

*May 13, 2004*

**TWD Acoustic Products Ltd.  
Unit A ~ B, 5/F., Por Yen Building,  
478 Castle Peak Road, Kowloon, Hong Kong.**

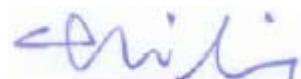
**Dear Miss Monica Chan:**

**Enclosed you will find your file copy of a Part 18 report (FCC ID: RXWWHP175).**

**For your reference, TCB will normally take another 15-20 days for reviewing the report. Approval will then be granted when no query is sorted.**

**Please contact me if you have any questions regarding the enclosed material.**

**Sincerely,**



**Billy Chow  
Senior Supervisor  
Signed for and on behalf of  
Intertek Hong Kong  
ETL SEMKO**

**Enclosure**

**FCC ID: RXWWHP175**

## **TWD Acoustic Products Ltd.**

### **Application For Certification (FCC ID: RXWWHP175)**

**Induction charger**

WO# 04058792

LC/el

May 13, 2004

**FCC ID: RXWWHP175**

- The test results reported in this test 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
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

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## LIST OF EXHIBITS

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## INTERTEK TESTING SERVICES

## MEASUREMENT/TECHNICAL REPORT

**TWD Acoustic Products Ltd. - MODEL: RCA WHP175  
FCC ID: RXWWHP175**

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

Equipment Type: Induction charger (example: computer, printer, modem, etc.)

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.

Transition Rules Request per 18.123? Yes No  X

If no, assumed Part 18 for induction charger - the new 47 CFR Part 18 [10-1-02 Edition] provision.

Report prepared by:

Billy Chow  
Intertek Testing Services  
Hong Kong Ltd.  
2/F., Garment Centre,  
576, Castle Peak Road,  
Kowloon, Hong Kong  
Phone: 852-2173-8545  
Fax: 852-2371-0914

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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.pdf
Test Setup Photo	Conduct Emission	conduct.pdf
Test Report	Conducted Emission Test Result	conduct.pdf
External Photo	External Photo	ophoto.pdf
Internal Photo	Internal Photo	iphoto.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	manual.pdf

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**EXHIBIT 1**

**GENERAL DESCRIPTION**

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## 1.0 General Description

### 1.1 Product Description

This Equipment Under Test (EUT) is a induction charger equipped inside the wireless audio system (900MHz transmitter with its associated headset receiver) which is used to charge up the rechargeable batteries for the headset. This EUT is operated in about 70kHz for generate a magnetic field for the receiving circuit for charging.

This EUT is powered by AC/DC adaptor (model: UD-1201B, input: 120VAC to output: 12VDC, 200mA) and will be activated once the headset was placed in the cradle of it. It contains two coils (primary in base unit while secondary inside the headset) for forming the transformer for the electrical induction. The construction photos were shown in following pages. This charger also can increase charging after 16 hours as it contains a timer incorporated with it.

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

### 1.2 Related Submittal(s) Grants

This is a single application for certification of induction charger.

The Certification procedure of transmitter (with same FCC ID) for this EUT is being processed as the same time of this application. Moreover, the certification procedure of receiver for this product (with FCC ID: RXWWHP175RX) is also being processed as the same time of this application.

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in FCC/OST MP-5 (1986). Radiated Emission measurement was performed in Open Area Test Sites and Conducted Emission was performed in shield room. 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 radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been 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 FCC/OST MP-5 (1986).

The EUT was powered by AC/DC adaptor (model: UD-1201B, AC 120V to DC 12V, 200mA). The unit was operated standalone and place in the center of the table.

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. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

For simplicity of testing, the unit was operated to charging continuously.

#### 2.2 EUT Exercising Software

There was no special software to exercise the device.

#### 2.3 Special Accessories

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

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### 2.4 Equipment Modification.

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

No modifications were installed by Intertek Testing Services.

### 2.5 Measurement Uncertainly

When determining of the test conclusion, the measurement uncertainly of test has been considered.

### 2.6 Support Equipment List and Description

Associated receiver (FCC ID: RXWWHP175RX) for simulation of charging status

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

*Billy Chow*  
Senior Supervisor - Home Entertainment Electronics  
Intertek Testing Services Hong Kong Ltd.  
Agent for TWD Acoustic Products Ltd.



\_\_\_\_\_  
Signature

\_\_\_\_\_  
May 13, 2004  
\_\_\_\_\_  
Date

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**EXHIBIT 3**

**EMISSION RESULTS**

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### 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 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.

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

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

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

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

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

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

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

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

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### **3.2 Radiated Emission Configuration Photograph**

**Worst Case Radiated Emission  
at  
23.723 MHz**

For electronic filing, the front view and back view of the test configuration photographs are saved with filename: radiated.pdf.

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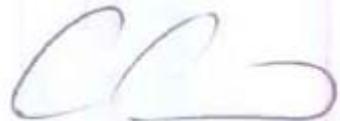
### 3.3 Radiated Emission Data

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 19.0 dB margin

The radiated emissions test was observed up to 30MHz

### **TEST PERSONNEL:**



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*Signature*

Lawrence H. C. Chow, Compliance Engineer

*Typed/Printed Name*

May 13, 2004

Date

## INTERTEK TESTING SERVICES

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Company: TWD Acoustic Products Ltd.  
Model: RCA WHP175  
Worst Case Operating Mode: Charging

Date of Test: April 27, 2004

**Table 1**

**Radiated Scan  
Pursuant to FCC 18.305(c) emissions Requirement**

Polarization	Frequency (MHz)	Net at 3m (dBmV/m)	Net at 300m (dBmV/m)	Limit at 3m (dBmV/m)	Margin (dB)
	3.876	35.9	-4.1	23.5	-27.6
	5.893	39.7	-0.3	23.5	-23.8
	12.371	42.1	2.1	23.5	-21.4
	15.638	43.4	3.4	23.5	-20.1
	23.723	44.5	4.5	23.5	-19.0
	26.119	44.1	4.1	23.5	-19.4

- NOTES:
1. Loop antenna and average detector are use for emissions test.
  2. Negative sign (-) in the margin column signify levels below the limit.
  3. Frequency range scanned: 9KHz to 30MHz.
  4. Only emissions significantly above equipment noise floor are reported.
  5. A closer fixed distance was used for tested and 1/d attenuation law factor was used.

Test Engineer: Lawrence H. C. Chow

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### **3.4      Conducted Emission Configuration Photograph**

Worst Case Conducted Emission  
at  
charging mode

For electronic filing, the front view, rear view and side view of the test configuration photographs are saved with filename: conducted.pdf.

## **INTERTEK TESTING SERVICES**

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Company: TWD Acoustic Products Ltd.  
Model: RCA WHP175

Date of Test: April 27, 2004

### **Conducted Emissions Section 18.307 Requirements**

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

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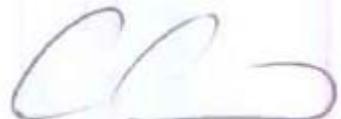
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### 3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission are saved with filename: conduct.pdf. The data table lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by at least 20 dB margin

#### **TEST PERSONNEL:**



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*Signature*

Lawrence H. C. Chow, Compliance Engineer

*Typed/Printed Name*

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May 13, 2004

Date

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**EXHIBIT 4**

**EQUIPMENT PHOTOGRAPHS**

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### 4.0 Equipment Photographs

For electronic filing, photographs of the tested EUT are saved with filename: ophoto.pdf for external photo, and iphoto.pdf for internal photo.

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**EXHIBIT 5**

**PRODUCT LABELLING**

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### 5.0 Product Labelling

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

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 Technical Specifications

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

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**EXHIBIT 7**

**INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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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. Moreover, it was said that the declaration which mention in following pages will also be committed at the time.

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**EXHIBIT 8**

**MISCELLANEOUS INFORMATION**

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### **8.0 Miscellaneous Information**

The miscellaneous information includes details of the test procedure and calculation of factor such as pulse desensitization and averaging factor (calculation and timing diagram).

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### **8.1 Discussion of Pulse Desensitization**

No desensitization of the measurement equipment is required as this device is a induction charger.

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### **8.2 Calculation of Average Factor**

This device is a induction charger receiver. It is not necessary to apply average factor to the measurement result.

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### 8.3 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of induction charger operating under the Part 18, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of FCC/OST MP-5 (1986).

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 axis to obtain maximum emission levels. The antenna height and polarization are also 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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to 30MHz. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

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

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

The EUT was furnished with rated (normal) voltage as specified by manufacturer.

Conducted measurements were made as described in FCC/OST MP-5 (1986).

The IF bandwidth used for measurement of radiated signal strength was 10 kHz or greater when frequency is below 30 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 (See Exhibit 8.2).

Measurements are normally conducted at a measurement distance of three meters. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.