

FCC REPORT

Applicant: Front Electronics (H.K.) Ltd.

Address of Applicant: Rm 2919, Asia Trade Centre, 79 Lei Muk Road, Kwai Chung

Equipment Under Test (EUT)

Product Name: Bluetooth keyboard

Model No.: FEL-2942

FCC ID: TAZ2942

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2010

Date of sample receipt: 29 Jun., 2011

Date of Test: 29 Jun. -02 Jul., 2011

Date of report issued: 04 Jul., 2011

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	2011-07-04	Original

Prepared By:

Collin He

Date:

2011-07-04

Project Engineer

Check By:

Hans.Hu

Date:

2011-07-04

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge (Radiated Emission)	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Remark:

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Front Electronics (H.K.) Ltd.
Address of Applicant:	Rm 2919, Asia Trade Centre, 79 Lei Muk Road, Kwai Chung
Manufacturer:	Front Electronics (H.K.) Ltd.
Address of Manufacturer:	Rm 2919, Asia Trade Centre, 79 Lei Muk Road, Kwai Chung
Factory:	Shenzhen Front Electronics Co., Ltd.
Address of Factory:	lock 10, No. 2 Hexi Industrial Zone,Baoan, Shenzhen 518102 China

5.2 General Description of E.U.T.

Product Name:	Bluetooth keyboard
Model No.:	FEL-2942
Operation Frequency:	2402MHz to 2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	DC 3.7V charge Battery

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

5.3 Test mode

Charge mode	Keep the EUT in charge mode by PC.		
Transmitting mode	Keep the EUT in transmitting continuously mode.		
Pre-Test Mode: (lowest channel=2402MHz)			
GTS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:			
Axis	X	Y	Z
Field Strength(dBuV/m)	76.45	78.58	74.33
Final Test Mode:			
According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup”: Y axis (see the test setup photo)			

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
● FCC —Registration No.: 600491 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, July 20, 2010.
● Industry Canada (IC) The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-1.

5.5 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China Tel: 0755-27798480 0755-27798960
Fax:

5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
Lenovo	PC	M6900	EA05257893	DoC
DELL	PC	OPTIPLEX745	GTS312	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

5.7 Other Information Requested by the Customer

None.

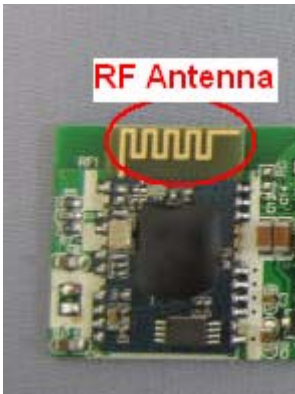
5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2011	Mar. 29 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sept. 10 2010	Sept. 09 2011
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2011	Feb. 25 2012
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	Aug. 03 2010	Aug. 02 2011
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Aug. 03 2010	Aug. 02 2011
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Apr. 01 2011	Mar. 31 2012
9	Coaxial Cable	GTS	N/A	GTS211	Apr. 01 2011	Mar. 31 2012
9	Coaxial cable	GTS	N/A	GTS210	Apr. 01 2011	Mar. 31 2012
11	Coaxial Cable	GTS	N/A	GTS212	Apr. 01 2011	Mar. 31 2012
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Aug. 03 2010	Aug. 02 2011
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Aug. 03 2010	Aug. 02 2011
14	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Aug. 03 2010	Aug. 02 2011
15	Band filter	Amindeon	82346	GTS219	Aug. 03 2010	Aug. 02 2011

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS206	Apr. 10 2011	Apr. 10 2012
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sept. 14 2010	Sept. 14 2011
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS209	Sept. 14 2010	Sept. 14 2011
4	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2011	Apr. 14 2012
5	Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2011	Apr. 01 2012
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i>	
E.U.T Antenna:	
<i>The antenna is no consideration of replacement. The best case gain of the antenna is 2dBi.</i>	
	

6.2 Conducted Emissions

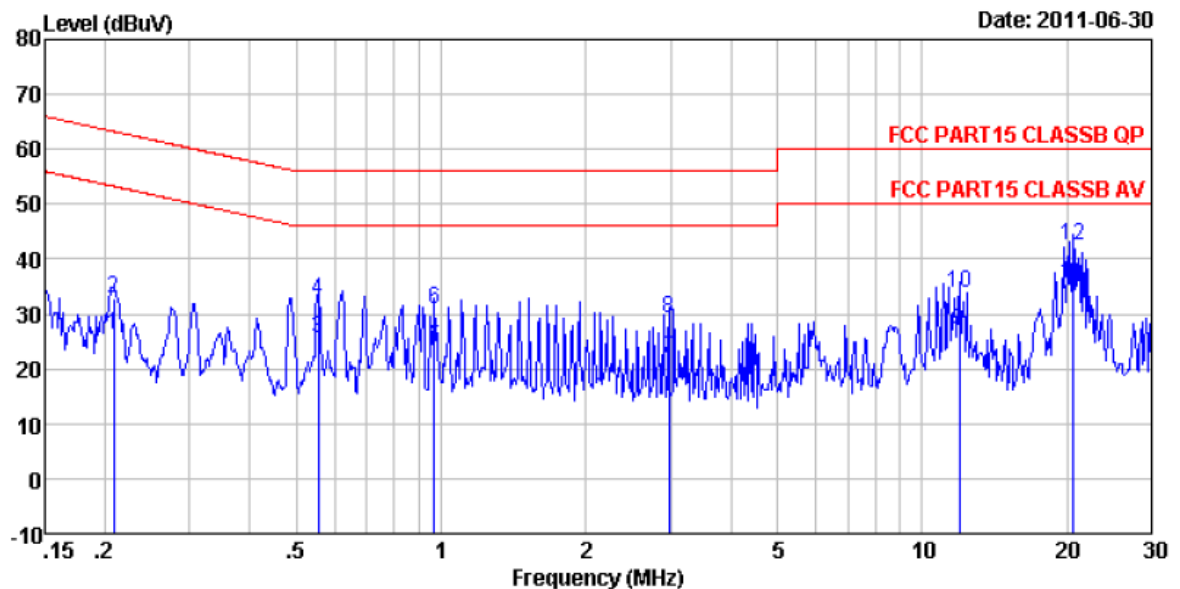
Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.4:2003		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test procedure	The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.		
Test setup:	Reference Plane LISN AUX Equipment E.U.T 40cm 80cm LISN Filter AC power EMI Receiver Test table/Insulation plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 5.7 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The worst mode: charge mode

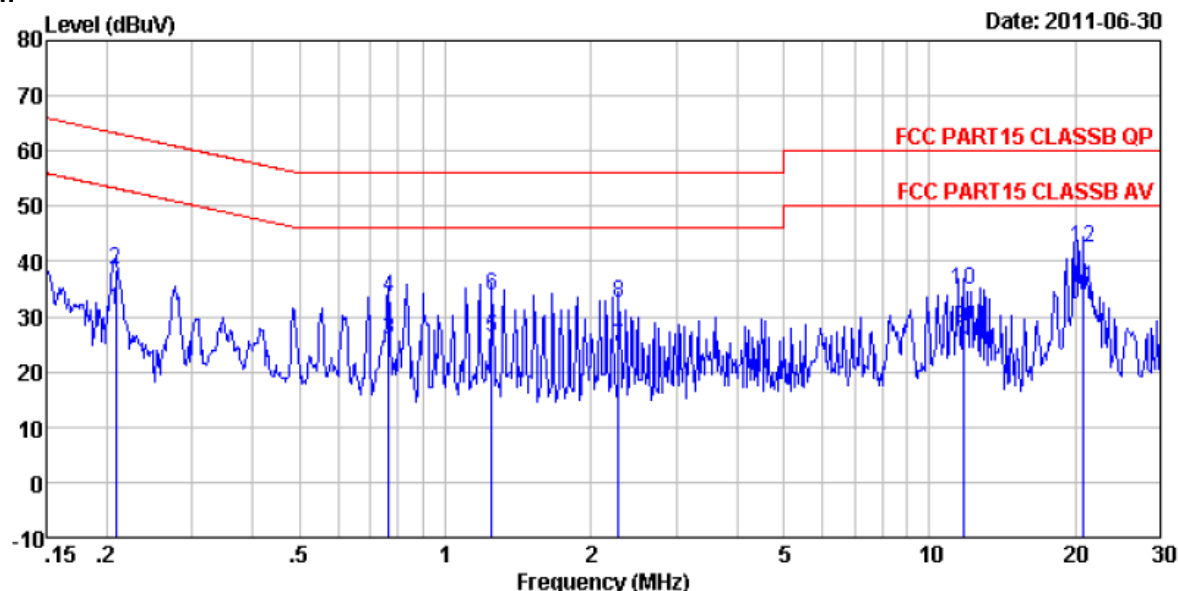
Line:



Condition : FCC PART15 CLASSB QP LISN(2011) LINE
 Job No. : 529RF
 Test Mode : Charge mode
 Test Engineer: Dick

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.208	25.33	0.65	0.10	26.08	53.27	-27.19	Average
2	0.208	32.24	0.65	0.10	32.99	63.27	-30.28	QP
3	0.555	24.77	0.54	0.10	25.41	46.00	-20.59	Average
4	0.555	31.89	0.54	0.10	32.53	56.00	-23.47	QP
5	0.968	23.13	0.48	0.10	23.71	46.00	-22.29	Average
6	0.968	30.39	0.48	0.10	30.97	56.00	-25.03	QP
7	2.978	21.46	0.36	0.10	21.92	46.00	-24.08	Average
8	2.978	28.60	0.36	0.10	29.06	56.00	-26.94	QP
9	11.933	26.47	0.20	0.20	26.87	50.00	-23.13	Average
10	11.933	33.59	0.20	0.20	33.99	60.00	-26.01	QP
11	20.594	35.13	0.14	0.21	35.48	50.00	-14.52	Average
12	20.594	42.16	0.14	0.21	42.51	60.00	-17.49	QP

Neutral:



Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL
 Job No. : 529RF
 Test Mode : Charge mode
 Test Engineer: Dick

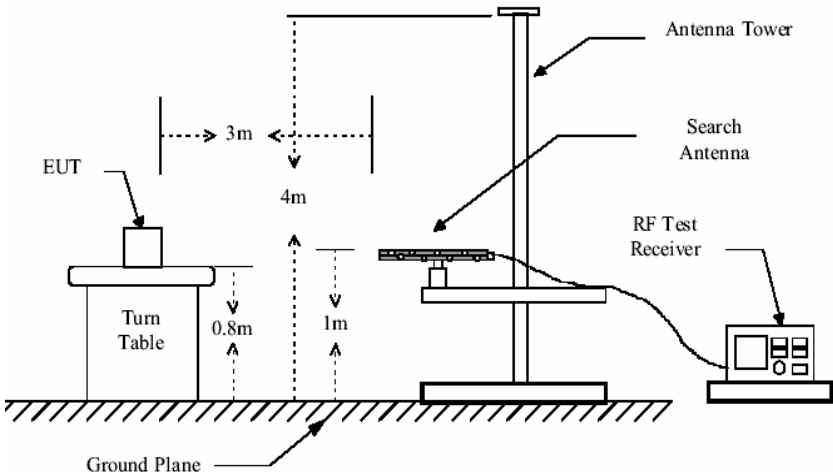
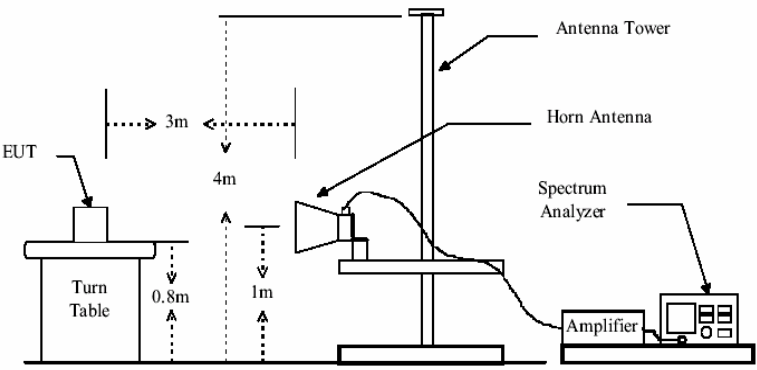
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.208	30.44	0.65	0.10	31.19	53.27	-22.08	Average
2	0.208	37.61	0.65	0.10	38.36	63.27	-24.91	QP
3	0.763	25.12	0.51	0.10	25.73	46.00	-20.27	Average
4	0.763	33.01	0.51	0.10	33.62	56.00	-22.38	QP
5	1.249	25.64	0.45	0.10	26.19	46.00	-19.81	Average
6	1.249	33.45	0.45	0.10	34.00	56.00	-22.00	QP
7	2.285	24.13	0.39	0.10	24.62	46.00	-21.38	Average
8	2.285	32.02	0.39	0.10	32.51	56.00	-23.49	QP
9	11.745	27.37	0.20	0.20	27.77	50.00	-22.23	Average
10	11.745	34.44	0.20	0.20	34.84	60.00	-25.16	QP
11	20.814	34.98	0.14	0.21	35.33	50.00	-14.67	Average
12	20.814	42.01	0.14	0.21	42.36	60.00	-17.64	QP

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

6.3 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.249 and 15.209																								
Test Method:	ANSI C63.4:2003																								
Test Frequency Range:	30MHz to 25000MHz																								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																								
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value	
Frequency	Detector	RBW	VBW	Remark																					
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value																					
Above 1GHz	Peak	1MHz	3MHz	Peak Value																					
	Peak	1MHz	10Hz	Average Value																					
Limit: (Field strength of the fundamental signal)	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">2400MHz-2483.5MHz</td><td>94.0</td><td>Average Value</td></tr><tr><td>114.0</td><td>Peak Value</td></tr></table>				Frequency	Limit (dBuV/m @3m)	Remark	2400MHz-2483.5MHz	94.0	Average Value	114.0	Peak Value													
Frequency	Limit (dBuV/m @3m)	Remark																							
2400MHz-2483.5MHz	94.0	Average Value																							
	114.0	Peak Value																							
Limit: (Spurious Emissions)	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>74.0</td><td>Peak Value</td></tr></table>				Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	74.0	Peak Value	
Frequency	Limit (dBuV/m @3m)	Remark																							
30MHz-88MHz	40.0	Quasi-peak Value																							
88MHz-216MHz	43.5	Quasi-peak Value																							
216MHz-960MHz	46.0	Quasi-peak Value																							
960MHz-1GHz	54.0	Quasi-peak Value																							
Above 1GHz	54.0	Average Value																							
	74.0	Peak Value																							
Limit: (band edge)	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 to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.																								
Test Procedure:	a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-																								

	peak or average method as specified and then reported in a data sheet.
Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

Measurement Data

6.3.1 Field Strength Of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	75.58	27.58	3.37	30.10	76.43	114.00	-37.57	Horizontal
2402.00	77.73	27.58	3.37	30.10	78.58	114.00	-35.42	Vertical
2441.00	76.24	27.48	3.43	29.99	77.16	114.00	-36.84	Horizontal
2441.00	77.78	27.48	3.43	29.99	78.70	114.00	-35.30	Vertical
2480.00	78.59	27.52	3.49	29.93	79.67	114.00	-34.33	Horizontal
2480.00	81.84	27.52	3.49	29.93	82.92	114.00	-31.08	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	64.28	27.58	3.37	30.10	65.13	94.00	-28.87	Horizontal
2402.00	66.43	27.58	3.37	30.10	67.28	94.00	-26.72	Vertical
2441.00	63.58	27.48	3.43	29.99	64.50	94.00	-29.50	Horizontal
2441.00	65.12	27.48	3.43	29.99	66.04	94.00	-27.96	Vertical
2480.00	65.28	27.52	3.49	29.93	66.36	94.00	-27.64	Horizontal
2480.00	67.53	27.52	3.49	29.93	68.61	94.00	-25.39	Vertical

6.3.2 Spurious Emissions

30MHz~1GHz

Test mode:	Transmitting
------------	--------------

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
35.88	50.00	15.25	0.63	32.20	33.68	40.00	-6.32	Vertical
101.29	36.31	12.77	1.17	31.71	18.54	43.50	-24.96	Vertical
239.99	39.94	10.42	1.92	32.28	20.00	46.00	-26.00	Vertical
636.13	36.75	19.25	2.79	31.44	27.35	46.00	-18.65	Vertical
916.07	38.62	24.49	3.36	31.47	35.00	46.00	-11.00	Vertical
38.89	39.35	15.64	0.64	32.16	23.47	40.00	-16.53	Horizontal
136.94	38.36	10.15	1.43	31.91	18.03	43.50	-25.47	Horizontal
300.37	37.37	13.04	2.07	32.30	20.18	46.00	-25.82	Horizontal
528.25	37.42	19.94	2.50	31.52	28.34	46.00	-17.66	Horizontal
900.15	36.63	25.48	3.34	31.46	33.99	46.00	-12.01	Horizontal

Above 1GHz					
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	39.28	31.78	5.32	24.09	52.29	74.00	-21.71	Vertical
7206.00	36.97	36.15	6.87	26.38	53.61	74.00	-20.39	Vertical
9608.00	35.94	37.95	8.94	25.40	57.43	74.00	-16.57	Vertical
12010.00	*	*	*	*	*	74.00	*	Vertical
14412.00	*	*	*	*	*	74.00	*	Vertical
4804.00	36.85	31.78	5.32	24.09	49.86	74.00	-24.14	Horizontal
7206.00	34.26	36.15	6.87	26.38	50.90	74.00	-23.10	Horizontal
9608.00	32.95	37.95	8.94	25.40	54.44	74.00	-19.56	Horizontal
12010.00	*	*	*	*	*	74.00	*	Horizontal
14412.00	*	*	*	*	*	74.00	*	Horizontal

Test mode:	Transmitting	Test channel:	Lowest	Remark:	average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	25.28	31.78	5.32	24.09	38.29	54.00	-15.71	Vertical
7206.00	24.30	36.15	6.87	26.38	40.94	54.00	-13.06	Vertical
9608.00	21.50	37.95	8.94	25.40	42.99	54.00	-11.01	Vertical
12010.00	*	*	*	*	*	54.00	*	Vertical
14412.00	*	*	*	*	*	54.00	*	Vertical
4804.00	22.85	31.78	5.32	24.09	35.86	54.00	-18.14	Horizontal
7206.00	21.59	36.15	6.87	26.38	38.23	54.00	-15.77	Horizontal
9608.00	18.51	37.95	8.94	25.40	40.00	54.00	-14.00	Horizontal
12010.00	*	*	*	*	*	54.00	*	Horizontal
14412.00	*	*	*	*	*	54.00	*	Horizontal

Remark:

1. “*”, means this data is the too weak instrument of signal is unable to test.
2. Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	Transmitting	Test channel:	Middle	Remark:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	38.60	31.85	5.40	24.01	51.84	74.00	-22.16	Vertical
7323.00	37.20	36.37	6.91	26.62	53.86	74.00	-20.14	Vertical
9764.00	34.35	38.35	9.01	25.30	56.41	74.00	-17.59	Vertical
12205.00	*	*	*	*	*	74.00	*	Vertical
14480.00	*	*	*	*	*	74.00	*	Vertical
4882.00	36.84	31.85	5.40	24.01	50.08	74.00	-23.92	Horizontal
7323.00	35.22	36.37	6.91	26.62	51.88	74.00	-22.12	Horizontal
9764.00	32.15	38.35	9.01	25.30	54.21	74.00	-19.79	Horizontal
12205.00	*	*	*	*	*	74.00	*	Horizontal
14480.00	*	*	*	*	*	74.00	*	Horizontal

Test mode:	Transmitting	Test channel:	Middle	Remark:	average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.00	26.89	31.85	5.40	24.01	40.13	54.00	-13.87	Vertical
7323.00	25.44	36.37	6.91	26.62	42.10	54.00	-11.90	Vertical
9764.00	22.38	38.35	9.01	25.30	44.44	54.00	-9.56	Vertical
12205.00	*	*	*	*	*	54.00	*	Vertical
14480.00	*	*	*	*	*	54.00	*	Vertical
4882.00	25.13	31.85	5.40	24.01	38.37	54.00	-15.63	Horizontal
7323.00	23.46	36.37	6.91	26.62	40.12	54.00	-13.88	Horizontal
9764.00	20.18	38.35	9.01	25.30	42.24	54.00	-11.76	Horizontal
12205.00	*	*	*	*	*	54.00	*	Horizontal
14480.00	*	*	*	*	*	54.00	*	Horizontal

Remark:

1. “*”, means this data is the too weak instrument of signal is unable to test.
2. Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	36.47	31.93	5.47	23.93	49.94	74.00	-24.06	Vertical
7440.00	40.28	36.59	6.95	26.95	56.87	74.00	-17.13	Vertical
9920.00	38.10	38.81	9.07	25.22	60.76	74.00	-13.24	Vertical
12400.00	*	*	*	*	*	74.00	*	Vertical
14646.00	*	*	*	*	*	74.00	*	Vertical
4960.00	32.29	31.93	5.47	23.93	45.76	74.00	-28.24	Horizontal
7440.00	35.17	36.59	6.95	26.95	51.76	74.00	-22.24	Horizontal
9920.00	32.06	38.81	9.07	25.22	54.72	74.00	-19.28	Horizontal
12400.00	*	*	*	*	*	74.00	*	Horizontal
14646.00	*	*	*	*	*	74.00	*	Horizontal

Test mode:	Transmitting	Test channel:	Highest	Remark:	average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	26.86	31.93	5.47	23.93	40.33	54.00	-13.67	Vertical
7440.00	25.07	36.59	6.95	26.95	41.66	54.00	-12.34	Vertical
9920.00	22.96	38.81	9.07	25.22	45.62	54.00	-8.38	Vertical
12400.00	*	*	*	*	*	54.00	*	Vertical
14646.00	*	*	*	*	*	54.00	*	Vertical
4960.00	24.49	31.93	5.47	23.93	37.96	54.00	-16.04	Horizontal
7440.00	22.58	36.59	6.95	26.95	39.17	54.00	-14.83	Horizontal
9920.00	20.35	38.81	9.07	25.22	43.01	54.00	-10.99	Horizontal
12400.00	*	*	*	*	*	54.00	*	Horizontal
14646.00	*	*	*	*	*	54.00	*	Horizontal

Remark:

1. “*” means this data is too weak, the instrument of signal is unable to test.
2. Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Pre-amplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not shown in the test report.

6.3.3 Band edge (Radiated Emission)

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	46.35	27.61	3.33	30.14	47.15	74.00	-26.85	Horizontal
2400.00	45.59	27.57	3.37	30.06	46.47	74.00	-27.53	Horizontal
2390.00	48.75	27.61	3.33	30.14	49.55	74.00	-24.45	Vertical
2400.00	48.39	27.57	3.37	30.06	49.27	74.00	-24.73	Vertical

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	34.15	27.61	3.33	30.14	34.95	54.00	-19.05	Horizontal
2400.00	35.19	27.57	3.37	30.06	36.07	54.00	-17.93	Horizontal
2390.00	36.55	27.61	3.33	30.14	37.35	54.00	-16.65	Vertical
2400.00	35.99	27.57	3.37	30.06	36.87	54.00	-17.13	Vertical

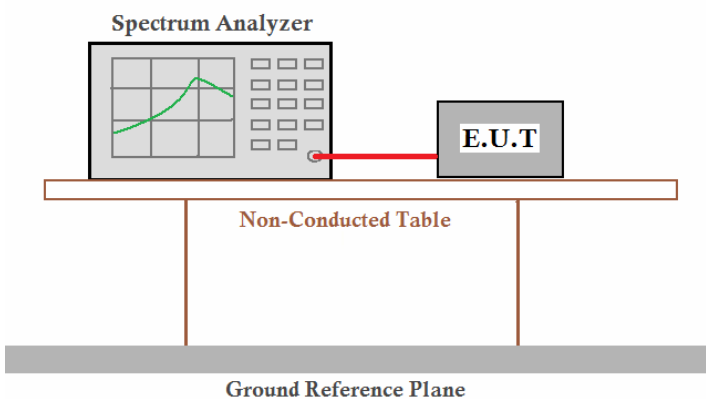
Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	44.60	27.54	3.52	30.70	44.96	74.00	-29.04	Horizontal
2500.00	45.31	27.56	3.52	30.70	45.69	74.00	-28.31	Horizontal
2483.50	47.98	27.53	3.49	30.70	48.30	74.00	-25.70	Vertical
2500.00	47.86	27.56	3.52	30.70	48.24	74.00	-25.76	Vertical

Test mode:	Transmitting	Test channel:	Highest	Remark:	Average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	30.86	27.54	3.52	30.70	31.22	54.00	-22.78	Horizontal
2500.00	31.40	27.56	3.52	30.70	31.78	54.00	-22.22	Horizontal
2483.50	30.24	27.53	3.49	30.70	30.56	54.00	-23.44	Vertical
2500.00	31.76	27.56	3.52	30.70	32.14	54.00	-21.86	Vertical

6.4 20dB Bandwidth

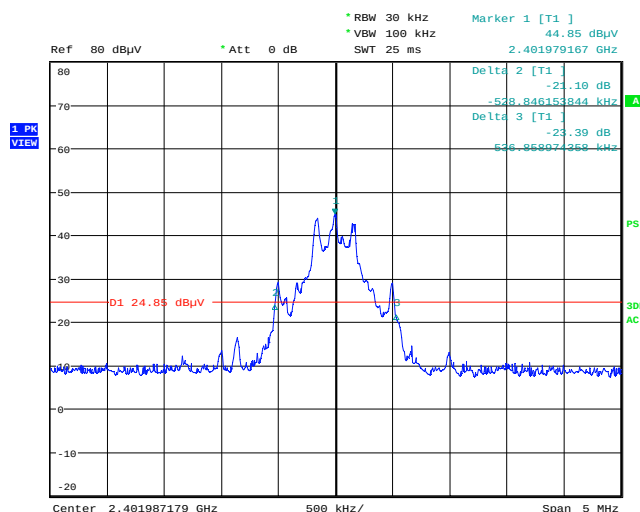
Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.4:2003
Receiver setup:	RBW=30KHz, VBW=100KHz, detector: Peak
Limit:	Operation Frequency range 2400MHz-2483.5MHz
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read 20dB bandwidth.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

Test channel	20dB bandwidth (MHz)	Results
Lowest	1.066	Pass
Middle	1.058	Pass
Highest	1.050	Pass

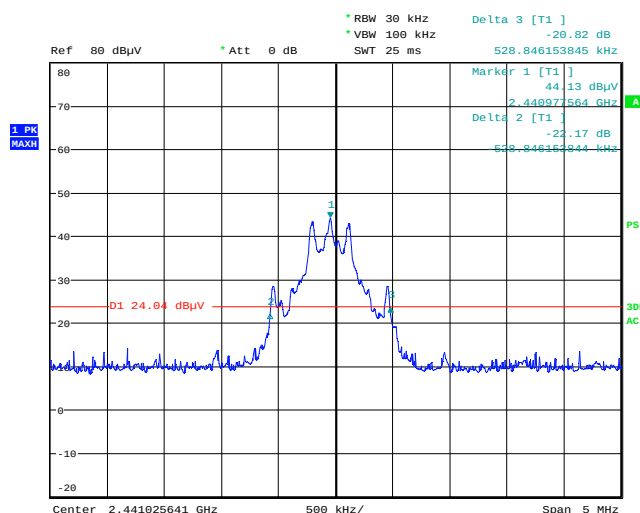
Test plot as follows:

Test channel:	Lowest	
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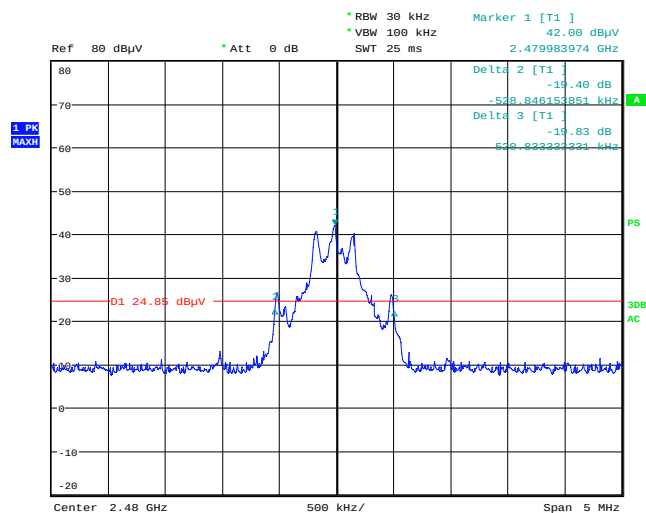
Date: 2.JUL.2011 13:54:13

Test channel:	Middle	
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Date: 2.JUL.2011 13:53:21

Test channel:	Highest	
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Date: 2.JUL.2011 13:54:47