

Date:1999-05-21

No.: HM100842

# TEST REPORT

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**APPLICANT:** (CODE:SHD001)

SHENZHEN DELUX INDUSTRY CO., LTD.

Block A Dajiahao Square, District 28, Baoan, Shenzhen, China.

**DATE OF SAMPLES RECEIVED:** 1999-05-13

**DATE OF TESTING:** 1999-05-17 to 1999-05-19

**DESCRIPTION OF SAMPLE(S):**

A sample of product said to be:

Product: Keyboard

Manufacturer: SHENZHEN DELUX INDUSTRY CO., LTD.

Model Number: DLK-9808

Brand Name: DELUX

Origin : CHINA

Additional Model: DLK-9810

**INVESTIGATIONS REQUESTED:**

Measurement to the relevant clauses of F.C.C. Rules and Regulations Part B - Unintentional Radiators.  
The results obtained are to compare with the class B digital device limit.

**RESULTS:** Please see attached sheet(s).

**REMARK :** This product was tested as a system using the Ancillary Equipment listed in Appendix B.

**CONCLUSION:**

From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirement for the relevant clauses of Federal Communications Commission Rules for Class B digital device.

**TEST EQUIPMENT AUDIT:** Please see Appendix A

\_\_\_\_\_  
Law Man Kit  
Testing Engineer

\_\_\_\_\_  
Kitty Choy  
Verify by

\_\_\_\_\_  
Patrick Wong  
Patrick Wong  
for Managing Director

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### TEST SUMMARY

(A) Measurement of Radiated Emission

Result -- Satisfactory  
Data -- See the attached data

(B) Measurement of Line-Conducted Voltage Test

Result -- Satisfactory  
Data -- See the attached data

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### (A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart B Section 15.109(a)  
(Class B)

TEST CONDITION : Worst case Monitor Power supplied by computer & separately

TEST DATE : 1999-05-19

Emission Frequency	Meter Reading (including antenna factor)	Polarization	Field Strength (at 3m)	FCC Limit
MHz	dB(µV)		µV/m	µV/m
84.810	23.9	H	15.7	100
132.968	34.3	H	51.9	150
232.700	22.7	V	13.6	200
239.920	14.6	H	5.4	200
351.700	31.0	V	35.5	200
398.020	27.0	H	22.4	200
431.900	28.5	H	26.6	200
465.327	35.8	V	61.7	200
465.344	35.0	H	56.2	200

- End -

### ===== SUMMARY =====

All data is within limits

=====  
Broad-band Antennas were used and both polarizations of emissions were measured.  
polarizations at highest reading indicated as:

H -- Horizontal      V -- Vertical

=====  
Quasi-peak measurements were performed if the maximised measurements  
were less than 6dB below the quasi-peak limit line.

Quasi-peak measurements are denoted by \* in the table above

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### **NOTES FOR THE RADIATION MEASUREMENT**

#### **(1) Test site facility:**

Open field test site located at Taipo (Hong Kong) with a metal ground plane in compliance with the requirements of ANSI C63.4:1992.

#### **(2) Test Equipment**

HP 8572A EMI receiver was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 100KHz or 1MHz depending on the type of signal. A biconical log-periodic antenna was used for frequency range from 30MHz to 1000MHz.

#### **(3) Test Set-Up:**

The EUT and support equipment are placed in accordance with ANSI C63.4.

#### **(4) Measuring Procedure:**

An initial pre-scan measurement was performed in a semi-anechoic chamber using a 25dB gain pre-amplifier. The receive antenna in the chamber was 1.5m above the groundplane and 3m from the sample. The sample was placed 0.8m above the groundplane. Measurements in both horizontal and vertical polarities were performed. All emissions recorded during the prescan were subsequently remeasured on the open field test site (described in 1 above) using the following procedure: The ambient noise scanning was made before powering on the EUT and support equipment to identify the emissions from the environment. During the test, each emission was maximized by: having the Handheld Terminal continuously working by running a special test program (PCB.exe) supplied by the customer, arranging and manipulating interconnecting cables, rotating turntable and varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The frequency range tested is from 30MHz to 1000MHz and the worst-case emissions are shown in Test Results.

#### **(5) Measuring Uncertainty:**

The calculated uncertainty for measurement performed at 3M test distance are:-  
30MHz to 300MHz =  $\pm 3.7$ dB, 300MHz to 1000MHz =  $+ 3.0$ dB/- $2.7$ dB.

Remark : Purpose of this test is to provide the Applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under FCC Equipment Authorization Program. This test itself is not an Approval Test.

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### (B) Measurement of Line-Conducted Voltage onto AC Power Line

TEST REFERENCE : FCC Rules Part 15 Subpart B Section 15.107(a)  
(Class B)

TEST CONDITION : Worst case Monitor Power supplied by computer & separately

TEST DATE : 1999-05-17

#### (1) Between "Live" and "Ground"

Frequency Range of Emission			Maximum Measured Radio Noise		FCC Limit (Class B)
	MHz		dB(µV)	µV	µV
0.45	-	0.8	< 32.24	40.93	250.00
0.8	-	1.6	< 37.41	74.22	250.00
1.6	-	3.0	< 38.78	86.90	250.00
3.0	-	5.0	35.77	61.45	250.00
5.0	-	7.0	31.17	36.18	250.00
7.0	-	9.0	< 29.23	28.94	250.00
9.0	-	11.0	20.68	10.81	250.00
11.0	-	13.0	22.49	13.32	250.00
13.0	-	15.0	26.60	21.38	250.00
15.0	-	17.0	< 0.00	1.00	250.00
17.0	-	19.0	28.31	26.03	250.00
19.0	-	21.0	28.65	27.07	250.00
21.0	-	23.0	< 0.00	1.00	250.00
23.0	-	25.0	21.83	12.35	250.00
25.0	-	27.0	< 0.00	1.00	250.00
27.0	-	30.0	< 14.00	5.01	250.00

- End -

### SUMMARY

All data is within limits

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### (B) Measurement of Line-Conducted Voltage onto AC Power Line

TEST REFERENCE : FCC Rules Part 15 Subpart B Section 15.107(a)  
(Class B)

TEST CONDITION : Worst case Monitor Power supplied by computer & separately

TEST DATE : 1999-05-17

#### (1) Between "Neutral" and "Ground"

Frequency Range of Emission			Maximum Measured Radio Noise		FCC Limit (Class B)
	MHz		dB(µV)	µV	µV
0.45	-	0.8	32.24	40.93	250.00
0.8	-	1.6	37.41	74.22	250.00
1.6	-	3.0	38.78	86.90	250.00
3.0	-	5.0	39.38	93.11	250.00
5.0	-	7.0	< 31.17	36.18	250.00
7.0	-	9.0	< 29.23	28.94	250.00
9.0	-	11.0	< 20.68	10.81	250.00
11.0	-	13.0	< 22.49	13.32	250.00
13.0	-	15.0	< 26.60	21.38	250.00
15.0	-	17.0	< 0.00	1.00	250.00
17.0	-	19.0	< 28.31	26.03	250.00
19.0	-	21.0	< 28.65	27.07	250.00
21.0	-	23.0	< 0.00	1.00	250.00
23.0	-	25.0	< 21.83	12.35	250.00
25.0	-	27.0	< 0.00	1.00	250.00
27.0	-	30.0	14.00	5.01	250.00

- End -

### SUMMARY

All data is within limits

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### NOTES FOR THE CONDUCTED POWER-LINE MEASUREMENT

(1) LISN (Line Impedance Stabilization Network) used :

50  $\mu$ H LISN in accordance with Section of ANSI C63.4:1992.

(2) Measurement Instrumentations:

CISPR quasi-peak type radio noise meter (9 KHz - 30 MHz), 6 dB bandwidth set at 9 KHz for measurement between 150 KHz & 30MHz.

(3) Frequency range scanned :

The frequency range form 450 KHz to 30 MHz had been searched. Reading of the highest emissions relating to the limit were reported as above.

(4) Configuration of EUT

Connection of equipment and operation conditions were same as those in the Radiation measurement.

(5) Measurement procedure :

In accordance with the relevant sections of ANSI C63.4:1992 "FCC Methods of measurement of Radio Noise Emissions from Computing Devices".

(6) Measuring Uncertainty:

The calculated uncertainty for conducted power-line measurement is  $\pm 2.3$ dB.

Remark : Purpose of this test is to provide the Applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under FCC's Equipment Authorization Program. This test itself is not an Approval Test.

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