

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: REMOTE FOR Wii™

Model No.: WL015/WL016, WL017/WL018, FEL-2961/FEL-2962,
FEL-2824/FEL-2962

FCC ID: TAZWL015

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2011

Date of sample receipt: October 20, 2012

Date of Test: October 20-26, 2012

Date of report issued: October 29, 2012

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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

2 Version

Version No.	Date	Description
00	October 29, 2012	Original

Prepared By:

hank. yan

Date:

October 29, 2012

Project Engineer

Check By:

Hans. Hu

Date:

October 29, 2012

Reviewer

3 Contents

Page

1	COVER PAGE	1
2	VERSION	2
3	CONTENTS	3
4	TEST SUMMARY	4
5	GENERAL INFORMATION	5
5.1	CLIENT INFORMATION	5
5.2	GENERAL DESCRIPTION OF E.U.T.	5
5.3	TEST MODE	7
5.4	DESCRIPTION OF SUPPORT UNITS	7
5.5	TEST FACILITY	7
5.6	TEST LOCATION	7
5.7	OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
6	TEST INSTRUMENTS LIST	8
7	TEST RESULTS AND MEASUREMENT DATA	9
7.1	ANTENNA REQUIREMENT:	9
7.2	RADIATED EMISSION METHOD	10
7.2.1	<i>Field Strength of The Fundamental Signal</i>	12
7.2.2	<i>Spurious emissions</i>	13
7.2.3	<i>Bandedge emissions</i>	17
7.3	20dB OCCUPY BANDWIDTH	18
8	TEST SETUP PHOTO	20
9	EUT CONSTRUCTIONAL DETAILS	21

4 Test Summary

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

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

N/A: not applicable.

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:	Block 10, No. 2 Hexi Industrial Zone, Baoan, Shenzhen China

5.2 General Description of E.U.T.

Product Name:	REMOTE FOR Wii™
Model No.:	WL015/WL016, WL017/WL018, FEL-2961/FEL-2962, FEL-2824/FEL-2962
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Modulation technology:	GFSK
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	DC 3.0V(2*1.5"AA")
Remark:	Only the model WL015/WL016 was tested. WL017/WL018, FEL-2961/FEL-2962, FEL-2824/FEL-2962 and WL015/WL016 are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.

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		

Remark:

The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. Channel 1, 40 and 79 of Bluetooth were chosen for testing.

5.3 Test mode

Transmitting mode	Keep transmitting mode.		
Per-test mode.			
We have 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)	92.45	94.28	93.07
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 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC approval
IBM	Notebook	T42	GTS209	DoC
IBM	AC Adapter	92P1024	N/A	VoC

5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: • CNAS —Registration No.: CNAS L5775 CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. • 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.
--

5.6 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 Fax: 0755-27798960

5.7 Other Information Requested by the Customer

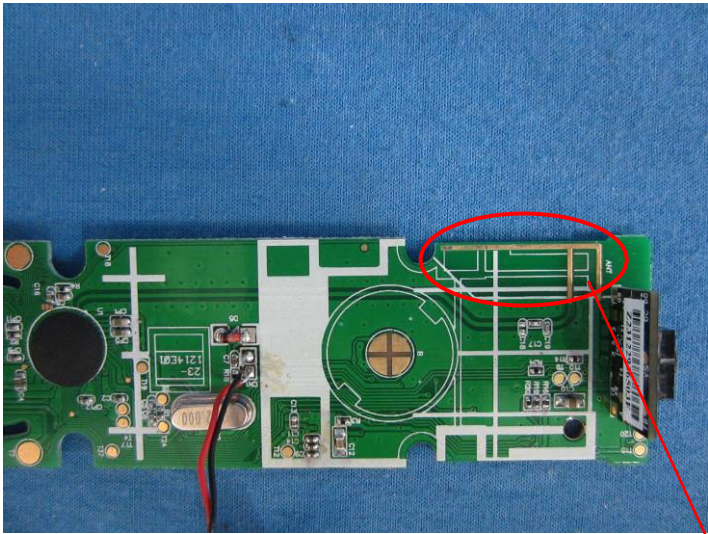
None.

6 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 2013
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	Jul. 03 2012	Jul. 02 2013
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 25 2012	Feb. 24 2013
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2012	June 28 2013
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2011	Mar. 29 2013
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Mar. 31 2012	Mar. 30 2013
9	Coaxial Cable	GTS	N/A	GTS211	Mar. 31 2012	Mar. 30 2013
10	Coaxial cable	GTS	N/A	GTS210	Mar. 31 2012	Mar. 30 2013
11	Coaxial Cable	GTS	N/A	GTS212	Mar. 31 2012	Mar. 30 2013
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2012	Jul. 02 2013
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 03 2012	Jul. 02 2013
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2012	June 28 2013
15	Band filter	Amindeon	82346	GTS219	Mar. 31 2012	Mar. 30 2013

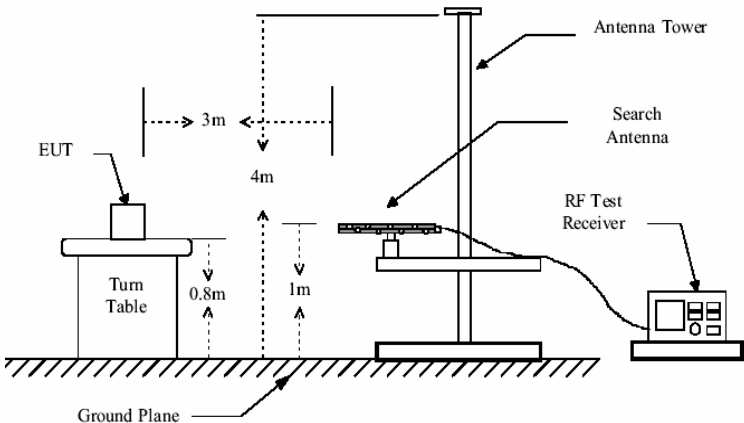
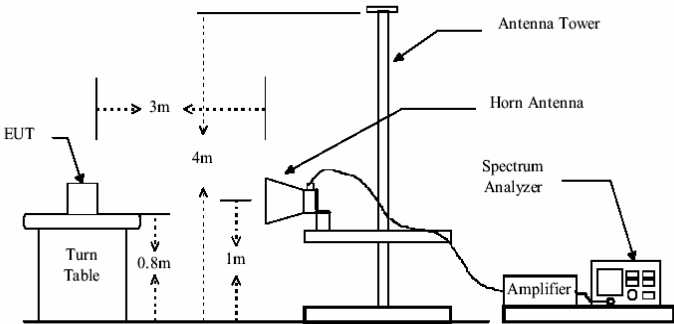
7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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.	
E.U.T Antenna: <i>The antenna is Integral antenna, the best case gain of the antenna is 2dBi</i>	
 RF Antenna	

7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	10Hz	Average Value
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	2400MHz-2483.5MHz		94.00		Average Value
			114.00		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.00		Quasi-peak Value
	88MHz-216MHz		43.50		Quasi-peak Value
	216MHz-960MHz		46.00		Quasi-peak Value
	960MHz-1GHz		54.00		Quasi-peak Value
	Above 1GHz		54.00		Average Value
			74.00		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:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. 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. 4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. 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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement data:

7.2.1 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	85.78	27.58	5.39	30.18	88.57	114.00	-25.43	Horizontal
2402.00	80.91	27.58	5.39	30.18	83.70	114.00	-30.30	Vertical
2441.00	88.14	27.55	5.43	30.06	91.06	114.00	-22.94	Horizontal
2441.00	83.51	27.55	5.43	30.06	86.43	114.00	-27.57	Vertical
2480.00	91.22	27.52	5.47	29.93	94.28	114.00	-19.72	Horizontal
2480.00	86.53	27.52	5.47	29.93	89.59	114.00	-24.41	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	77.56	27.58	5.39	30.18	80.35	94.00	-13.65	Horizontal
2402.00	72.81	27.58	5.39	30.18	75.60	94.00	-18.40	Vertical
2441.00	80.36	27.55	5.43	30.06	83.28	94.00	-10.72	Horizontal
2441.00	75.78	27.55	5.43	30.06	78.70	94.00	-15.30	Vertical
2480.00	82.98	27.52	5.47	29.93	86.04	94.00	-7.96	Horizontal
2480.00	78.27	27.52	5.47	29.93	81.33	94.00	-12.67	Vertical

According to the follow transmitter output power (P_t) formula:

$$P_t = (E \times d)^2 / (30 \times g_t)$$

P_t =transmitter output power in watts

g_t =numeric gain of the transmitting antenna (unitless)

E =electric field strength in V/m

d = measurement distance in meters (m).

According to the above test data, $E_{max}=94.28\text{dBuV/m}=0.0518\text{V/m}$, $d=3\text{m}$, $g_t=1.58$

$$P_t = (E \times d)^2 / (30 \times g_t) = (0.0518 \times 3)^2 / (30 \times 1.58) = 0.000509\text{W}$$

7.2.2 Spurious emissions

■ Below 1GHz

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
68.15	46.87	13.36	0.93	31.89	29.27	40.00	-10.73	Vertical
96.78	46.90	16.05	1.17	31.75	32.37	43.50	-11.13	Vertical
195.82	53.62	13.57	1.82	32.13	36.88	43.50	-6.62	Vertical
218.31	56.03	14.17	1.95	32.15	40.00	46.00	-6.00	Vertical
472.18	46.97	17.95	3.19	31.64	36.47	46.00	-9.53	Vertical
576.64	48.18	20.09	3.63	31.15	40.75	46.00	-5.25	Vertical
68.15	49.53	13.36	0.93	31.89	31.93	40.00	-8.07	Horizontal
96.78	56.00	16.05	1.17	31.75	41.47	43.50	-2.03	Horizontal
220.62	54.15	14.26	1.96	32.15	38.22	46.00	-7.78	Horizontal
303.54	57.50	16.12	2.38	32.17	43.83	46.00	-2.17	Horizontal
472.18	45.06	17.95	3.19	31.64	34.56	46.00	-11.44	Horizontal
848.06	39.94	23.55	4.65	31.25	36.89	46.00	-9.11	Horizontal

■ Above 1GHz

Test channel:	Lowest channel
---------------	----------------

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
4804.00	33.03	31.78	8.60	24.17	49.24	74.00	-24.76	Vertical
7206.00	33.51	36.15	11.65	26.39	54.92	74.00	-19.08	Vertical
9608.00	31.80	38.01	14.14	25.45	58.50	74.00	-15.50	Vertical
12010.00	*					74.00		Vertical
14412.00	*					74.00		Vertical
4804.00	33.10	31.78	8.60	24.17	49.31	74.00	-24.69	Horizontal
7206.00	34.51	36.15	11.65	26.39	55.92	74.00	-18.08	Horizontal
9608.00	31.65	38.01	14.14	25.45	58.35	74.00	-15.65	Horizontal
12010.00	*					74.00		Horizontal
14412.00	*					74.00		Horizontal

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
4804.00	21.88	31.78	8.60	24.17	38.09	54.00	-15.91	Vertical
7206.00	21.64	36.15	11.65	26.39	43.05	54.00	-10.95	Vertical
9608.00	23.12	38.01	14.14	25.45	49.82	54.00	-4.18	Vertical
12010.00	*					54.00		Vertical
14412.00	*					54.00		Vertical
4804.00	21.53	31.78	8.60	24.17	37.74	54.00	-16.26	Horizontal
7206.00	21.56	36.15	11.65	26.39	42.97	54.00	-11.03	Horizontal
9608.00	22.85	38.01	14.14	25.45	49.55	54.00	-4.45	Horizontal
12010.00	*					54.00		Horizontal
14412.00	*					54.00		Horizontal

Remark:

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

Test channel:	Middle channel
---------------	----------------

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
4882.00	33.48	31.85	8.66	24.10	49.89	74.00	-24.11	Vertical
7323.00	34.69	36.37	11.72	26.71	56.07	74.00	-17.93	Vertical
9764.00	31.22	38.35	14.25	25.36	58.46	74.00	-15.54	Vertical
12205.00	*					74.00		Vertical
14646.00	*					74.00		Vertical
4882.00	33.74	31.85	8.66	24.10	50.15	74.00	-23.85	Horizontal
7323.00	33.61	36.37	11.72	26.71	54.99	74.00	-19.01	Horizontal
9764.00	30.67	38.35	14.25	25.36	57.91	74.00	-16.09	Horizontal
12205.00	*					74.00		Horizontal
14646.00	*					74.00		Horizontal

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
4882.00	22.33	31.85	8.66	24.10	38.74	54.00	-15.26	Vertical
7323.00	21.71	36.37	11.72	26.71	43.09	54.00	-10.91	Vertical
9764.00	23.84	38.35	14.25	25.36	51.08	54.00	-2.92	Vertical
12205.00	*					54.00		Vertical
14646.00	*					54.00		Vertical
4882.00	22.17	31.85	8.66	24.10	38.58	54.00	-15.42	Horizontal
7323.00	21.63	36.37	11.72	26.71	43.01	54.00	-10.99	Horizontal
9764.00	23.15	38.35	14.25	25.36	50.39	54.00	-3.61	Horizontal
12205.00	*					54.00		Horizontal
14646.00	*					54.00		Horizontal

Remark:

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

Test channel:	Highest channel
---------------	-----------------

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
4960.00	32.29	31.93	8.73	24.03	48.92	74.00	-25.08	Vertical
7440.00	33.71	36.59	11.79	27.03	55.06	74.00	-18.94	Vertical
9920.00	28.75	38.81	14.38	25.26	56.68	74.00	-17.32	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
4960.00	33.34	31.93	8.73	24.03	49.97	74.00	-24.03	Horizontal
7440.00	33.82	36.59	11.79	27.03	55.17	74.00	-18.83	Horizontal
9920.00	29.21	38.81	14.38	25.26	57.14	74.00	-16.86	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					74.00		Horizontal

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
4960.00	21.14	31.93	8.73	24.03	37.77	54.00	-16.23	Vertical
7440.00	22.26	36.59	11.79	27.03	43.61	54.00	-10.39	Vertical
9920.00	24.06	38.81	14.38	25.26	51.99	54.00	-2.01	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
4960.00	21.77	31.93	8.73	24.03	38.40	54.00	-15.60	Horizontal
7440.00	22.24	36.59	11.79	27.03	43.59	54.00	-10.41	Horizontal
9920.00	23.54	38.81	14.38	25.26	51.47	54.00	-2.53	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					54.00		Horizontal

Remark:

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

7.2.3 Bandedge emissions

Test channel:	Lowest channel
---------------	----------------

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
2390.00	51.90	27.59	5.38	30.18	54.69	74.00	-19.31	Horizontal
2400.00	67.82	27.58	5.39	30.18	70.61	74.00	-3.39	Horizontal
2390.00	46.76	27.59	5.38	30.18	49.55	74.00	-24.45	Vertical
2400.00	62.56	27.58	5.39	30.18	65.35	74.00	-8.65	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
2390.00	35.24	27.59	5.38	30.18	38.03	54.00	-15.97	Horizontal
2400.00	48.34	27.58	5.39	30.18	51.13	54.00	-2.87	Horizontal
2390.00	30.37	27.59	5.38	30.18	33.16	54.00	-20.84	Vertical
2400.00	44.14	27.58	5.39	30.18	46.93	54.00	-7.07	Vertical

Test channel:	Highest channel
---------------	-----------------

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
2483.50	66.44	27.53	5.47	29.93	69.51	74.00	-4.49	Horizontal
2500.00	51.32	27.55	5.49	29.93	54.43	74.00	-19.57	Horizontal
2483.50	61.79	27.53	5.47	29.93	64.86	74.00	-9.14	Vertical
2500.00	47.05	27.55	5.49	29.93	50.16	74.00	-23.84	Vertical

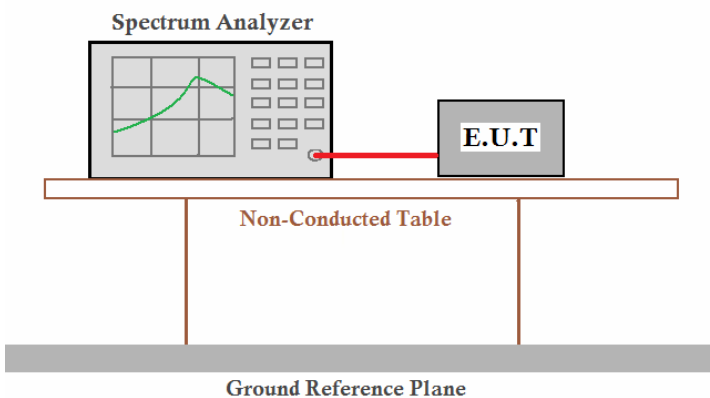
Average value:

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
2483.50	40.33	27.53	5.47	29.93	43.40	54.00	-10.60	Horizontal
2500.00	34.34	27.55	5.49	29.93	37.45	54.00	-16.55	Horizontal
2483.50	35.99	27.53	5.47	29.93	39.06	54.00	-14.94	Vertical
2500.00	29.83	27.55	5.49	29.93	32.94	54.00	-21.06	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

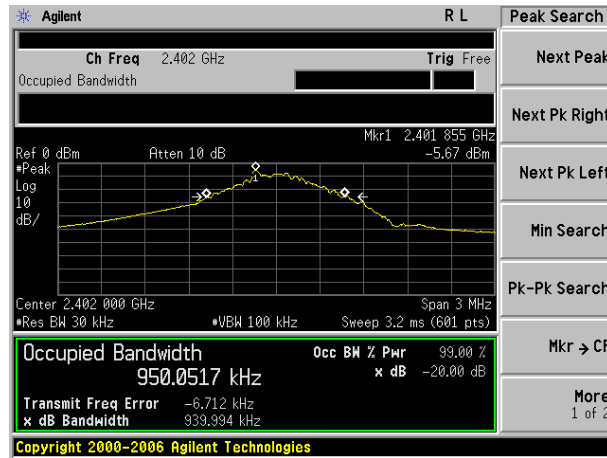
7.3 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.4:2003
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

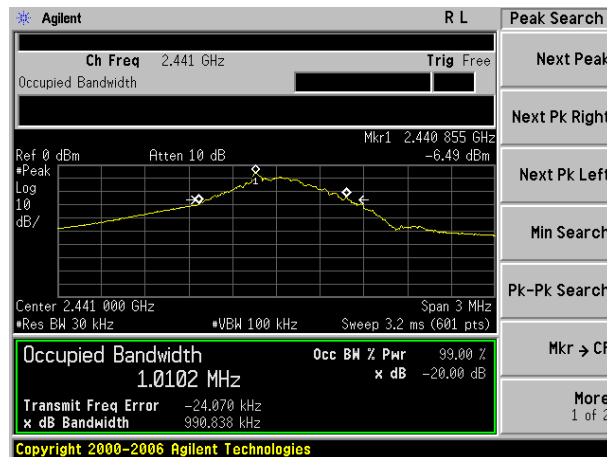
Measurement Data

Test channel	20dB bandwidth(MHz)	Result
Lowest	0.940	Pass
Middle	0.991	Pass
Highest	1.007	Pass

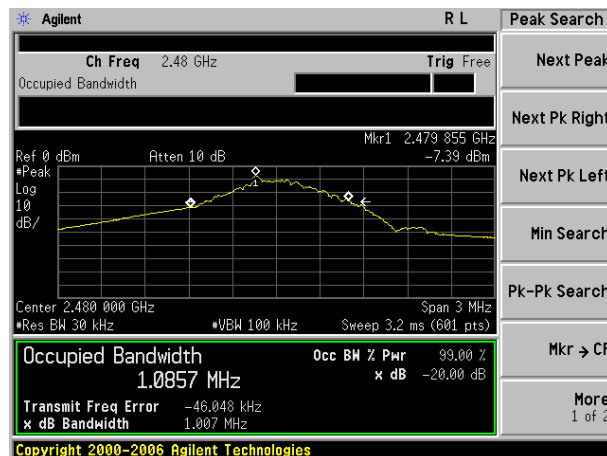
Test plot as follows:



Lowest channel



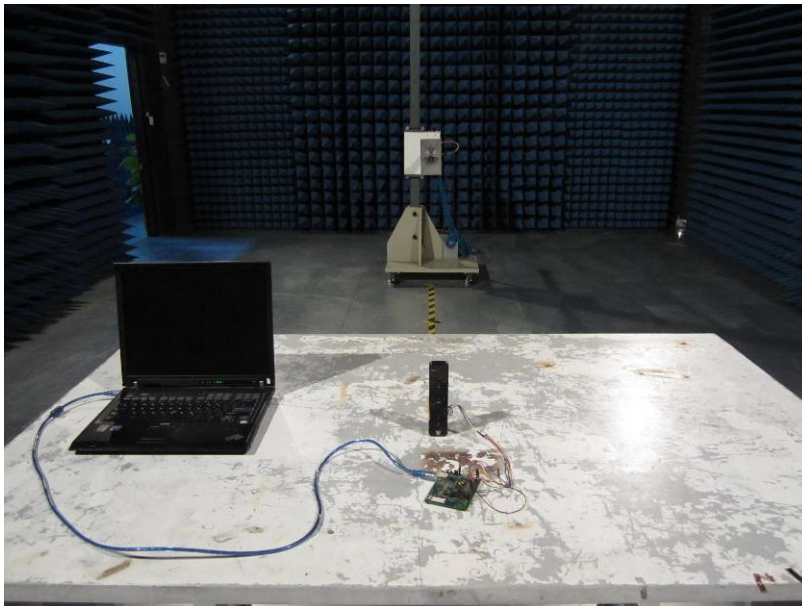
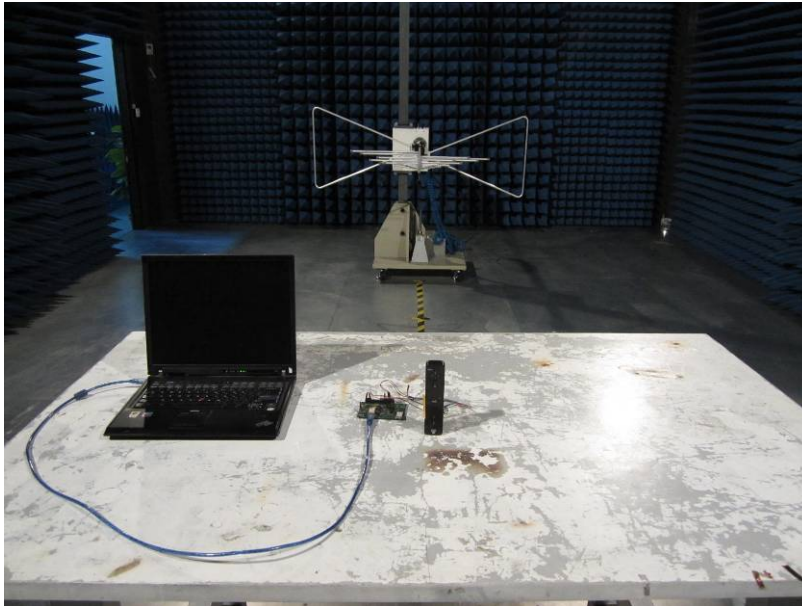
Middle channel



Highest channel

8 Test Setup Photo

Radiated Emission

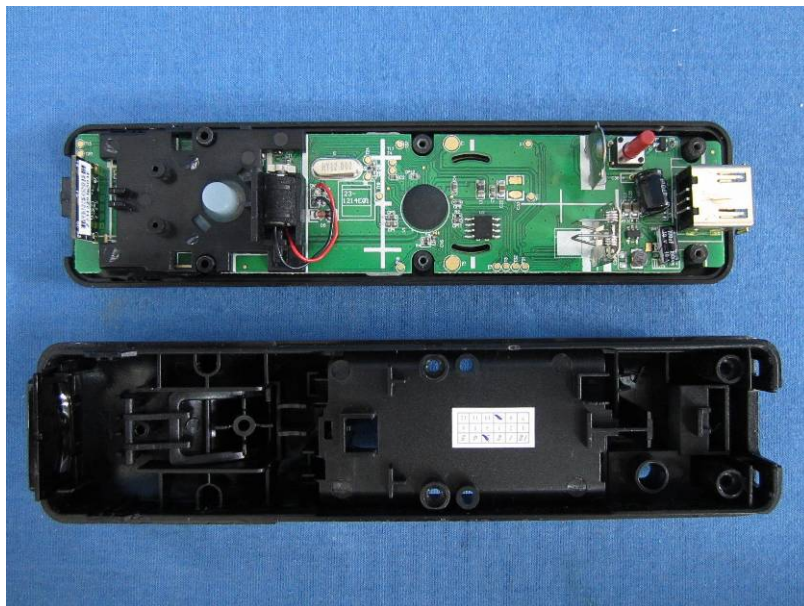


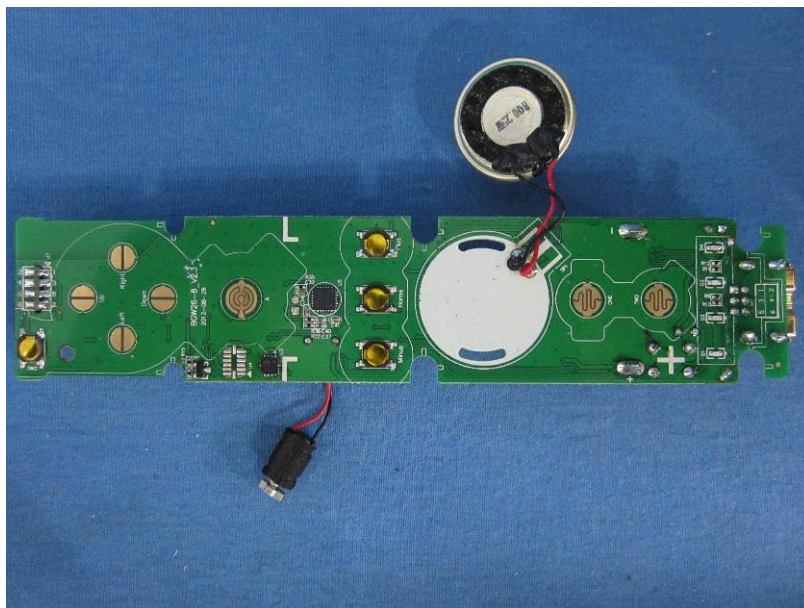
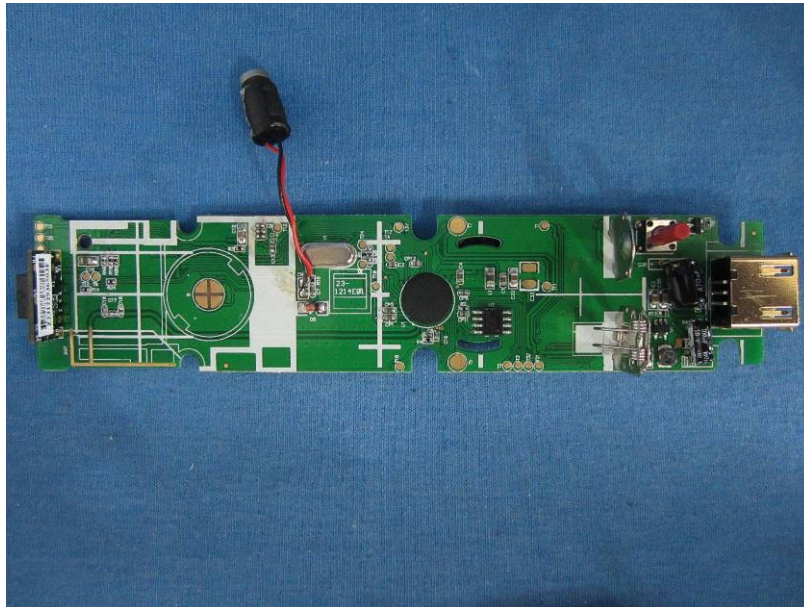
9 EUT Constructional Details

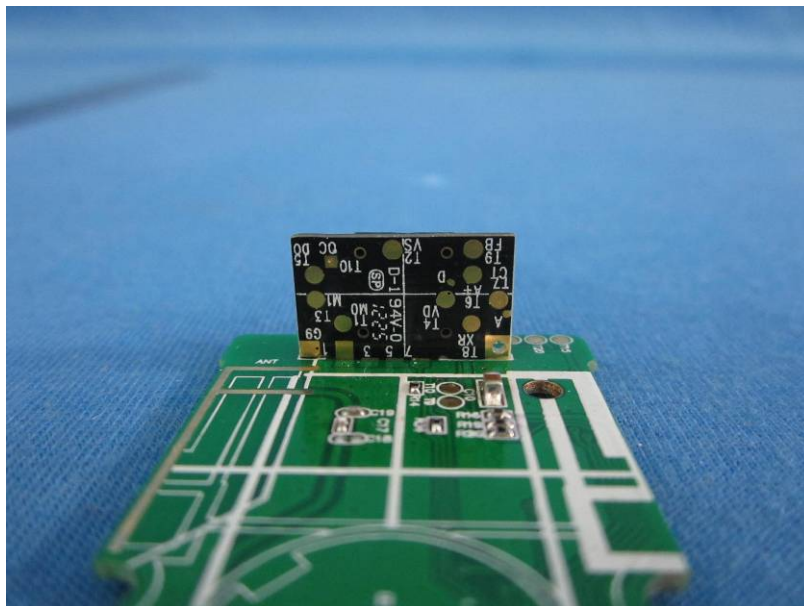


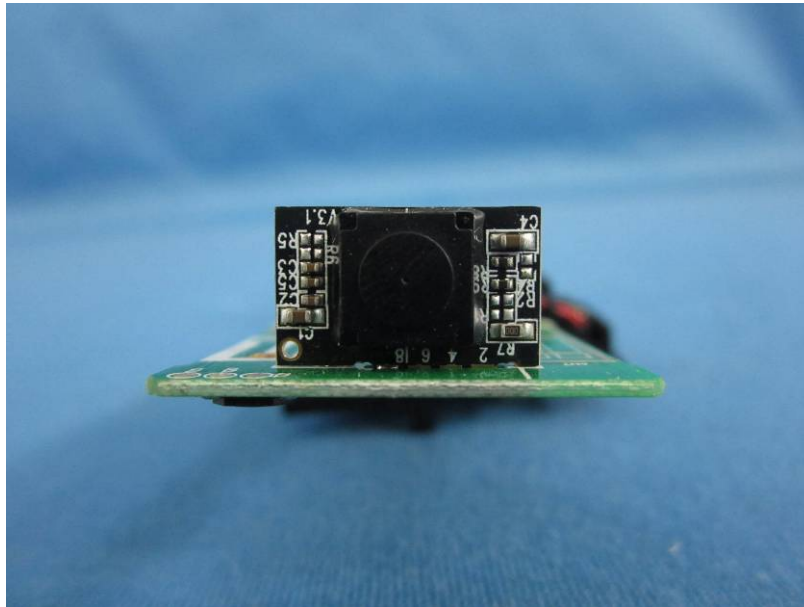
Model No.: WL015/WL016, WL017/WL018, FEL-2961/FEL-2962







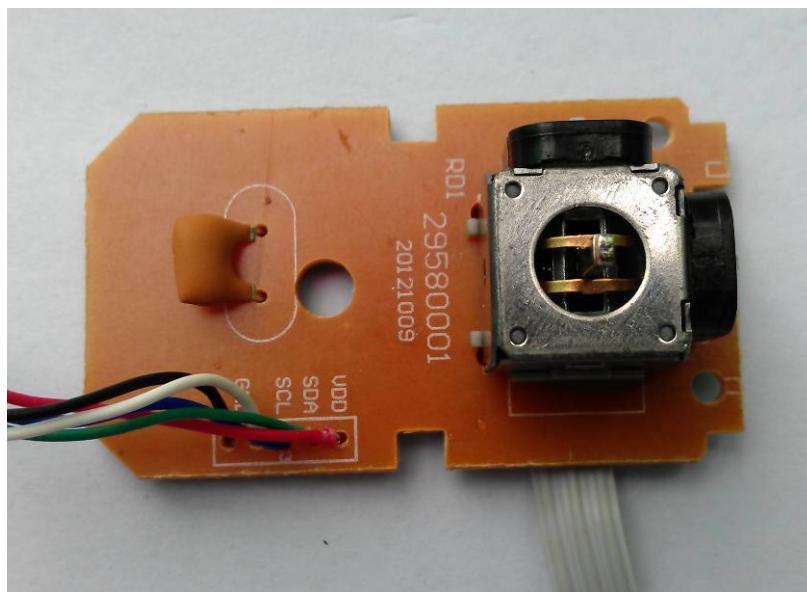
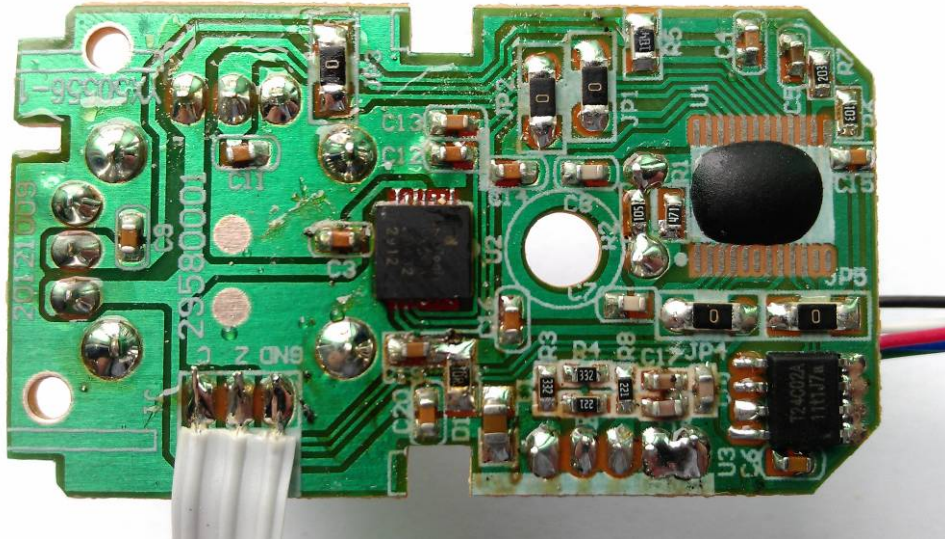












-----End-----