



Test Report

Product Name : Cordless Keyboard
Model No. : Y-RBA78
FCC ID. : JNZYRBA78

Applicant : Logitech Far East Ltd.
Address : #2 Creation Rd., 4, Science-Based Ind. Park,
Hsinchu, Taiwan, R.O.C.

Date of Receipt : 2007/05/14
Issued Date : 2007/05/23
Report No. : 075H030-RFUSP03V01

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2007/05/23

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Product Name : Cordless Keyboard
 Applicant : Logitech Far East Ltd.
 Address : #2 Creation Rd., 4, Science-Based Ind. Park, Hsinchu,
 Taiwan, R.O.C.
 Manufacturer : Logitech Far East Ltd.
 Model No. : Y-RBA78
 FCC ID. : JNZYRBA78
 Rated Voltage : DC 3V (Power by Battery)
 EUT Voltage : DC 3V (Power by Battery)
 Trade Name : Logitech
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.227: 2006
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By : Demi Chang
 (Demi Chang)
 Tested By : Halu Chung
 (Halu Chung)
 Approved By : Roy Wang
 (Roy Wang)

TABLE OF CONTENTS

Description	Page
x	
1. General Information	4
1.1. EUT Description	4
1.2. Operational Description	5
1.3. Test Mode	6
1.4. Tested System Details.....	7
1.5. Configuration of tested System	7
1.6. EUT Exercise Software	7
1.7. Test Facility	8
2. Conducted Emission	9
2.1. Test Equipment	9
2.2. Test Setup	9
2.3. Limits.....	10
2.4. Test Procedure	10
2.5. Test Specification	10
2.6. Uncertainty.....	10
2.7. Test Result	11
3. Radiated Emission	12
3.1. Test Equipment	12
3.2. Test Setup	13
3.3. Limits.....	14
3.4. Test Procedure	15
3.5. Test Specification	15
3.6. Uncertainty.....	15
3.7. Test Result	16
3.8. Test Photo	22
4. Occupied Bandwidth	23
4.1. Test Equipment	23
4.2. Test Setup	23
4.3. Limits.....	23
4.4. Test Specification	23
4.5. Uncertainty.....	23
4.6. Test Result	24
Attachement.....	26
EUT Photograph	26

1. General Information

1.1. EUT Description

Product Name	Cordless Keyboard
Trade Name	Logitech
Model No.	Y-RBA78
Frequency Range	27.095MHz~27.145MHz
Channel Number	2
Type of Modulation	FSK
Antenna Type	Loop Antenna

Working Frequency of Each Channel			
Channel	Frequency	Channel	Frequency
001	27.095MHz	002	27.145MHz

Note:

1. This device is a Cordless Keyboard.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.227.
3. Regards to the frequency band operation; the highest rate that was included the lowest and highest frequency of channel were selected to perform the test, and then shown on this report.

1.2. Operational Description

The EUT is a 27MHz Wireless Keyboard intends to use in household and office PC system. The device adapts FSK modulation. The antenna Soldered on PCB Provides diversity function to improve the transmitting function.

1.3. Test Mode

QuieTek 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:

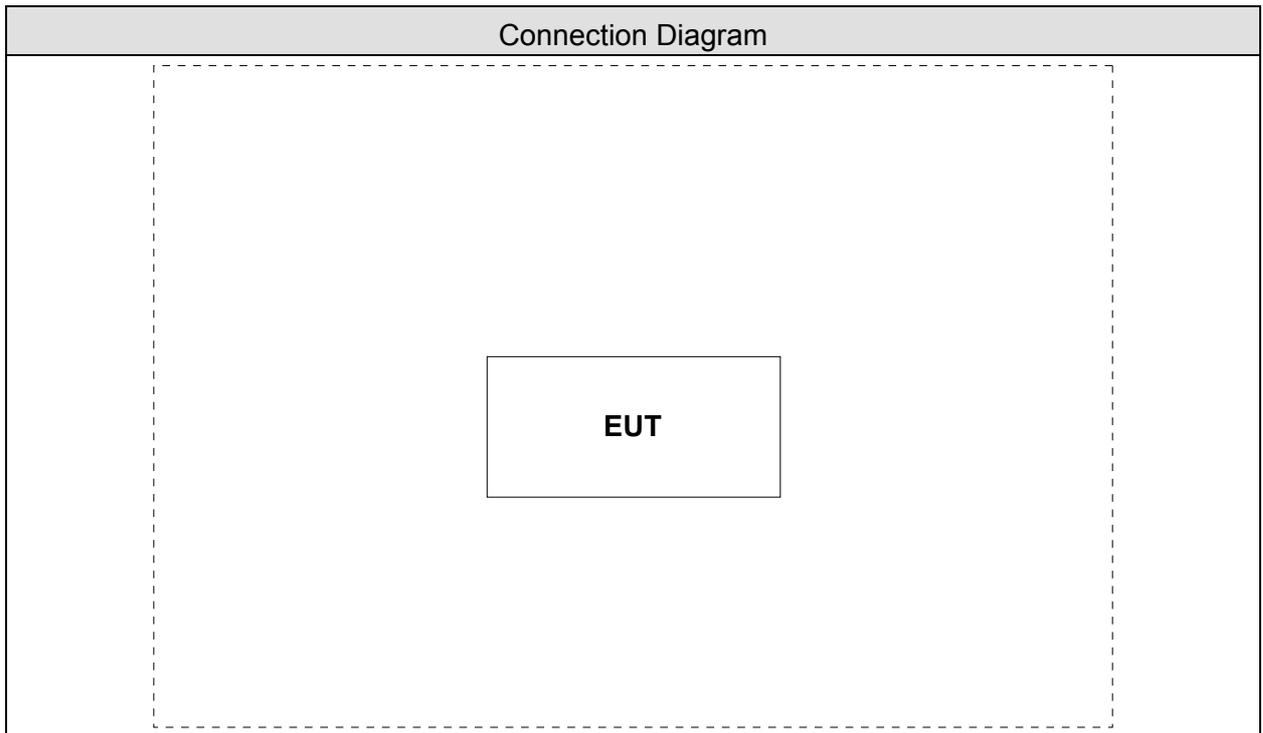
Pre-Test Mode	
EMI	Mode 1: Transmitter
Final Test Mode	
TX	Mode 1: Transmitter

1.4. Tested System Details

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

N/A

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT as shown on 1.4.
2	Enable RF signal and confirm EUT active.
3	Modulate output capacity of EUT up to specification.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC Part 15 Subpart C Paragraph	15 - 35	20
Humidity (%RH)	15.207	25 - 75	50
Barometric pressure (mbar)	Conducted Emission	860 - 1060	950-1000
Temperature (°C)	FCC Part 15 Subpart C Paragraph	15 - 35	24
Humidity (%RH)	15.209 and 15.227	25 - 75	59
Barometric pressure (mbar)	Radiated Emission (DSSS)	860 - 1060	950-1000
Temperature (°C)	FCC Part 15 Subpart C Paragraph	15 - 35	25
Humidity (%RH)	15.215	25 - 75	50
Barometric pressure (mbar)	Occupied Bandwidth (DSSS)	860 - 1060	950-1000

Site Description:

January 24, 2005 File on
 Federal Communications Commission
 Laboratory Division
 7435 Oakland Mills Road
 Columbia, MD 21046
 Registration Number: 365520



Accredited by CNLA
 Accreditation Number: 1313
 Effective through: September 27, 2007



1313

ILAC MRA

Accredited by NVLAP
 NVLAP Lab Code: 200347-0
 Effective through: September 30, 2006



Site Name: Quietek Corporation
 Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
 Chiung-Lin, Hsin-Chu County,
 Taiwan, R.O.C.

TEL : 886-3-592-8858 / FAX : 886-3-592-8859
 E-Mail : service@quietek.com

2. Conducted Emission

2.1. Test Equipment

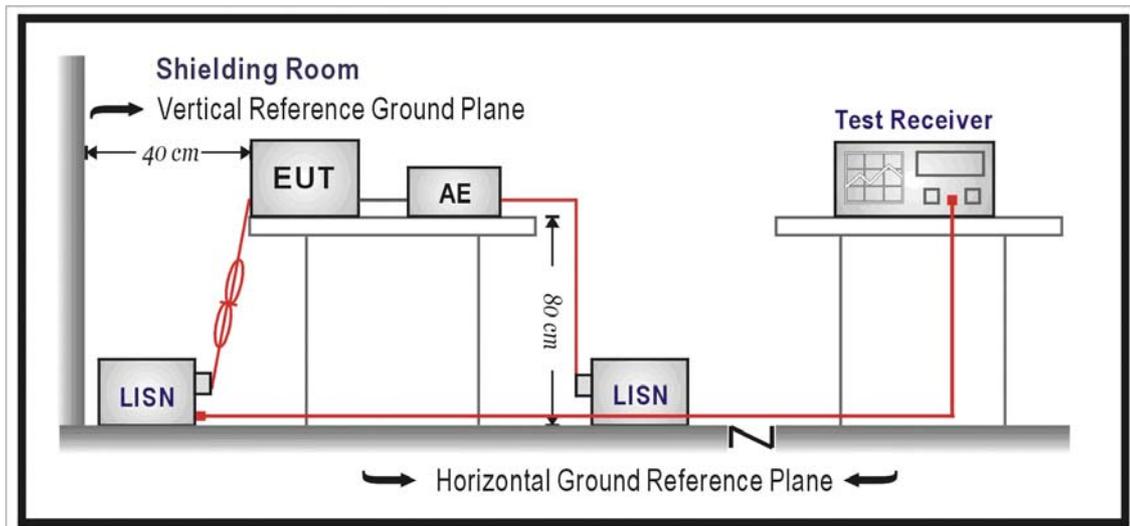
The following test equipment are used during the test:

Conducted Emission / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2007/04/15
Artificial Mains Network	R & S	ENV4200	848411/010	2007/03/13
Double 2-Wire ISN	R & S	ENY 22	835354/008	2007/04/15
LISN	R & S	ESH3-Z5	825562/002	2007/03/31
Pulse Limiter	R & S	ZSH3Z2	357.8810.54	2006/07/19
Test Receiver	R & S	ESCS 30	100122	2007/02/21

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

Limits (dBuV)		
Frequency	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /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 AC 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 on conducted measurement.

The bandwidth of the field strength meter is 9kHz.

2.5. Test Specification

According to EMC Standard: FCC Part 15 Subpart C Paragraph 15.207

2.6. Uncertainty

The measurement uncertainty is evaluated as ± 2.26 dB.

2.7. Test Result

Product	Cordless Keyboard		
Test Item	Conducted Emission		
Test Mode	--		
Date of Test	--	Test Site	No.2 Shielded Room

Owing to the DC operation of EUT, this test item is not performed.

3. Radiated Emission

3.1. Test Equipment

The following test equipment are used during the test:

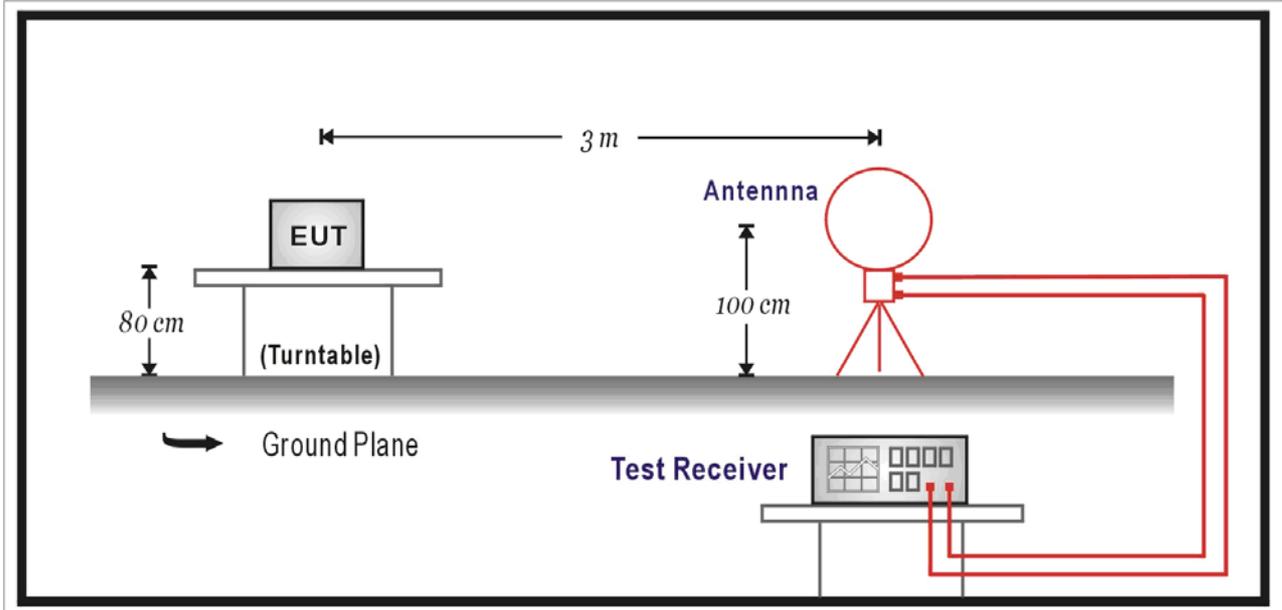
Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2006/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2007/03/15
Pre-Amplifier	HP	8449B	3008A01123	2006/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Loop Antenna	R & S	HFH2-Z2	833799/004	2006/09/03
Spectrum Analyzer	R & S	FSP40	100005	2006/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2006/11/24
Test Receiver	R & S	ESCS 30	825442/017	2007/02/13

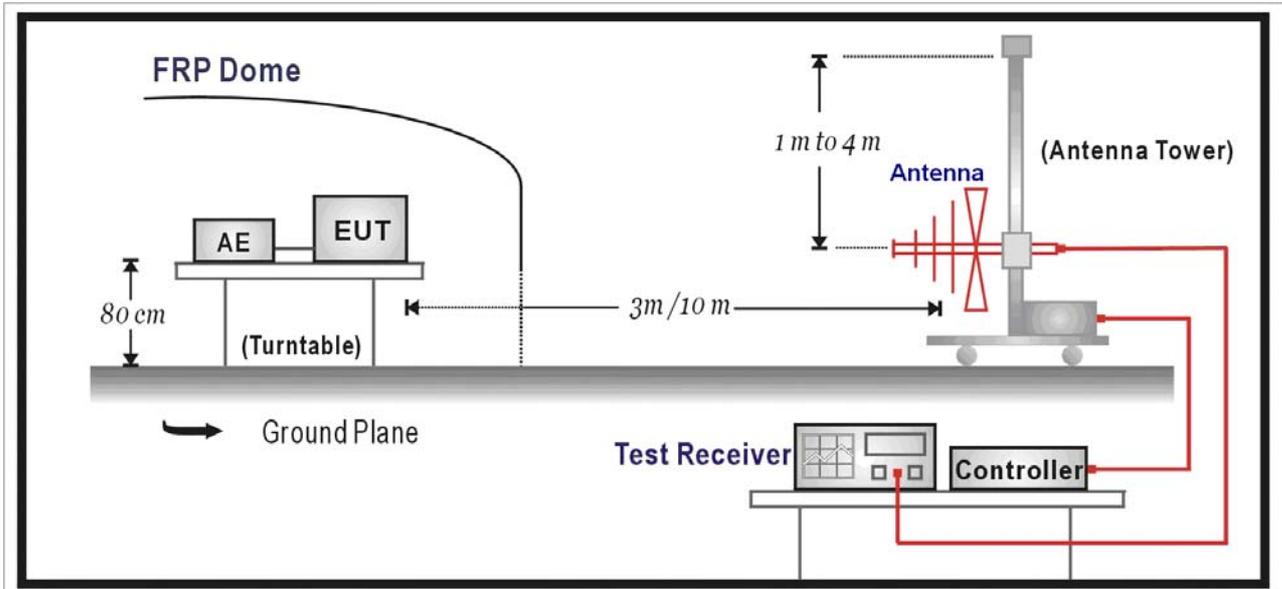
- Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
 2. "N/A" Ca1.Date is used to Pre-test, not final test.

3.2. Test Setup

For 9kHz-30MHz Test Setup



For 30MHz-1GHz Test Setup



3.3. Limits

➤ FCC Part 15 Subpart C Paragraph 15.227 Limit

FCC Part 15 Subpart C Paragraph 15.227 Limits		
Fundamental Frequency MHz	Field strength of fundamental	
	uV/m	dBuV/m
26.96-27.28	10000	80.0

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

➤ Frequencies in restricted band are complied to limits on Paragraph 15.209.

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	See Remark ¹	300
0.490-1.705	24000/F(kHz)	See Remark ¹	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 on radiated measurement.

On the field strength of fundamental and harmonics, the limits shown are based on measuring equipment employing a average detector function. As an alternative, compliance with the limits may be based on the use of measurement instrumentation with a CISPR quasi-peak detector.

On the field strength of spurious electric, on any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function.

When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

3.5. Test Specification

According to EMC Standard: FCC Part 15 Subpart C Paragraph 15.209 and 15.227

3.6. Uncertainty

The measurement uncertainty is evaluated as ± 3.19 dB.

3.7. Test Result

Product	Cordless Keyboard		
Test Item	Radiated Emission		
Test Mode	Mode 1: Transmitter (27.095MHz)		
Date of Test	2007/05/15	Test Site	No.1 OATS

Direction	Frequency (MHz)	Correction Fact (dB)	Peak Reading Level (dBuV)	Average Reading Level (dBuV)	Peak Emission Level (dBuV/m)	Average Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)
X	27.095	9.65	41.25	38.25	50.9	47.9	100	80
Y	27.095	9.65	47.95	44.95	57.6	54.6	100	80
Z	27.095	9.65	48.55	45.55	58.2	55.2	100	80

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

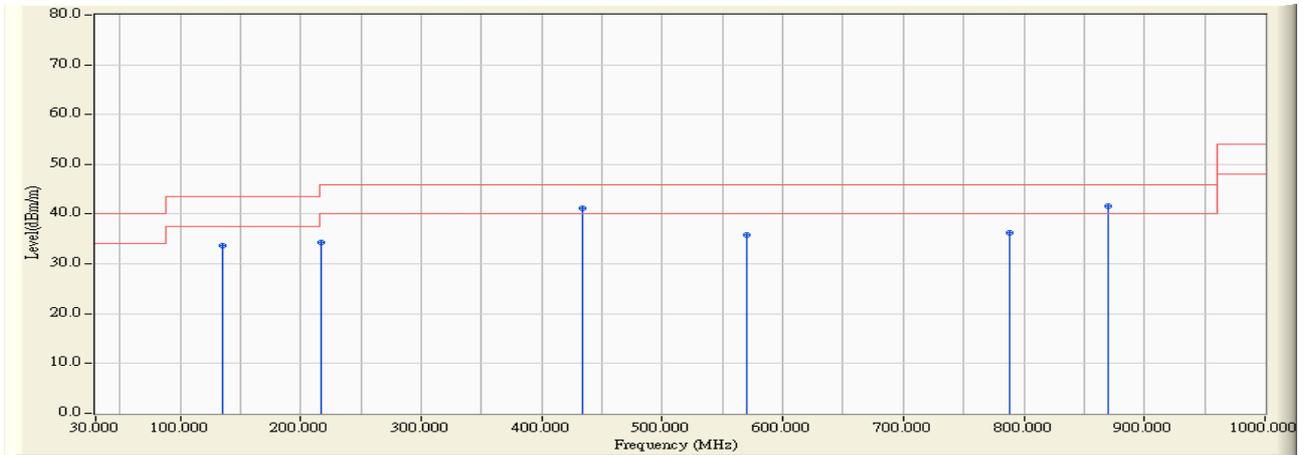
Product	Cordless Keyboard		
Test Item	Radiated Emission		
Test Mode	Mode 1: Transmitter (27.145MHz)		
Date of Test	2007/05/15	Test Site	No.1 OATS

Direction	Frequency (MHz)	Correction Fact (dB)	Peak Reading Level (dBuV)	Average Reading Level (dBuV)	Peak Emission Level (dBuV/m)	Average Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)
X	27.145	9.65	41.25	38.25	50.9	47.9	100	80
Y	27.145	9.65	47.85	44.85	57.5	54.5	100	80
Z	27.145	9.65	48.55	45.55	58.2	55.2	100	80

Note:

1. All Readings Levels are performed with peak and/or average measurements as necessary.
2. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/05/20 - 23:49
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Cordless Keyboard	Probe : FCC_RF_30-1G(200605) - HORIZONTAL
Power : DC 3V (Power by Battery)	Note : Mode 1: Transmitter (27.095MHz)

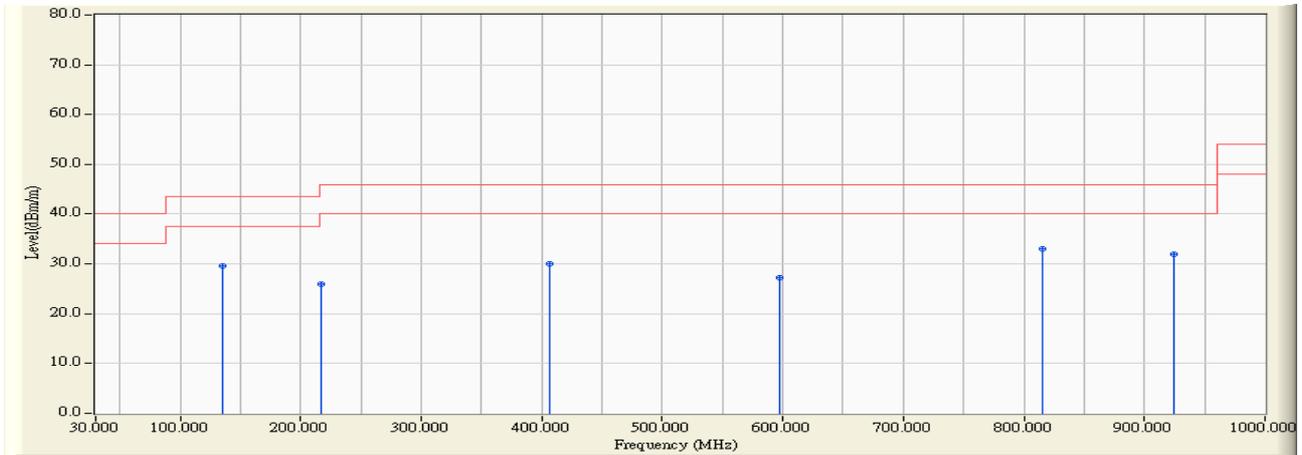


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	134.970	-13.474	47.226	33.752	-9.748	43.500	QUASPEAK	0.000	0.000
2	216.613	-13.239	47.631	34.392	-11.608	46.000	QUASPEAK	0.000	0.000
3	434.329	2.532	38.554	41.086	-4.914	46.000	QUASPEAK	0.000	0.000
4	570.401	4.619	31.300	35.919	-10.081	46.000	QUASPEAK	0.000	0.000
5	788.116	3.937	32.297	36.234	-9.766	46.000	QUASPEAK	0.000	0.000
6	* 869.760	5.211	36.465	41.676	-4.324	46.000	QUASPEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 1	Time : 2007/05/20 - 23:51
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Cordless Keyboard	Probe : FCC_RF_30-1G(200605) - VERTICAL
Power : DC 3V (Power by Battery)	Note : Mode 1: Transmitter (27.095MHz)

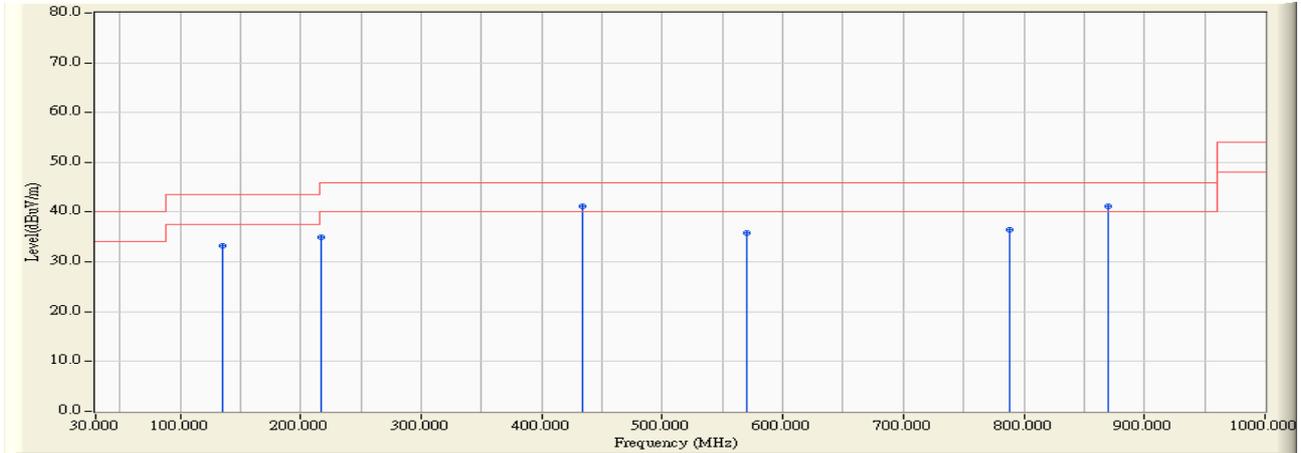


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm/m)	Margin (dB)	Limit (dBm/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	134.970	-8.045	37.570	29.525	-13.975	43.500	QUASIPeAK	0.000	0.000
2	216.613	-6.152	32.183	26.031	-19.969	46.000	QUASIPeAK	0.000	0.000
3	407.114	-0.335	30.307	29.973	-16.027	46.000	QUASIPeAK	0.000	0.000
4	597.615	2.545	24.743	27.289	-18.711	46.000	QUASIPeAK	0.000	0.000
5	* 815.331	4.595	28.447	33.041	-12.959	46.000	QUASIPeAK	0.000	0.000
6	924.188	3.576	28.310	31.886	-14.114	46.000	QUASIPeAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 1	Time : 2007/05/21 - 00:26
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Cordless Keyboard	Probe : FCC_RF_30-1G(200605) - HORIZONTAL
Power : DC 3V (Power by Battery)	Note : Mode 1: Transmitter (27.145MHz)

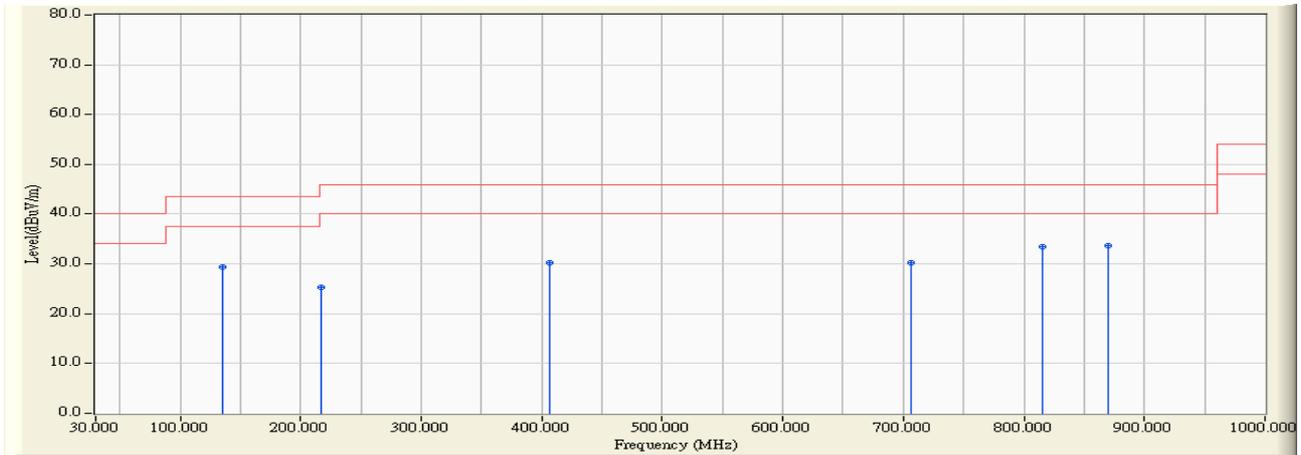


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	134.970	-13.474	46.661	33.187	-10.313	43.500	QUASIPeAK	0.000	0.000
2	216.613	-13.239	48.127	34.888	-11.112	46.000	QUASIPeAK	0.000	0.000
3	434.329	2.532	38.560	41.092	-4.908	46.000	QUASIPeAK	0.000	0.000
4	570.401	4.619	31.290	35.909	-10.091	46.000	QUASIPeAK	0.000	0.000
5	788.116	3.937	32.602	36.539	-9.461	46.000	QUASIPeAK	0.000	0.000
6	* 869.760	5.211	35.989	41.200	-4.800	46.000	QUASIPeAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 1	Time : 2007/05/21 - 00:27
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Cordless Keyboard	Probe : FCC_RF_30-1G(200605) - VERTICAL
Power : DC 3V (Power by Battery)	Note : Mode 1: Transmitter (27.145MHz)



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	134.970	-8.045	37.340	29.295	-14.205	43.500	QUASIPeAK	0.000	0.000
2	216.613	-6.152	31.559	25.407	-20.593	46.000	QUASIPeAK	0.000	0.000
3	407.114	-0.335	30.645	30.311	-15.689	46.000	QUASIPeAK	0.000	0.000
4	706.473	1.144	29.075	30.218	-15.782	46.000	QUASIPeAK	0.000	0.000
5	815.331	4.595	28.782	33.376	-12.624	46.000	QUASIPeAK	0.000	0.000
6	* 869.760	3.929	29.742	33.671	-12.329	46.000	QUASIPeAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

4. Occupied Bandwidth

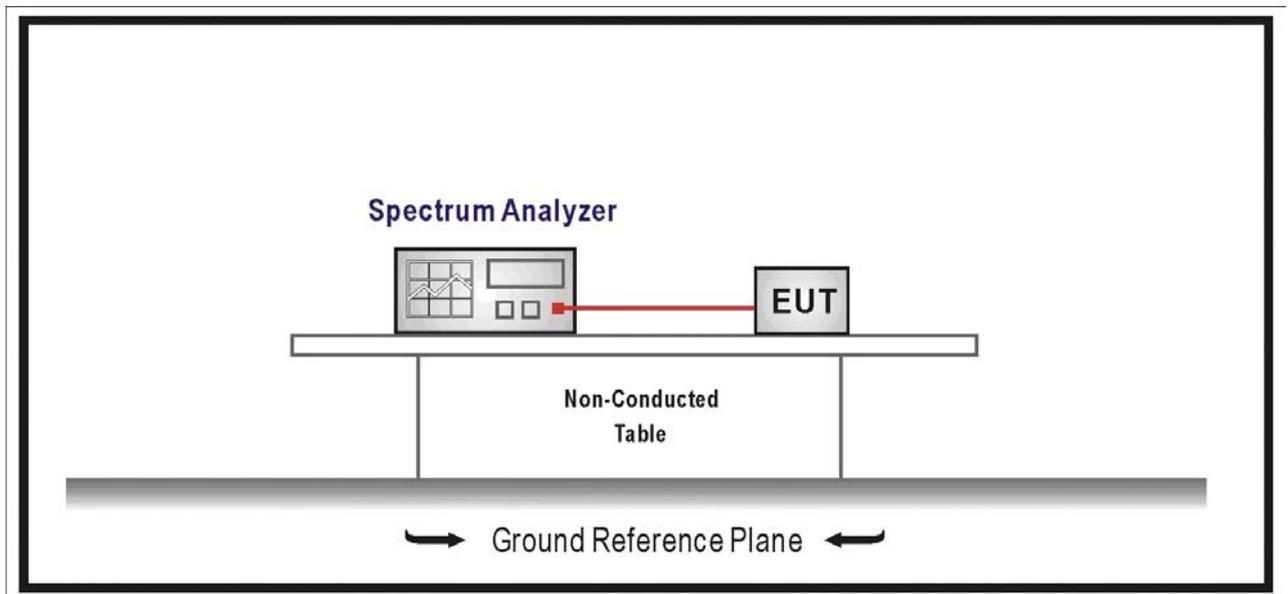
4.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2007
2	No.1 OATS			Sep., 2006

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

N/A

4.4. Test Specification

According to EMC Standard: FCC Part 15 Subpart C Paragraph 15.215

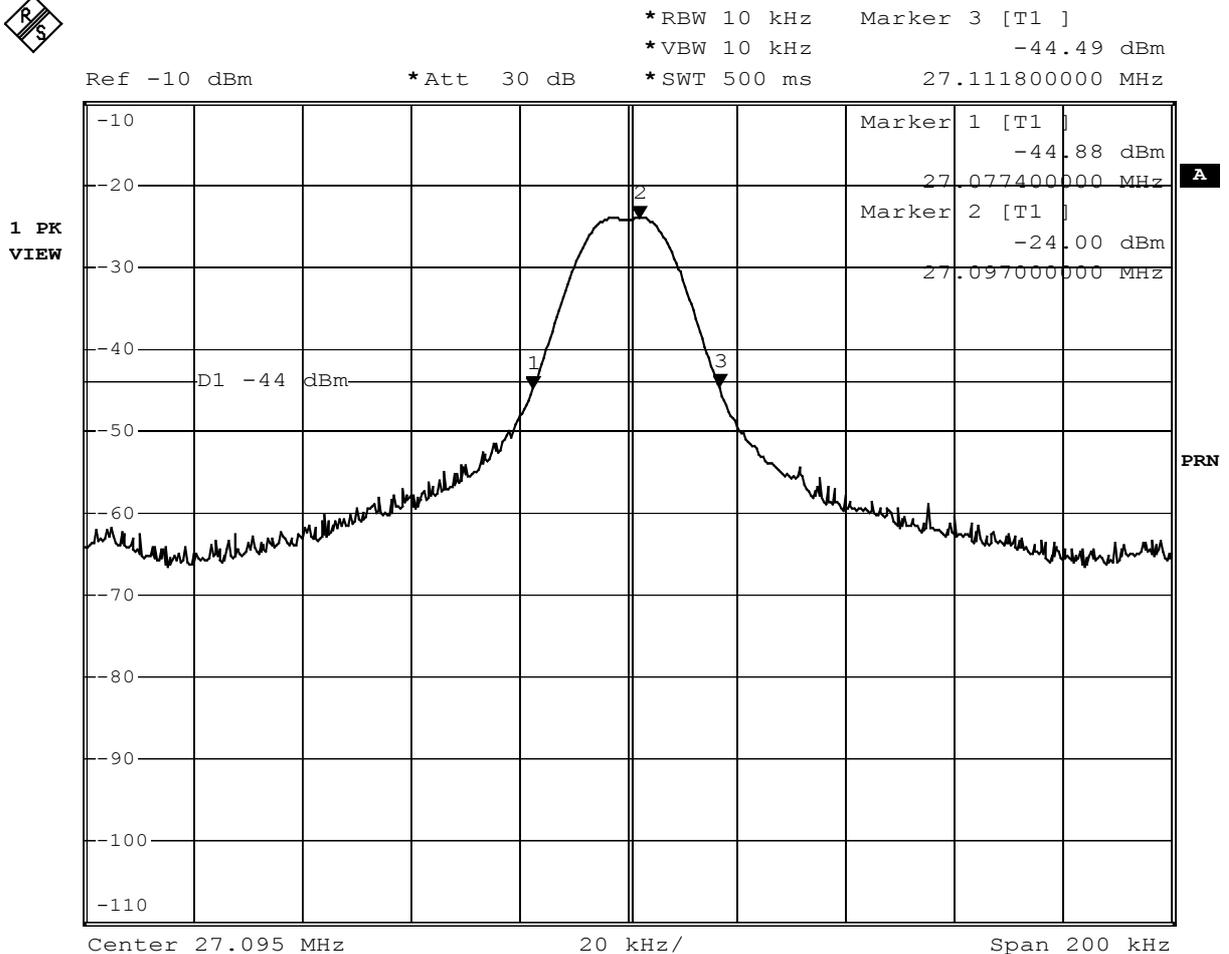
4.5. Uncertainty

The measurement uncertainty is defined as $\pm 50\text{kHz}$

4.6. Test Result

Product	Cordless Keyboard		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (27.095MHz)		
Date of Test	2007/05/20	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)
1	27.095	34.400	--



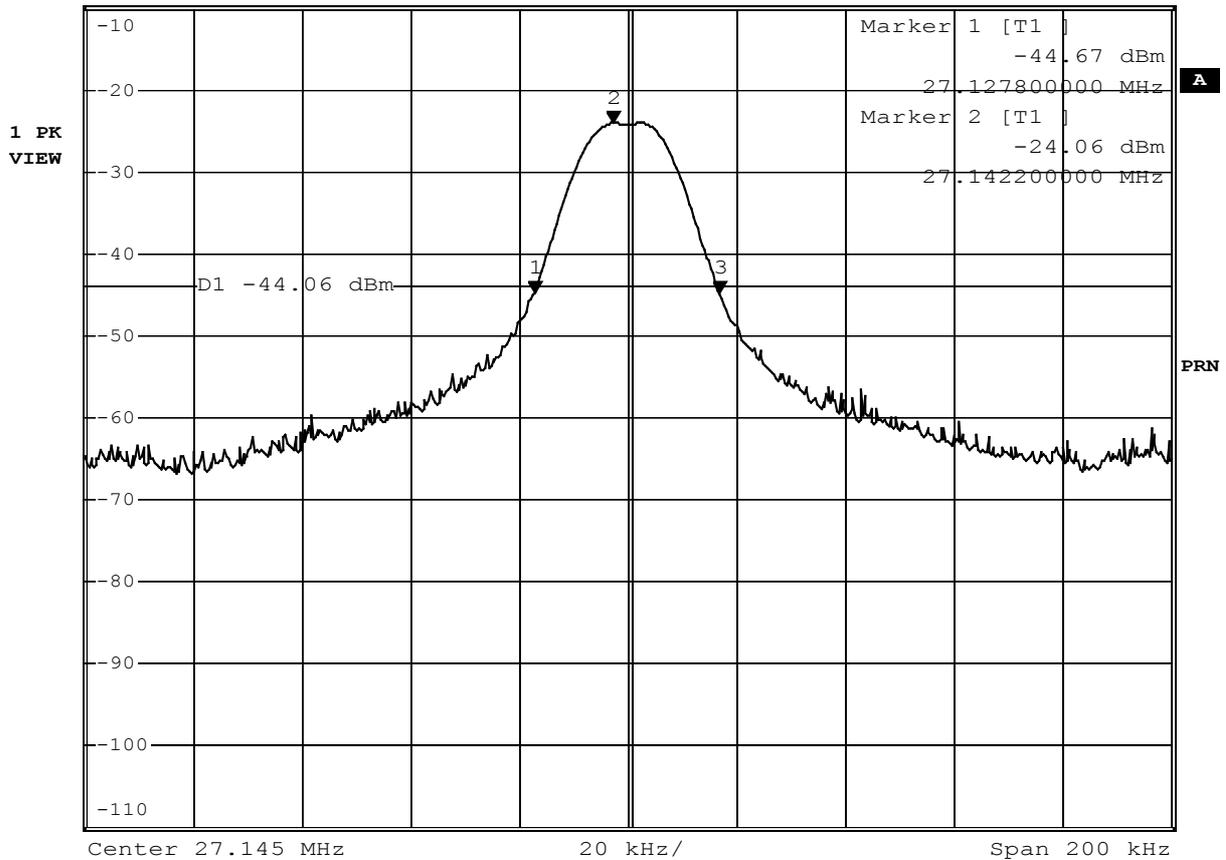
Date: 1.JAN.2000 11:09:33

Product	Cordless Keyboard		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (27.145MHz)		
Date of Test	2007/05/20	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)
1	27.145	34.000	--



*RBW 10 kHz Marker 3 [T1]
 *VBW 10 kHz -44.71 dBm
 *Att 30 dB *SWT 500 ms 27.161800000 MHz
 Ref -10 dBm



Date: 1.JAN.2000 11:12:29