FCC TEST REPORT

REPORT NO.: RF970318H04

MODEL NO.: Y-RBA97

RECEIVED: April 14, 2008

TESTED: April 15 to 17, 2008

ISSUED: April 21, 2008

APPLICANT: LOGITECH FAR EAST LTD.

ADDRESS: #2 Creation Rd. 4, Science-Based Ind. Park
Hsinchu Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien,
Taiwan, R.O.C.

Testing Laboratory
0536

ACCREDITED
TESTING CERT #2177-01

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1 CERTIFICATION

PRODUCT :	Cordless Keyboard
BRAND NAME :	Logitech
MODEL NO :	Y-RBA97
TESTED :	April 15 to 17, 2008
TEST SAMPLE :	ENGINEERING SAMPLE
APPLICANT :	LOGITECH FAR EAST LTD.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.227) ANSI C63.4: 2003

The above equipment (Model: Y-RBA97) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Carol Liao , **DATE:** April 21, 2008
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** April 21, 2008
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** April 21, 2008
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
STANDARD PARAGRAPH	**TEST TYPE**	**RESULT**	**REMARK**
15.207	Conducted Emission Test	NA	Power supply is DC 3V from batteries
15.227 / 15.209	Radiated Emission Test	PASS	Minimum passing margin is -1.58 dB at 135.72 MHz
15.227	Band Edges Test	PASS	Meet the requirement of limit

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	**Value**
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz ~18GHz)	2.33 dB
Radiated emissions (18GHz ~40GHz)	2.55 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Cordless Keyboard
MODEL NO.	Y-RBA97
FCC ID	JNZYRBA97
POWER SUPPLY	DC 3V from batteries
MODULATION TYPE	FSK
CARRIER FREQUENCY OF EACH CHANNEL	27.095 MHz, 27.145MHz
NUMBER OF CHANNEL	2
ANTENNA TYPE	Loop antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is the transmitter part of Cordless Keyboard.
2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

The EUT was tested with the following condition:

Test Mode	Frequency
1	27.145MHz

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is the transmitter part of a Cordless Keyboard. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C (Section 15.227)

ANSI C63.4-2003

All tests have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

4 EMISSION TEST

4.1 RADIATED EMISSION & OCCUPIED BANDWIDTH MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.227 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m)	
26.96-27.28	Peak	Average
	100	80

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 TEST INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 15, 2008
HP Pre_Amplifier	8449B	3008A01922	Oct. 04, 2008
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Mar. 28, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	July 26, 2008
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 16, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 27, 2009
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2008
RF Switches (ARNITSU)	CS-201	1565157	Aug. 13, 2008
RF CABLE (Chaintek)	SF102	22054-2	Dec. 06, 2008
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Aug. 13, 2008
Software	ADT_Radiated_V 7.6.15.8	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824A-3.
7. Loop antenna was used for all emissions below 30 MHz.

4.1.3 TEST PROCEDURE

Part 1 – Radiated Emission

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters open area test site. 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 is a broadband antenna, and its 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

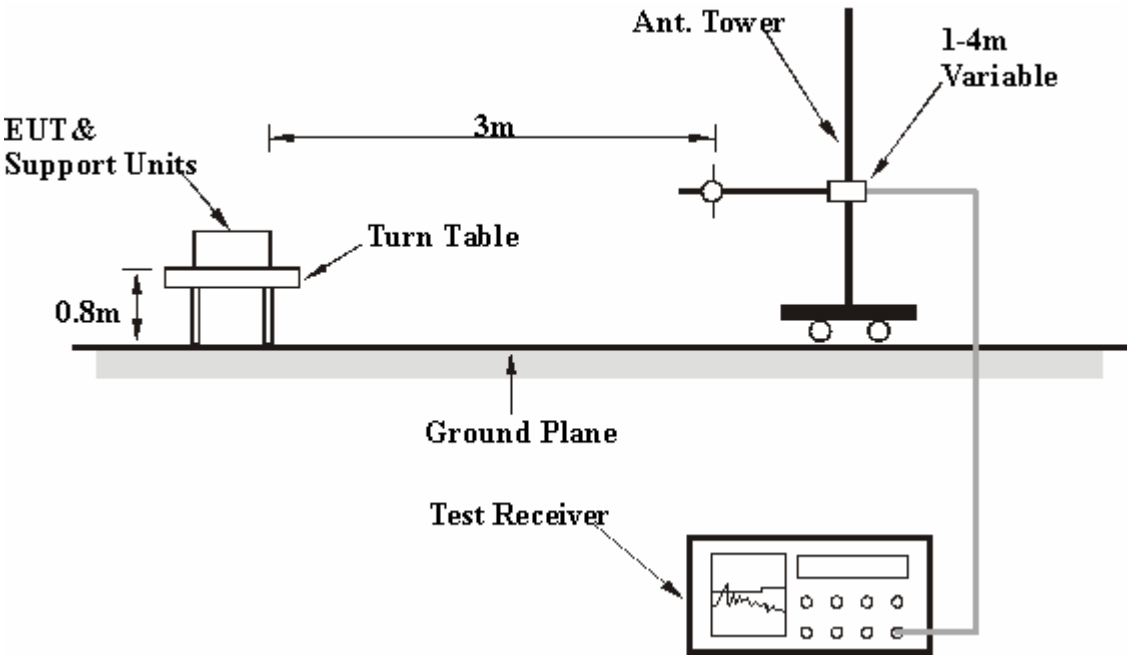
Part 2 –Band edges

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 10kHz with suitable frequency range from 26.96 ~ 27.28 MHz. The band edges was measured and recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP (RADIATED EMISSION)



For the actual test configuration, please refer to the related item in this test report - Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITION

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULT (RADIATED EMISSION)

FREQUENCY RANGE	30 ~ 1000 MHz	INPUT POWER	DC 3V from batteries
ENVIRONMENTAL CONDITIONS	24 deg. C, 76 % RH, 965 hPa	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak / 120 kHz
TEST BY	Frank Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	81.44	34.95 QP	40.00	-5.05	4.00 H	306	24.95	10.00
2	**135.72**	**41.92 QP**	**43.50**	**-1.58**	**2.29 H**	**157**	**27.92**	**14.00**
3	162.87	35.29 QP	43.50	-8.21	1.72 H	159	20.32	14.97
4	217.16	34.75 QP	46.00	-11.25	1.41 H	218	22.45	12.30
5	434.32	31.99 QP	46.00	-14.01	1.88 H	248	12.68	19.31
6	515.75	27.93 QP	46.00	-18.07	1.69 H	261	6.93	21.00
7	678.62	34.21 QP	46.00	-11.79	1.31 H	176	9.72	24.49
8	760.06	37.40 QP	46.00	-8.60	1.14 H	174	9.98	27.42
9	814.35	37.93 QP	46.00	-8.07	1.12 H	336	9.76	28.17
10	977.22	30.11 QP	54.00	-23.89	1.00 H	168	0.07	30.04

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.29	28.16 QP	40.00	-11.84	1.58 V	359	13.14	15.02
2	135.72	29.80 QP	43.50	-13.70	1.23 V	234	15.80	14.00
3	190.01	21.98 QP	43.50	-21.52	1.56 V	68	9.30	12.68
4	407.18	23.49 QP	46.00	-22.51	2.13 V	217	5.18	18.31
5	434.32	25.41 QP	46.00	-20.59	2.06 V	199	6.10	19.31
6	515.75	23.59 QP	46.00	-22.41	1.84 V	118	2.59	21.00
7	542.90	28.31 QP	46.00	-17.69	1.84 V	304	7.41	20.90
8	705.77	27.00 QP	46.00	-19.00	2.26 V	4	2.16	24.84
9	760.06	30.64 QP	46.00	-15.36	2.01 V	21	3.22	27.42
10	814.35	32.19 QP	46.00	-13.81	1.84 V	81	4.02	28.17
11	868.64	31.04 QP	46.00	-14.96	1.81 V	21	2.12	28.92

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.1.8 TEST RESULT (RADIATED EMISSION)

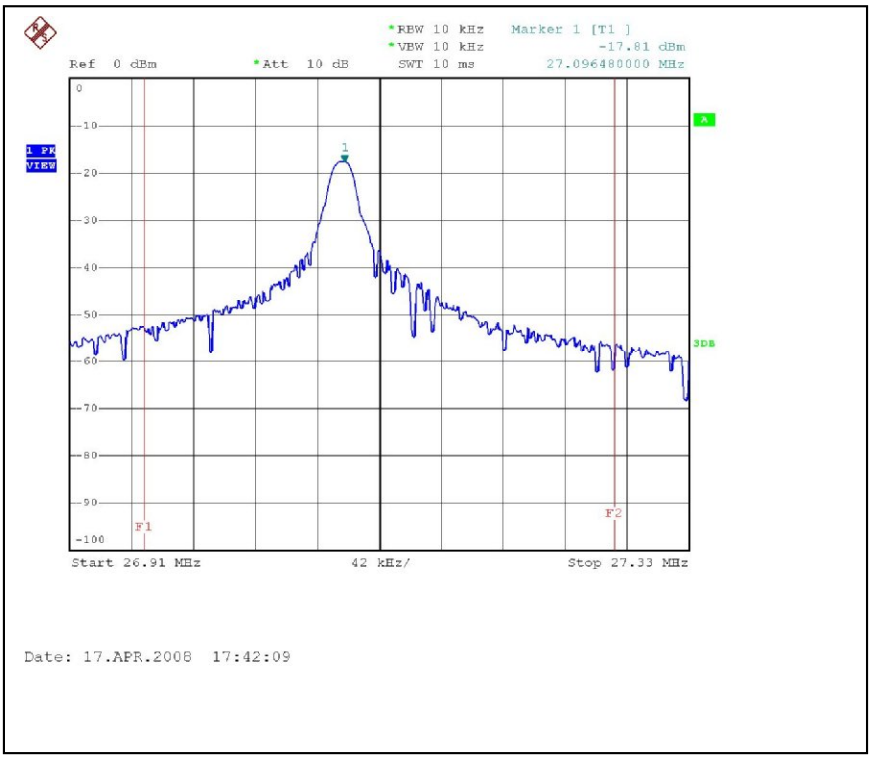
FREQUENCY RANGE	Below 30 MHz	**INPUT POWER**	DC 3V from batteries
ENVIRONMENTAL CONDITIONS	20 deg. C, 72 % RH, 965 hPa	**DETECTOR FUNCTION & BANDWIDTH**	Peak / Average 9 kHz
TEST BY	Frank Liu		

LOOP ANTENNA TEST DISTANCE: AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*27.14	48.28 PK	100.00	-51.72	2.1	17	36.70	11.58
2	*27.14	36.68 AV	80.00	-43.32	2.1	17	25.10	11.58

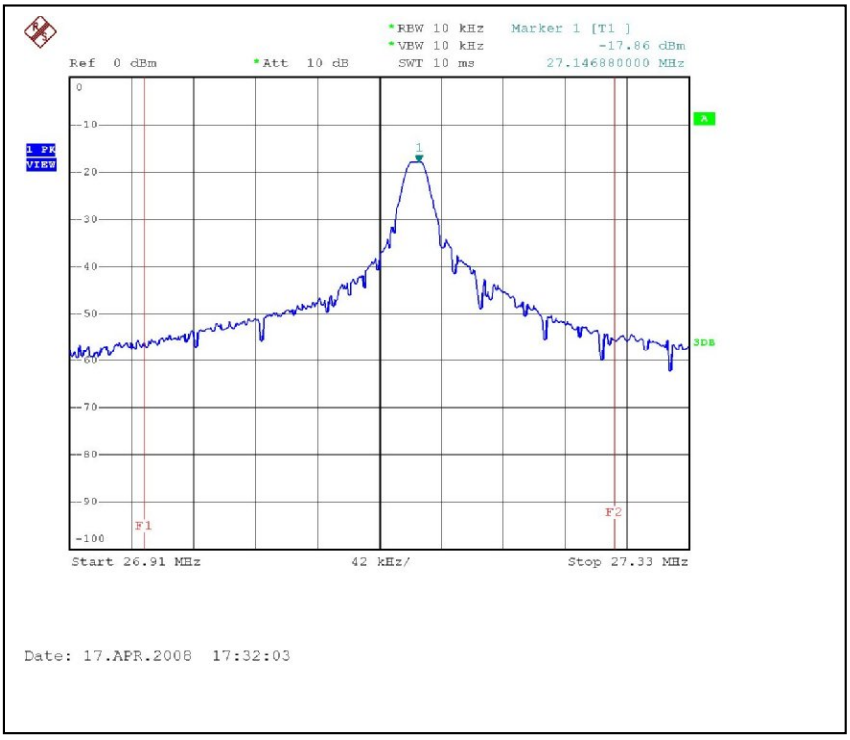
REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.1.9 TEST RESULTS (BAND EDGES MEASUREMENT)

27.095MHz



27.145MHz



5 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
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Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.