

Product Name : Cordless Keyboard

Model No. : Y-RBH94

FCC ID : JNZYRBH94

Applicant : Logitech Far East Ltd.

Address : #2 Creation Rd.4, Science-Based Ind. Park Hsinchu

Taiwan, R.O.C.

Date of Receipt : 2007/10/24

Issued Date : 2007/11/01

Report No. : 07BS005-RF-US-P03V01

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by CNLA, NVLAP, NIST or any agency of the Government.

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Test Report Certification

Issued Date : 2007/11/01

Report No. : 07BS005-RF-US-P03V01

QuieTek

Product Name : Cordless Keyboard

Applicant : Logitech Far East Ltd.

Address : #2 Creation Rd.4, Science-Based Ind. Park Hsinchu

Taiwan, R.O.C.

Manufacturer : (1) Logitech Far East Ltd.

(2) Logitech Technology (Suzhou) Co., Ltd.

Model No. : Y-RBH94

FCC ID : JNZYRBH94

Rated Voltage : AC 120V/ 60Hz

EUT Voltage : DC 3V (Power by Battery)

Trade Name : Logitech

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2007

ANSI C63.4: 2003

Test Result : Complied

Performed Location : SuZhou EMC laboratory

No.99 Hongye Rd., Suzhou Industrial Park Loufeng

Hi-Tech Development Zone., SuZhou, China

TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

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Approved By

Murphy Wang)



Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C. : BSMI, DGT, CNLA

Germany : TUV Rheinland

Norway : Nemko, DNV

USA : FCC, NVLAP

Japan : VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://tw.quietek.com/modules/myalbum/

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: http://www.guietek.com/

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory:

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan. R.O.C.













LinKou Testing Laboratory:













Suzhou Testing Laboratory:











TABLE OF CONTENTS

Des	scription	Page
1.	General Information	5
1.1.	EUT Description	5
1.2.	Operational Description	6
1.3.	Mode of Operation	7
1.4.	Tested System Details	8
1.5.	Configuration of Tested System	9
1.6.	EUT Exercise Software	9
2.	Technical Test	10
2.1.	Summary of Test Result	10
2.2.	Test Environment	11
3.	Conducted Emission	12
3.1.	Test Equipment	12
3.2.	Test Setup	12
3.3.	Limit	13
3.4.	Test Procedure	13
3.5.	Uncertainty	13
3.6.	Test Result	13
4.	Radiated Emission	14
4.1.	Test Equipment	14
4.2.	Test Setup	14
4.3.	Limit	16
4.4.	Test Procedure	17
4.5.	Uncertainty	17
4.6.	Test Result	18
4.7.	Test Photograph	26
5.	Occupied Bandwidth	29
5.1.	Test Equipment	29
5.2.	Test Setup	29
5.3.	Limit	29
5.4.	Test Procedure	30
5.5.	Uncertainty	30
5.6.	Test Result	31
6.	Attachment	33
	EUT Photograph	33



1. General Information

1.1. EUT Description

Product Name	Cordless Keyboard
Trade Name	Logitech
Model No.	Y-RBH94
FCC ID	JNZYRBH94
Working Voltage	DC 3V
Frequency Range	27.095MHz - 27.145MHz
Channel Number	2
Type of Modulation	FSK
Channel Control	Manual
Antenna type	Loop Antenna
Antenna Gain	0dBi

Working Frequency of Each Channel:

Channel	Frequency
1	27.095MHz
2	27.145MHz

- 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.



1.3. Mode of Operation

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:

Test Mode

Mode 1: Continuance transmission on channel 1 (27.095MHz)

Mode 2: Continuance transmission on channel 2 (27.145MHz)



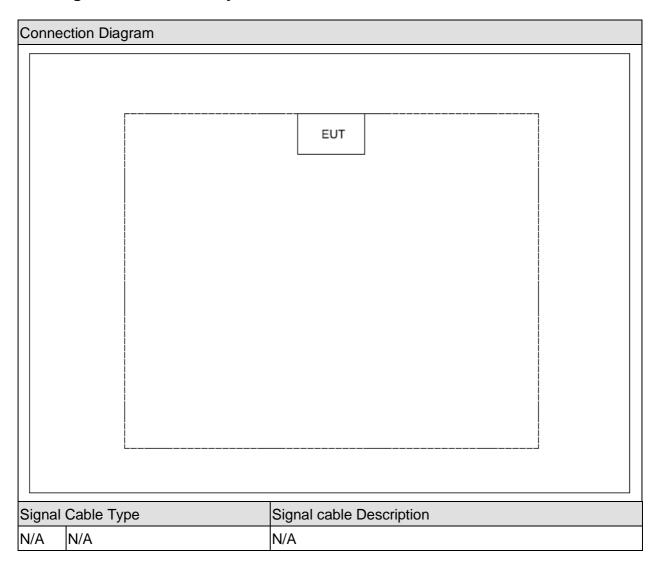
1.4. Tested System Details

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

Ρ	roduct	Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A	N/A



1.5. Configuration of Tested System



1.6. EUT Exercise Software

Setup the EUT as shown above.
Set the wireless keyboard work on continuously transmission on channel 1(27.095MHz), and then on channel 2 (27.145MHz), test them respectively.



2. Technical Test

2.1. Summary of Test Result

\boxtimes	No deviations from the test standards
	Deviations from the test standards as below description:

Dorformed Toot Itom	Normative References	Test	Deviation	
Performed Test Item	Normative References	Performed		
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2007	N/A	N/A	
	Section 15.207			
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2007	Yes	No	
	Section 15.209 and 15.227			
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2007	Yes	No	
	Section 15.215(c)			

Page: 10 of 35



2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

Page: 11 of 35



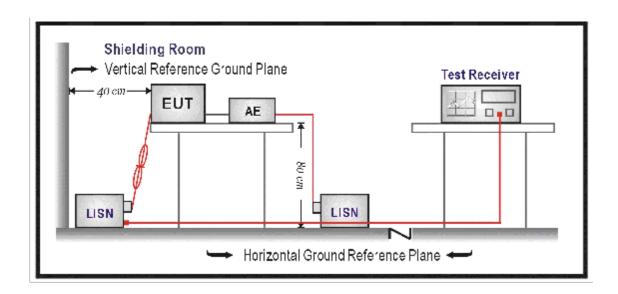
3. Conducted Emission

3.1. Test Equipment

Conducted Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCI	100176	2006/11/22
Two-Line V-Network	R&S	ENV216	100013	2006/11/20
Two-Line V-Network	R&S	ENV216	100014	2006/11/20
50ohm Coaxial Switch	ANRITSU	MP59B	6200464462	2006/11/25
50ohm Termination	SHX	50ohml	QT-IM001	2007/03/20
Coaxial Cable	Luthi	RG214	519358	2006/11/25
Temperature/Humidity	zhiohona	ZC1-2	QT-TH004	2007/03/31
Meter	zhicheng	201-2	Q1-1 H004	2007/03/31

3.2. Test Setup





3.3. Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)				
Frequency (MHz)	QP (dBuV)	AV (dBuV)		
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.

3.4. 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 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 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as \pm 2.02 dB

3.6. Test Result

EUT is a DC (3V) power device, so the test item is not necessary performed.



4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2006/11/20
EMI Test Receiver	R&S	ESCI	100573	2007/05/23
Preamplifier	Quietek	AP-025C	QT-AP003	2006/11/25
Preamplifier	Quietek	AP-180C	CHM-0602013	2006/11/25
Loop Antenna	R&S	HFH2-Z2	833799/0003	2007/08/13
Bilog Type Antenna	Schaffner	CBL6112B	2932	2006/11/22
*Broad-Band Horn	Schwarzbeck	BBHA9120D	496	2006/11/25
Antenna				
50ohm Coaxial Switch	ANRITSU	MP59B	6200447304	2006/11/25
Coaxial Cable	Huber+Suhner	AC2-C	04	2006/11/25
Temperature/Humidity	zhicheng	ZC1-2	QT-TH002	2007/03/30
Meter				

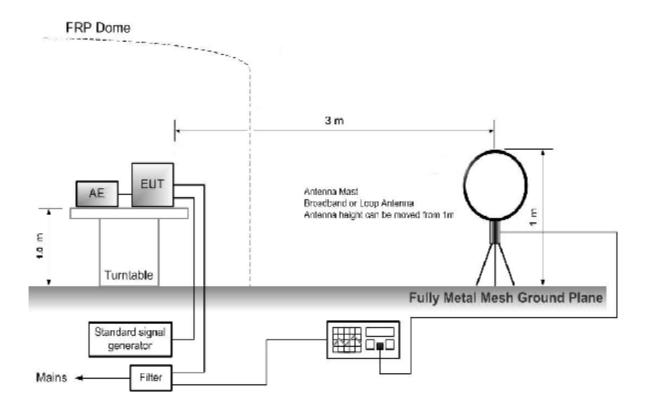
Note: "*" means the test device calibration period for two years.

4.2. Test Setup

For Fundamental Emission Test Setup

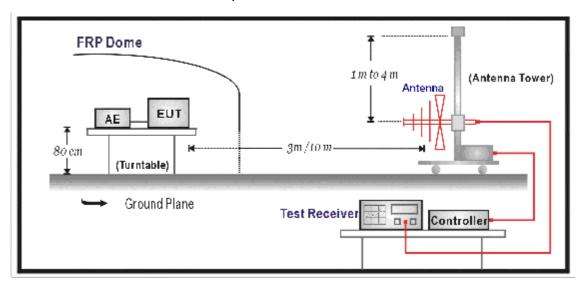
Page: 14 of 35







For Unwanted Emission Test Setup



4.3. Limit

(1) The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

The provisions in Section 15.35 of FCC standard for limiting peak emissions apply.

FCC Part 15 Subpart C Paragraph 15.227 Limits (dBuV/m)				
Frequency (MHz)	Distance (m)	dBuV/m		
26.96-27.28	3	80		



(2) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits as following table.

FCC Part 15 Subpart C Paragraph 15.209 Limits (dBuV/m)				
Frequency (MHz)	Distance (m)	dBuV/m		
30 - 88	3	40		
88 - 216	3	43.5		
216 - 960	3	46		
Above 960	3	54		

Remark:

- 1. The tighter limit shall apply at the edge between two frequency bands.
- 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. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

4.4. 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 and 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 on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth between 30MHz-1GHz setting on the field strength meter (R&S Test Receiver ESCI) is 120 kHz and 9 kHz for below 30MHz.

The frequency range from 30MHz to 10th harmonic is checked.

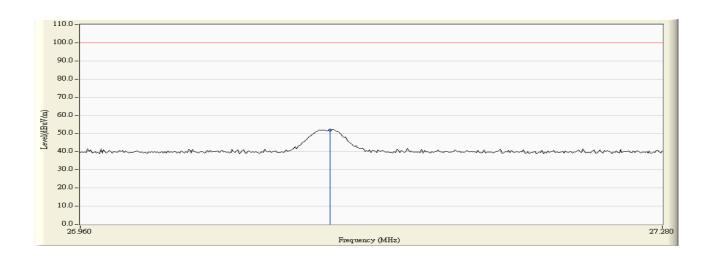
4.5. Uncertainty

The measurement uncertainty under 1G is defined as ± 3.8 dB



4.6. Test Result

Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/26 - 02:41
Limit : FCC_SpartC_15.227_F_03M_PK	Margin: 0
EUT : Cordless Keyboard	Probe : HFH2-Z2
Power : DC 3V(Power by Battery)	Note : Mode 1: Continuance transmission on channel 1 (27.095MHz)

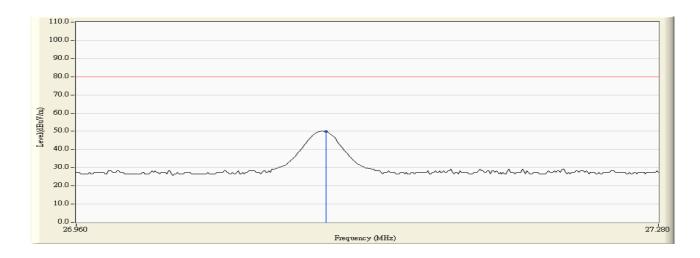


			Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
			(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
ĺ	1	*	27.097	21.410	30.637	52.047	-47.953	100.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin				
Site : AC-2 (Radiated Emission)	Time : 2007/10/26 - 02:41			
Limit : FCC_SpartC_15.227_F_03M_AV	Margin : 0			
EUT : Cordless Keyboard	Probe : HFH2-Z2			
Power : DC 3V(Power by Battery)	Note : Mode 1: Continuance transmission on channel 1			
	(27.095MHz)			

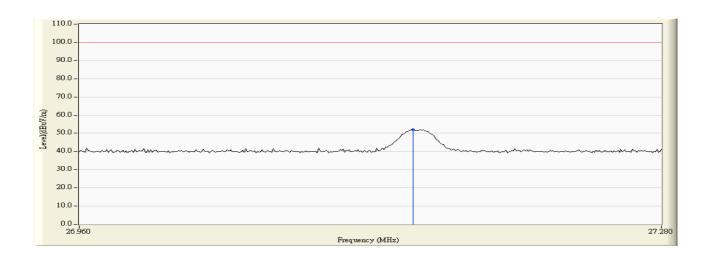


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	27.097	21.410	28.357	49.767	-30.233	80.000	AVERAGE

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/26 - 02:44
Limit : FCC_SpartC_15.227_F_03M_PK	Margin: 0
EUT : Cordless Keyboard	Probe : HFH2-Z2
Power : DC 3V(Power by Battery)	Note : Mode 2: Continuance transmission on channel 2
	(27.145MHz)

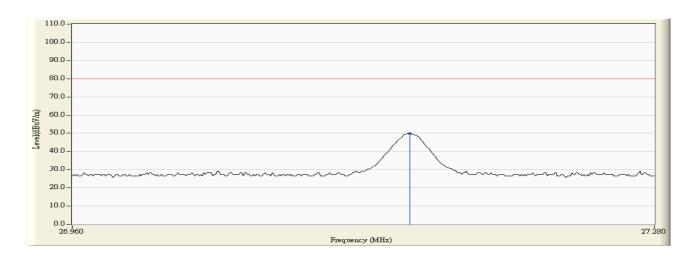


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	27.143	21.410	30.631	52.041	-47.959	100.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/26 - 02:45
Limit : FCC_SpartC_15.227_F_03M_AV	Margin: 0
EUT : Cordless Keyboard	Probe : HFH2-Z2
Power : DC 3V(Power by Battery)	Note : Mode 2: Continuance transmission on channel 2
	(27.145MHz)

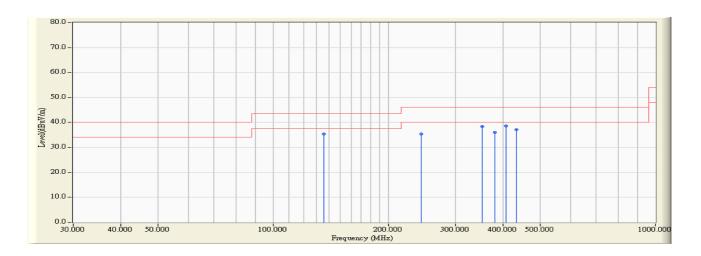


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	27.145	21.410	28.456	49.866	-30.134	80.000	AVERAGE

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/25 - 09:16
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
EUT : Wireless Keyboard (M/N: Parrot)	Probe : CBL6112B_2932(30-2000MHz) - HORIZONTAL
Power : DC 3V(Power by Battery)	Note : Mode 1: Continuance transmission on channel 1
	(27.095MHz)

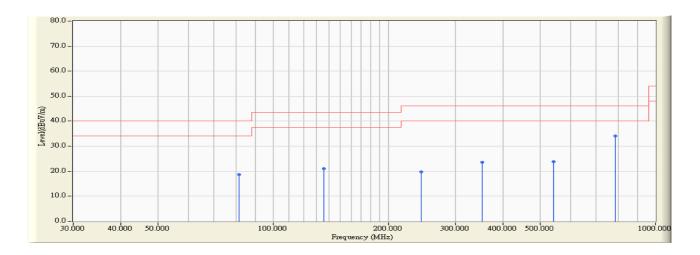


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		135.475	-9.503	44.900	35.397	-8.123	43.520	QUASIPEAK
2		243.875	-8.831	44.200	35.369	-10.651	46.020	QUASIPEAK
3		352.275	-5.038	43.500	38.462	-7.558	46.020	QUASIPEAK
4		379.325	-4.354	40.300	35.946	-10.074	46.020	QUASIPEAK
5	*	406.400	-3.135	41.800	38.665	-7.355	46.020	QUASIPEAK
6		433.550	-2.795	39.800	37.004	-9.016	46.020	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/25 - 09:22
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
EUT : Wireless Keyboard (M/N: Parrot)	Probe : CBL6112B_2932(30-2000MHz) - VERTICAL
Power : DC 3V(Power by Battery)	Note : Mode 1: Continuance transmission on channel 1
	(27.095MHz)

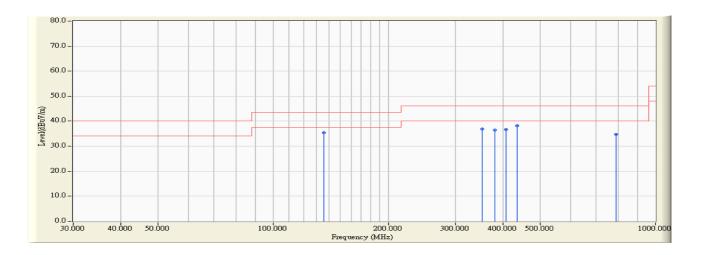


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		81.275	-13.988	32.600	18.612	-21.388	40.000	QUASIPEAK
2		135.475	-9.503	30.600	21.097	-22.423	43.520	QUASIPEAK
3		243.875	-8.831	28.600	19.769	-26.251	46.020	QUASIPEAK
4		352.225	-5.039	28.700	23.661	-22.359	46.020	QUASIPEAK
5		541.850	-0.342	24.100	23.758	-22.262	46.020	QUASIPEAK
6	*	785.825	1.782	32.300	34.082	-11.938	46.020	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time: 2007/10/25 - 09:35
Limit : FCC_SpartC_15.209_03M_QP	Margin: 6
EUT : Wireless Keyboard (M/N: Parrot)	Probe : CBL6112B_2932(30-2000MHz) - HORIZONTAL
Power : DC 3V(Power by Battery)	Note : Mode 2: Continuance transmission on channel 2
	(27.145MHz)

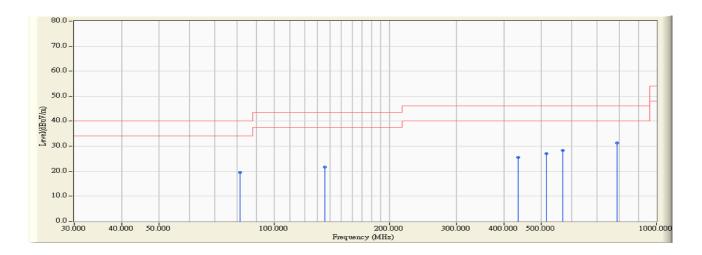


		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		135.725	-9.517	44.900	35.383	-8.137	43.520	QUASIPEAK
2		352.875	-5.025	41.900	36.874	-9.146	46.020	QUASIPEAK
3		380.025	-4.336	40.900	36.564	-9.456	46.020	QUASIPEAK
4		407.150	-3.104	39.800	36.696	-9.324	46.020	QUASIPEAK
5	*	434.350	-2.771	41.000	38.229	-7.791	46.020	QUASIPEAK
6		787.100	1.790	32.900	34.690	-11.330	46.020	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Engineer : Marlin	
Site : AC-2 (Radiated Emission)	Time : 2007/10/25 - 09:47
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
EUT : Wireless Keyboard (M/N: Parrot)	Probe : CBL6112B_2932(30-2000MHz) - VERTICAL
Power : DC 3V(Power by Battery)	Note : Mode 2: Continuance transmission on channel 2
	(27.145MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		81.450	-13.951	33.500	19.549	-20.451	40.000	QUASIPEAK
2		135.775	-9.520	31.200	21.681	-21.839	43.520	QUASIPEAK
3		434.275	-2.772	28.300	25.527	-20.493	46.020	QUASIPEAK
4		515.725	-1.324	28.400	27.076	-18.944	46.020	QUASIPEAK
5		570.000	0.334	27.900	28.234	-17.786	46.020	QUASIPEAK
6	*	787.225	1.790	29.600	31.390	-14.630	46.020	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



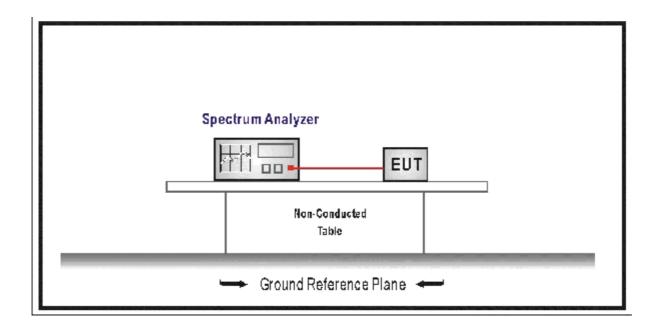
5. Occupied Bandwidth

5.1. Test Equipment

Occupied Bandwidth / AC-3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2007/06/11
Coaxial Cable	Huber+Suhner	AC3-RF	08	2006/11/25
Temperature/Humidity	zhicheng	ZC1-2	QT-TH003	2007/03/31
Meter				

5.2. Test Setup



5.3. Limit

The bandwidth of the emission must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.



5.4. Test Procedure

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer.
- c) Add a correction factor to the display, and then test.

5.5. Uncertainty

The measurement uncertainty is defined as \pm 100 Hz

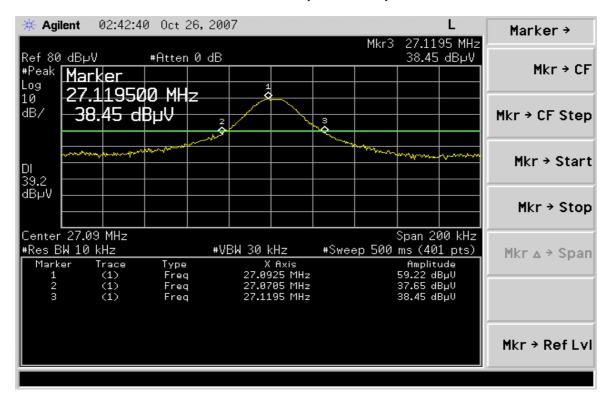
Page: 30 of 35



5.6. Test Result

Product	:	ordless Keyboard	
Test Item	:	Dccupied Bandwidth	
Test Site	:	AC-3	
Test Mode	:	Mode 1: Transmit	

Channel 01 (27.095MHz)





Channel 02 (27.145MHz)

