



Antonio Precise Products Manufactory Ltd.

Application
For
Certification

Bluetooth Stereo Headset

(FCC ID: QLM0160609)

06149191
KL/ ac
June 20, 2007

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MEASUREMENT/TECHNICAL REPORT

Antonio Precise Products Manufactory Ltd. - Model: BT95
FCC ID: QLM0160609

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

Equipment Type : DXT - Pt 15 Low Power Transceiver, Rx Verified

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 C for intentional radiator - the new 47 CFR [04-05-05
Edition] Provision.

Report prepared by:

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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 & Conducted Emission for Headset	config photos.doc
Test Report	Emission Plot	emission.pdf
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 Bluetooth Stereo Headset operating at 2402.000MHz to 2480.000MHz. The EUT is powered by a 4.2V Polymer Li-Ion rechargeable built-in battery (model: B052030P01) and/or a switching power adaptor (100-240VAC to 5.5VDC 250mA, model: CPS005A055025) or an USB port. The EUT has "+" and "-" buttons for adjusting volume up and down, and it also has a ON/OFF button for turning on or off itself and for pairing with a Bluetooth-equipped mobile device. After switching on the unit, it transmits a user's voice to a corresponding Bluetooth-equipped mobile device.

The antennas used in headset is integral, and the tested sample is a prototype.

The circuit description is saved with filename: descri.pdf

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1.2 Related Submittal(s) Grants

This is an Application for Certification of a DXT - Part 15 Low Power Transceiver, RX Verified. One Transmitter is included in this application.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). 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 radiated data and conducted data are 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

2.0 System Test Configuration

2.1 Justification

For emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The EUT was powered by a 4.2V Polymer Li-Ion rechargeable built-in battery (model: B052030P01) and/or a switching power adaptor (100-240VAC to 5.5VDC 250mA, model: CPS005A055025), or an USB port.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed 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 to 40 GHz, whichever is lower.

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.

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2.3 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

HARDWARE:

An AC adaptor and a battery (provided with the unit) were used to power the device. Their description are listed below.

- (1) A Switching Power Adaptor (100-240VAC to 5.5VDC 250mA, Model: CPS005A055025)
- (2) A 4.2V Polymer Li-Ion type rechargeable built-in battery (Model: B052030P01)

CABLES:

- (1) 1 x serial cable with 1 meter long
- (2) 1 x USB cable with 1 meter long (Supplied by Client)

OTHERS:

- (1) HP Notebook, Model: NC6220, S/N: CNU62015KN, DoC Product
- (2) HP Mouse, Model: M-UV96, S/N: F93A90AN3SY385Y, DoC Product
- (3) Hayes Modem, Model: 6800CN, S/N: A00900153317, FCC ID: BFJ9D907-00038
- (4) Genius Modem, Model: GM56EX, S/N: ZT5505000355, DoC Product

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2.4 Measurement Uncertainty

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

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Equipment Modification

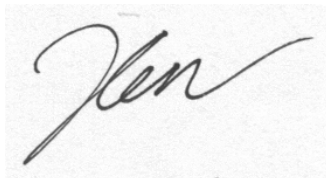
Any modifications installed previous to testing by Antonio Precise Products Manufactory Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by ETL Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

*Lam Chun Cheong, Kenneth
Assistant Supervisor
Intertek Testing Services
Agent for Antonio Precise Products Manufactory Ltd.*



Signature

June 20, 2007

Date

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EXHIBIT 3 EMISSION RESULTS

3.0 **Emission Results**

Data is included of the 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 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 $\text{dB}\mu\text{V/m}$
 RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$
 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 $\text{dB}\mu\text{V/m}$
 $RR = RA - AG$ in $\text{dB}\mu\text{V}$
 $LF = CF + AF$ in dB

Assume a receiver reading of $52.0 \text{ dB}\mu\text{V}$ 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, giving a field strength of $32 \text{ dB}\mu\text{V/m}$. This value in $\text{dB}\mu\text{V/m}$ was converted to its corresponding level in $\mu\text{V/m}$.

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

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

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

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

$$FS = RR + LF$$

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

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

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

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

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3.2 Radiated Emission Configuration Photograph - Headset

Worst Case Radiated Emission

at 2441.000 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.doc

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3.3 Radiated Emission Data - Headset

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 0.4 dB margin

TEST PERSONNEL:



Tester Signature

Jess Tang, Lead Engineer
Typed/Printed Name

June 20, 2007
Date

INTERTEK TESTING SERVICES

Company: Antonio Precise Products Manufactory Ltd. Date of Test: July 17-September 14, 2006
Model: BT95
Mode : TX-Channel 1

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	2402.000	96.9	33	29.4	93.3	94.0	-0.7
H	*4804.000	51.1	33	34.9	53.0	54.0	-1.0
H	7206.000	48.2	33	37.9	53.1	54.0	-0.9
H	9608.000	44.6	33	40.4	52.0	54.0	-2.0
H	*12010.000	43.4	33	40.5	50.9	54.0	-3.1

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.
5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

INTERTEK TESTING SERVICES

Company: Antonio Precise Products Manufactory Ltd. Date of Test: July 17-September 14, 2006
Model: BT95
Mode : TX-Channel 40

Table 2

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	2441.000	97.2	33	29.4	93.6	94.0	-0.4
H	*4882.000	48.9	33	34.9	50.8	54.0	-3.2
H	*7323.000	48.1	33	37.9	53.0	54.0	-1.0
H	9764.000	45.2	33	40.4	52.6	54.0	-1.4
H	*12205.000	42.5	33	40.5	50.0	54.0	-4.0

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.
5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

INTERTEK TESTING SERVICES

Company: Antonio Precise Products Manufactory Ltd. Date of Test: July 17-September 14, 2006
Model: BT95
Mode : TX-Channel 79

Table 3

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre- Amp (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
H	2480.000	96.7	33	29.4	93.1	94.0	-0.9
H	*4960.000	50.8	33	34.9	52.7	54.0	-1.3
H	*7440.000	48.3	33	37.9	53.2	54.0	-0.8
H	9920.000	44.8	33	40.4	52.2	54.0	-1.8
H	*12400.000	43.6	33	40.5	51.1	54.0	-2.9

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.
5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).
- * Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Jess Tang

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3.4 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Please refer to the following plots for radiated emission on the bandedge:

Plot H1A: Handset - Low Channel Emissions

Plot H1B: Handset - High Channel Emissions

For electronic filing, the above plots are saved with filename: emission.pdf

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3.5 Line Conducted Configuration Photograph - Headset

Worst Case Line-Conducted Configuration

at 0.590 MHz

For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.doc

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3.6 Line Conducted Emission Data - Headset

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by 8.3 dB margin

For electronic filing, the conducted emission test result is saved with filename: conduct.pdf

TEST PERSONNEL:



Tester Signature

Jess Tang, Lead Engineer
Typed/Printed Name

June 20, 2007

Date

INTERTEK TESTING SERVICES

Company: Antonio Precise Products Manufactory Ltd. Date of Test: July 17-September 14, 2006
Model: BT95

3.7 Radiated Emissions from Digital Portion of EUT, FCC Ref: 15.109

- ☐ Not required - No digital part
- ☒ Test results are attached
- ☐ Included in the separated DOC report.

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Company: Antonio Precise Products Manufactory Ltd. Date of Test: July 17-September 14, 2006
Model: BT95
Mode: Headset Online

Table 4

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	32.000	35.6	16	10.0	29.6	40.0	-10.4
V	64.000	35.5	16	9.0	28.5	40.0	-11.5
V	80.000	39.6	16	6.0	29.6	40.0	-10.4
H	96.000	33.9	16	12.0	29.9	43.5	-13.6
H	128.000	34.2	16	14.0	32.2	43.5	-11.3
H	144.000	34.0	16	14.0	32.0	43.5	-11.5
H	160.000	33.1	16	16.0	33.1	43.5	-10.4
H	176.000	31.1	16	19.0	34.1	43.5	-9.4
H	192.000	31.5	16	16.0	31.5	43.5	-12.0
H	240.000	25.0	16	19.0	28.0	46.0	-18.0

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated 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 radiated 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.

Test Engineer: Jess Tang

**EXHIBIT 4
EQUIPMENT PHOTOGRAPHS**

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4.0 Equipment Photographs

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

**EXHIBIT 5
PRODUCT LABELLING**

5.0 **Product Labelling**

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

**EXHIBIT 6
TECHNICAL SPECIFICATIONS**

6.0 Technical Specifications

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

**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: manual.pdf

The required FCC Information to the User is stated on P.8 of the Instruction Manual.

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