**Date:1999-03-09** **Page 1 of 7**

**No.: HM1936/504**

# TEST REPORT

**APPLICANT:** (CODE:22260)

Olympia Office Machines Ltd.
8/F., Elite Industrial Building, 135-137 Hoi Bun Rd., Kwun Tong, Kowloon, H.K..

**DATE OF SAMPLES RECEIVED:** 1999-02-24

**DATE OF TESTING:** 1999-03-02 to 1999-03-03

**DESCRIPTION OF SAMPLE(S):**

A sample of product said to be:

| | |
|---|---|
| Product: | Personnel Computer |
| Manufacturer: | Olympia Computer Systems Ltd. |
| Model Number: | 1734.OTC.ATX |
| Brand Name: | Olympia |
| Rating : | 220-240Va.c., 4A, 230W, 50Hz |
| Origin : | Thailand |

**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 | KITTY CHOY | PATRICK WONG |
| Testing Engineer | Verify by | Patrick Wong<br>for Managing Director |

Conditions in issuance of Test Report

**1**. This Report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Standards and Testing Centre Ltd. It may not be reproduced either in its entirety or in part and it may not be used for advertising. The client to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Standards and Testing Centre Ltd. to his customer, supplier or other persons directly concerned. The Hong Kong Standards and Testing Centre Ltd. will not, without the consent of the client, enter into any discussion or correspondence with any third party concerning the contents of the Report. **2**. The report refers only to the sample tested and does not apply to the bulk, unless the sampling has been carried out by the Hong Kong Standards and Testing Centre Ltd. and is stated as such in the Report. **3**. In the event of the improper use of the report, the Hong Kong Standards and Testing Centre Ltd. reserves the rights to withdraw it, and to adopt any other remedies which may be appropriate. **4**. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Hong Kong Standards and Testing Centre Ltd. **5**. The Hong Kong Standards and Testing Centre Ltd. will not be liable for or accept responsibility for any loss or damage howsoever arising from the use of information contained in any of its Reports or in any communication

T E S T  S U M M A R Y

(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

# TEST REPORT

**No.: HM1936/504**

(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 : 1999-03-03

| Emission Frequency | Meter Reading (including antenna factor) | Polarization | Field Strength (at 3m) | FCC Limit |
|---|---|---|---|---|
| MHz | dB(μV) | | μV/m | μV/m |
| 48.015 | 31.2 | H | 36.3 | 100 |
| *50.604 | 25.6 | V | 19.1 | 100 |
| 51.046 | 32.8 | H | 43.7 | 100 |
| 180.635 | 23.1 | V | 14.3 | 150 |
| 186.171 | 21.5 | H | 11.9 | 150 |
| 200.000 | 30.5 | V | 33.5 | 150 |
| *240.115 | 43.3 | H | 146.2 | 200 |
| 259.654 | 32.0 | V | 39.8 | 200 |
| 288.099 | 29.5 | H | 29.9 | 200 |
| 300.750 | 32.8 | V | 43.7 | 200 |
| *301.451 | 35.0 | H | 56.2 | 200 |
| 325.893 | 36.9 | H | 70.0 | 200 |
| 327.402 | 25.9 | V | 19.7 | 200 |
| 357.925 | 28.2 | V | 25.7 | 200 |
| 405.000 | 32.1 | H | 40.3 | 200 |
| *432.156 | 36.1 | V | 63.8 | 200 |
| 449.380 | 35.1 | H | 56.9 | 200 |
| 446.671 | 36.0 | H | 63.1 | 200 |
| 446.671 | 34.0 | V | 50.1 | 200 |
| 528.180 | 36.1 | H | 63.8 | 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

## 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 to1000MHz 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 200MHz = ± 3.7dB, 200MHz to 1000MHz = + 3.0dB/-2.7dB.

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.

(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 : 1999-03-02

(1) Between "Live" and "Ground"

| Frequency Range of Emission MHz | | | Maximum Measured Radio Noise dB(μV) | μV | FCC Limit (Class B) μV |
|---|---|---|---|---|---|
| 0.45 | - | 0.8 | 44.37 | 165.4 | 250.00 |
| 0.8 | - | 1.6 | 40.02 | 100.2 | 250.00 |
| 1.6 | - | 3.0 | 38.64 | 85.5 | 250.00 |
| 3.0 | - | 5.0 | 27.80 | 24.5 | 250.00 |
| 5.0 | - | 7.0 | 0.00 | 1.00 | 250.00 |
| 7.0 | - | 9.0 | 0.00 | 1.00 | 250.00 |
| 9.0 | - | 11.0 | 0.00 | 1.00 | 250.00 |
| 11.0 | - | 13.0 | 0.00 | 1.00 | 250.00 |
| 13.0 | - | 15.0 | 0.00 | 1.00 | 250.00 |
| 15.0 | - | 17.0 | 0.00 | 1.00 | 250.00 |
| 17.0 | - | 19.0 | 0.00 | 1.00 | 250.00 |
| 19.0 | - | 21.0 | 0.00 | 1.00 | 250.00 |
| 21.0 | - | 23.0 | 0.00 | 1.00 | 250.00 |
| 23.0 | - | 25.0 | < 31.91 | 39.4 | 250.00 |
| 25.0 | - | 27.0 | 0.00 | 1.00 | 250.00 |
| 27.0 | - | 30.0 | 28.92 | 27.9 | 250.00 |

- End -

---------- SUMMARY ----------
All data is within limits
---

(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 : 1999-03-02

(1) Between "Neutral" and "Ground"

| Frequency Range of Emission MHz | | | Maximum Measured Radio Noise dB(μV) | | μV | FCC Limit (Class B) μV |
|---|---|---|---|---|---|---|
| 0.45 | - | 0.8 | | 36.34 | 65.6 | 250.00 |
| 0.8 | - | 1.6 | | 35.52 | 59.7 | 250.00 |
| 1.6 | - | 3.0 | < | 38.64 | 85.5 | 250.00 |
| 3.0 | - | 5.0 | < | 27.80 | 24.5 | 250.00 |
| 5.0 | - | 7.0 | | 0.00 | 1.00 | 250.00 |
| 7.0 | - | 9.0 | | 0.00 | 1.00 | 250.00 |
| 9.0 | - | 11.0 | | 0.00 | 1.00 | 250.00 |
| 11.0 | - | 13.0 | | 0.00 | 1.00 | 250.00 |
| 13.0 | - | 15.0 | | 0.00 | 1.00 | 250.00 |
| 15.0 | - | 17.0 | | 0.00 | 1.00 | 250.00 |
| 17.0 | - | 19.0 | | 0.00 | 1.00 | 250.00 |
| 19.0 | - | 21.0 | | 0.00 | 1.00 | 250.00 |
| 21.0 | - | 23.0 | | 0.00 | 1.00 | 250.00 |
| 23.0 | - | 25.0 | | 31.91 | 39.4 | 250.00 |
| 25.0 | - | 27.0 | | 0.00 | 1.00 | 250.00 |
| 27.0 | - | 30.0 | < | 28.92 | 27.9 | 250.00 |

- End -

---------- SUMMARY ----------
All data is within limits
---

NOTES FOR THE CONDUCTED POWER-LINE MEASUREMENT

(1) LISN (Line Impedance Stabilization Network) used :
50 μH 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 = ±2.3dB.

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.

** End of document **