

**Antonio Precise Products Manufactory Ltd.**

Application  
For  
Certification  
**(FCC ID: QLM0080409)**

Computer Peripheral

0418711  
TL/ Sandy Lee  
October 25, 2004

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**Intertek Testing Services Hong Kong Ltd.**

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# INTERTEK TESTING SERVICES

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## LIST OF EXHIBITS

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**INTERTEK TESTING SERVICES**

**MEASUREMENT/TECHNICAL REPORT**

**Antonio Precise Products Manufactory Ltd. - MODEL: MP86**

**FCC ID: QLM0080409**

**October 25, 2004**

This report concerns (check one:) Original Grant  Class II Change \_\_\_\_\_

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

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Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes \_\_\_ No

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.

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Transition Rules Request per 15.37? Yes \_\_\_ No

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [12-08-03 Edition] provision.

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Report prepared by: Tommy Leung  
Intertek Testing Services  
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# INTERTEK TESTING SERVICES

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### List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.doc
Test Setup Photo	Conducted Emission	conducted photos.doc
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf

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**EXHIBIT 1**

**GENERAL DESCRIPTION**

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### 1.0 **General Description**

#### 1.1 Product Description

The Equipment Under Test (EUT) is a MP3 Player Headset. The EUT is powered by 3V d.c. (2 x 1.5V "AAA" battery) when installed into adjustable DJ headphones or 1.5V d.c. (1 x 1.5V "AAA" battery) when installed into battery box/ module holder. During normal use, it can play music or record voice. The music/voice in digital format, stored in the MP3 player, can be transferred to computer through USB port and by using applicable software.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

#### 1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral.

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2001). 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. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. 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.

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**EXHIBIT 2**  
**SYSTEM TEST CONFIGURATION**

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### 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 (2001).

PC Download:

The MP3 player was powered by USB port from the computer.

MP3 player installed into headphones:

The MP3 player was powered by 2 x new 1.5V "AAA" battery.

MP3 player installed into battery box/ module holder:

The MP3 player was powered by 1 x new 1.5V "AAA" battery.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

All modes were tested and PC download and play modes were representative test modes.

The frequency range from 9kHz to 1GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

#### 2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

The USB driver for MP3 player was used for downloading the files from the computer to MP3 player.

#### 2.3 Special Accessories

No special accessories were used for compliance of this product.

Equipment listed in 2.6 was used during the test.

#### 2.4 Equipment Modification

Any modifications installed previous to testing by Intertek Testing Services will be incorporated in each production model sold/leased in the United States.

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### 2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

### 2.6 Support Equipment List and Description

This product was tested in a standalone configuration.

Refer List:

- |                                                                                |                                                                         |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1. HP Computer<br>Model: D530S<br>S/N: CNG4110DX<br>DOC Product                | 1. HP Computer<br>Model: Vectra VL420<br>S/N: SG20409996<br>DOC Product |
| 2. Philips LCD Monitor<br>Model: 150B4CG<br>S/N: CX000409301774<br>DOC Product | 2. HP Monitor<br>Model: D2813<br>S/N: TW63600424<br>FCCID: A3KM043      |
| 3. Compaq Keyboard<br>Model: KB-0133<br>S/N: B55940EGANR0CE<br>DOC Product     | 3. HP Keypad<br>Model: SK-2502<br>S/N: C0205303122<br>FCCID: GYUR41SK   |
| 4. Compaq Mouse<br>Model: M-S69<br>FCCID: JNZ211443                            | 4. HP Mouse<br>Model: M-S34<br>FCCID: DZL211029                         |
| 5. HP Printer<br>Model C2642A<br>S/N: SG67B131RY<br>FCCID: B94C2642X           | 5. Headphones                                                           |
| 6. Hayes Modem<br>Model: 6800CN<br>FCCID: BFJ9D907-00038                       | 6. Earphones                                                            |
|                                                                                | 7. Battery box/ module holder                                           |
|                                                                                | 8. 1 x serial cable with 1m long                                        |
|                                                                                | 9. 1 x parallel cable with 1m long                                      |
|                                                                                | 10. 2 x 1m telephone line with termination                              |

Confirmed by:

*Tommy Leung*  
Supervisor  
Intertek Testing Services Hong Kong Ltd.  
Agent for Antonio Precise Products Manufactory Ltd.



\_\_\_\_\_  
Signature

\_\_\_\_\_  
October 25, 2004

\_\_\_\_\_  
Date

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**EXHIBIT 3**  
**EMISSION RESULTS**

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### 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.

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### 3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

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

where FS = Field Strength in dB $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

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

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### 3.1 Field Strength Calculation (cont'd)

#### Example

Assume a receiver reading of 62.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

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

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

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

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

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

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### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at  
138.340 MHz

For electronic filing, the radiated emission configuration photograph for PC download and mp3 player with battery box/ module holder & earphone (worst case) is saved with filename: radiated photos.doc.

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### 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 9.5 dB

#### **TEST PERSONNEL:**



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*Signature*

Ben W. K. Ho, Compliance Engineer  
*Typed/Printed Name*

October 25, 2004

*Date*

## INTERTEK TESTING SERVICES

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Applicant: Antonio Precise Products Manufactory Ltd. Date of Test: September 21, 2004

Model: MP86

Mode: MP3 Play (MP3 player with headphones)

Table 1

### Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	141.020	33.1	11.7	16	28.8	43.5	-14.7
H	151.310	32.1	11.9	16	28.0	43.5	-15.5
H	159.000	33.2	12.4	16	29.6	43.5	-13.9
H	165.090	32.8	13.8	16	30.6	43.5	-12.9
H	169.430	34.4	13.8	16	32.2	43.5	-11.3
H	174.640	32.4	14.7	16	31.1	43.5	-12.4
H	188.140	31.5	16.7	16	32.2	43.5	-11.3
H	209.900	30.8	11.8	16	26.6	43.5	-16.9
H	238.910	31.3	11.4	16	26.7	46.0	-19.3
H	268.900	31.0	12.4	16	27.4	46.0	-18.6
H	308.900	29.7	14.3	16	28.0	46.0	-18.0
H	338.900	31.0	14.6	16	29.6	46.0	-16.4
H	390.000	29.3	15.4	16	28.7	46.0	-17.3

Notes: 1. Peak Detector Data unless otherwise stated.

2. 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.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

## INTERTEK TESTING SERVICES

Applicant: Antonio Precise Products Manufactory Ltd. Date of Test: September 21, 2004

Model: MP86

Mode: MP3 Play (MP3 player with battery box/ module holder and earphones)

Table 2

### Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	60.320	31.0	9.9	16	24.9	40.0	-15.1
H	78.270	35.4	6.3	16	25.7	40.0	-14.3
H	125.660	35.4	12.6	16	32.0	43.5	-11.5
H	131.400	36.1	12.3	16	32.4	43.5	-11.1
H	134.803	37.3	12.3	16	33.6	43.5	-9.9
H	138.340	38.1	11.9	16	34.0	43.5	-9.5
H	141.030	37.8	11.7	16	33.5	43.5	-10.0
H	145.400	35.0	11.6	16	30.6	43.5	-12.9
H	156.530	32.1	12.4	16	28.5	43.5	-15.0
H	170.670	32.3	14.7	16	31.0	43.5	-12.5
H	183.670	30.4	16.2	16	30.6	43.5	-12.9
H	193.810	29.3	17.1	16	30.4	43.5	-13.1
H	205.103	29.8	11.8	16	25.6	43.5	-17.9
H	244.403	34.2	11.4	16	29.6	46.0	-16.4
H	257.403	34.9	12.4	16	31.3	46.0	-14.7
H	266.603	36.2	12.4	16	32.6	46.0	-13.4
H	275.703	35.7	13.3	16	33.0	46.0	-13.0
H	285.003	33.3	13.3	16	30.6	46.0	-15.4
H	302.103	30.4	14.3	16	28.7	46.0	-17.3
H	362.103	30.0	14.9	16	28.9	46.0	-17.1

Notes: 1. Peak Detector Data unless otherwise stated.

2. 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.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

## INTERTEK TESTING SERVICES

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Applicant: Antonio Precise Products Manufactory Ltd. Date of Test: September 21, 2004  
Model: MP86  
Mode: PC Download

Table 3

### Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	48.000	30.1	11.9	16	26.0	40.0	-14.0
H	60.003	31.6	9.9	16	25.5	40.0	-14.5
H	144.003	29.3	11.7	16	25.0	43.5	-18.5
H	192.000	32.4	17.1	16	33.5	43.5	-10.0
H	215.976	33.2	11.8	16	29.0	43.5	-14.5
H	240.000	34.6	11.4	16	30.0	46.0	-16.0
H	287.999	30.4	13.3	16	27.7	46.0	-18.3
H	384.000	27.6	15.4	16	27.0	46.0	-19.0

- Notes:
1. Peak Detector Data unless otherwise stated.
  2. 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.
  3. Negative value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

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### 3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at  
1.065 MHz

For electronic filing, the line-conducted configuration photograph for PC download is saved with filename: conducted photos.doc.

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### 3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conduct.pdf.

Judgement: Passed by 5.5 dB

#### **TEST PERSONNEL:**



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*Signature*

Ben W. K. Ho, Compliance Engineer  
*Typed/Printed Name*

October 25, 2004  
*Date*

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**EXHIBIT 4**

**EQUIPMENT PHOTOGRAPHS**

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### 4.0 Equipment Photographs

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.doc & internal photos.doc.

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**EXHIBIT 5**  
**PRODUCT LABELLING**

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### 5.0 **Product Labelling**

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

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

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### 6.0 Technical Specifications

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

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**EXHIBIT 7**  
**INSTRUCTION MANUAL**

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### 7.0 Instruction Manual

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

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

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**EXHIBIT 8**

**MISCELLANEOUS INFORMATION**

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### 8.0 Miscellaneous Information

This miscellaneous information includes emission measuring procedure.

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### 8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of EUT operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2001.

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

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### 8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.4 - 2001.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report. Above 1000 MHz, a resolution bandwidth of 1 MHz is used.