

Bandai (HK) Company Limited

Application
For
Certification
(FCC ID: PQ3WB21T)

Computer Peripheral

WO# 0106510
WN/at
December 14, 2001

- The test results reported in this report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report shall not be reproduced except in full without prior authorization from Intertek Testing Services Hong Kong Limited

FCC ID : PQ3WB21T

INTERTEK TESTING SERVICES

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	General Description
<i>EXHIBIT 2:</i>	System Test Configuration
<i>EXHIBIT 3:</i>	Emission Results
<i>EXHIBIT 4:</i>	Equipment Photographs
<i>EXHIBIT 5:</i>	Product Labelling
<i>EXHIBIT 6:</i>	Technical Specifications
<i>EXHIBIT 7:</i>	Instruction Manual

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

Bandai (HK) Company Limited - MODEL: 70709
FCC ID: PQ3WB21T

December 14, 2001

This report concerns (check one:) Original Grant X Class II Change _____

Equipment Type: Computer Peripheral (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No X

If no, assumed Part 15, Subpart B for unintentional radiator

Report prepared by: _____

Wilbur Ng
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG
Phone: 852-2173-8502
Fax: 852-2742-9149

INTERTEK TESTING SERVICES

Table of Contents

1.0 <u>General Description</u>	2
1.1 Product Description	2
1.2 Related Submittal(s) Grants	2
1.3 Test Methodology	3
1.4 Test Facility	3
1.5 Equipment List	4
2.0 <u>System Test Configuration</u>	6
2.1 Justification	6
2.2 EUT Exercising Software	6
2.3 Support Equipment List and Description	6
2.4 Equipment Modification	7
2.5 specialk Accessories	7
3.0 <u>Emission Results</u>	9
3.1 Field Strength Calculation	10
3.2 Radiated Emission Configuration Photograph	11
3.3 Radiated Emission Data	12
4.0 <u>Equipment Photographs</u>	14
5.0 <u>Product Labelling</u>	16
6.0 <u>Technical Specifications</u>	18
7.0 <u>Instruction Manual</u>	20

INTERTEK TESTING SERVICES

List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated1.pdf to radiated2.pdf
External Photo	External Photo	ophoto1.pdf, ophoto2.pdf
Internal Photo	Internal Photo	iphoto1.pdf to iphoto2.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual1.pdf to manual4.pdf

INTERTEK TESTING SERVICES

EXHIBIT 1

GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

1.0 **General Description**

1.1 Product Description

The equipment under test (EUT) is a interface for a computer - Interactive Robot. The EUT is powered by 2 new AA batteries. There is a ON/OFF switch on the EUT. After turning on the power, it can transmit programs from the PC to the robot, and it also sends infrared signals to the robot transmitting the information designed in program.

The brief circuit description is listed as follows :

- IC1 and associated circuit act as Controller.
- Q1 and associated circuit act as IR Transmitter.

1.2 Related Submittal(s) Grants

This is a single application for certification of a Computer Peripheral.

INTERTEK TESTING SERVICES

1.3 Test Methodology

The radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

INTERTEK TESTING SERVICES

1.5 Equipment List

Radiated Emissions Tests for FCC Part 15

Equipment	EMI Test Receiver	Antenna Set	
Registration No.	EW-0014	EW-0953	EW-0954
Manufacturer	R&S	EMCO	EMCO
Model No.	ESVS30	3148	3104C
Serial No.	842807/001	9909-1093	9911-4872
Calibration Institute	HKGSCL	ETS	ETS
Calibration Certificate No.	RF010108	12974	13045
Calibration Date	January 16, 2001	June 22, 2001	June 27, 2001
Calibration Due Date	January 16, 2002	June 22, 2002	June 27, 2002
Traceability	HKGSCL	NIST	NIST

INTERTEK TESTING SERVICES

EXHIBIT 2

SYSTEM TEST CONFIGURATION

INTERTEK TESTING SERVICES

2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (1992.)

The EUT was powered by two new AA batteries.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The system was configured for testing in a typical fashion (as a customer would normally use it). The system was tested during data transfer from the weather monitor to the personal computer.

During testing, the peripheral locations were not varied with respect to the main unit.

All interconnecting cables dropped from the rear of the turntable, but none were within 40cm of the ground plane.

The mouse and keyboard cables were arranged in order to maximize emissions.

The arrangement of the cables dangling from the rear of the table was varied to the extent possible to product the maximum emissions.

2.2 EUT Exercising Software

Robot works (Supplied by Client)

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

INTERTEK TESTING SERVICES

2.4 Equipment Modification

Any modifications installed previous to testing by Bandai (HK) Company Limited will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

*Wilbur Ng
Manager
Intertek Testing Services
Agent for Bandai (HK) Company Limited*



Signature

December 14 _____
Date

INTERTEK TESTING SERVICES

EXHIBIT 3

EMISSION RESULTS

INTERTEK TESTING SERVICES

3.0 **Emission Results**

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

INTERTEK TESTING SERVICES

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where FS = Field Strength in dB μ V/m

RR = RA - AG in dB μ V

LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V/m}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}\mu\text{V/m}$$

$$RR = 23.0 \text{ dB}\mu\text{V}$$

$$LF = 9.0 \text{ dB}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

INTERTEK TESTING SERVICES

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

37.306 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated1.pdf to radiated2.pdf

INTERTEK TESTING SERVICES

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 13.4 dB

TEST PERSONNEL:



Signature

Anthony K. M. Chan, Compliance Engineer
Typed/Printed Name

December 14, 2001
Date

INTERTEK TESTING SERVICES

Company: Bandai (HK) Company Limited
Model: 70709

Date of Test: June 11, 2001

Table 1

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dB μ V)	Antenna Factor (dB)	Pre- Amp Gain (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	33.302	31.7	10	16	25.7	40	-14.3
V	37.306	32.6	10	16	26.6	40	-13.4
V	41.550	30.8	10	16	24.8	40	-15.2
V	48.553	31.0	11	16	26.0	40	-14.0
V	55.303	30.8	11	16	25.8	40	-14.2
V	67.216	33.2	8	16	25.2	40	-14.8
V	78.336	34.2	6	16	24.2	40	-15.8
H	84.214	31.9	8	16	23.9	40	-16.1

- Notes:
1. Negative sign in the column shows value below limit.
 2. Peak Detector Data unless otherwise stated.
 3. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

Test Engineer: Anthony K. M. Chan

INTERTEK TESTING SERVICES

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

INTERTEK TESTING SERVICES

4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: ophoto1.pdf to ophoto2.pdf and iphoto1.pdf to iphoto2.pdf

INTERTEK TESTING SERVICES

EXHIBIT 5

PRODUCT LABELLING

INTERTEK TESTING SERVICES

5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf

INTERTEK TESTING SERVICES

EXHIBIT 6

TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematics are saved with filename: block.pdf and circuit.pdf respectively.

INTERTEK TESTING SERVICES

EXHIBIT 7

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual1.pdf to manual4.pdf

This manual will be provided to the end-user with each unit sold/leased in the United States.