February 1, 2002

Tandy Electronics (China) Ltd.
6/F., & 7/F., M.C. Packaging Bldg.,
9th District Lian Tang Ind.,
District Shenzhen, Guangdong.

Dear Mr. Tan Hui:

Enclosed you will find your file copy of a Part 15 report (FCC ID: AAO3301196).

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,

Alfred Lo
Senior Technical Supervisor

Enclosure

FCC ID: AAO3301196

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2745 8306

Tandy Electronics (China) Ltd.

Application
For
Certification
(FCC ID: AAO3301196)

Superheterodyne Receiver

WO# 0200049
AL/sa
February 1, 2002

FCC ID: AAO3301196

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2713 8888 Fax: (852) 2745 8306

LIST OF EXHIBITS

MEASUREMENT/TECHNICAL REPORT

Tandy Electronics (China) Ltd. - MODEL: 33-1196 Receiver
FCC ID: AAO3301196

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

Equipment Type: Superheterodyne Receiver (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 - the new 47 CFR [5-24-01 Edition] provision.

Report prepared by:

Alfred Lo
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

Table of Contents

List of attached file

Exhibit type	File Description	filename
Cover Letter	Letter of Agency	letter.pdf
Test Report	Test Report	report.doc
Operation Description	Technical Description	descri1.pdf, descri2.pdf and descri3.pdf
Test Setup Photo	Radiated Emission	radiated1.jpg, radiated2.jpg
External Photo	External Photo	ophoto1.jpg, ophoto2.jpg
Internal Photo	Internal Photo	iphoto1.jpg, iphoto2.jpg, iphoto3.jpg, iphoto4.jpg, iphoto5.jpg, iphoto6.jpg and iphoto7.jpg
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label1.pdf and label2.pdf
User Manual	User Manual	manual1.pdf, manual2.pdf and manual3.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 **General Description**.0 **General Description**

1.1 Product Description.1 Product Description

The equipment under test (EUT) is a superheterodyne receiver of wireless headphone operating at 900MHz. The EUT is powered by 3 pieces of 1.2V rechargeable batteries (AAA size). It's primary function is use to receive the modulated signal from it's corresponding transmitter and the reproduct the audio sound. It consists the on/off switch, volume control knob, power on indicating light (colour in red) and the DC socket (12VDC in) which provide to recharge the batteries. The bare wire type antenna which buried into the headband and covered by the FCC ID label. The antenna was illustrated on equipment photograph (External photograph number 2).

For electronic filing, the brief circuit description is saved with filename: descri1.pdf to descri3.pdf

1.2 Related Submittal(s) Grants.2 Related Submittal(s) Grants

The transmitter for this receiver is authorized by Certification procedure. The FCC ID of the transmitter is AAO3301196T and has been filed at the same time as this application.

1.3 Test Methodology.3 Test Methodology

Radiated emission measurements was performed according to the procedures in ANSI C63.4 (1992) and conducted in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site 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.4 Test Facility

The open area test site 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.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 **System Test Configuration**.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 ANSIC63.4 (1992).

The EUT is powered by 3 pieces of 1.2V rechargeable 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. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

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

2.2 EUT Exercising Software.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it received the RF Signal continuously.

2.3 Special Accessories

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

2.4 Equipment Modification.4 Equipment Modification

Any modifications installed previous to testing by Tandy Electronics (China) Ltd. 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

All the items listed under section 2.0 of this report are:
1. Auxiliary input of EUT connected to a walkman through 1.8 meter cable (Provided by ITS)2. It's corresponding transmitter with FCC ID AA03361196T

Confirmed by:

Alfred Lo
Senior Technical Supervisor - Home Entertainment Electronics
Intertek Testing Services Hong Kong Ltd.
Agent for Tandy Electronics (China) Ltd.

_____ Signature

February 1, 2002 Date

EXHIBIT 3

EMISSION RESULTS

3.0 **Emission Results**.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.

3.1 Field Strength Calculation.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 dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
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

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

Example

Assume a receiver reading of 62.0 dBμV 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 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
904.946 MHz

For electronic filing, the front view and back view of the test configuration photographs are saved with filename: radiated1.jpg and radiated2.jpg respectively.

3.3 Radiated Emission Data.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 4.7 dB margin

TEST PERSONNEL:

_____
Signature

Lawrence H. C. Chow, Compliance Engineer
Typed/Printed Name

February 1, 2002
Date

Company: Tandy Electronics (China) Ltd. Date of Test: January 4, 2002
Model: 33-1196 Receiver
Worst case operating mode: Headphone Receiving

Table 1

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net 3m at (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	904.946	34.7	22.6	16	41.3	46.0	-4.7
H	1089.892	46.6	25.5	34	38.1	54.0	-15.9
H	2714.838	42.5	29.1	34	37.6	54.0	-16.4
H	3619.784	38.2	32.8	34	37.0	54.0	-17.0

NOTES:
1. Peak Detector is used below 1000MHz unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 sign in the column shows value below limit.
4. Horn antenna and average detector are used for the emission over 1000MHz.
5. The radiated emission test was observed up to 5GHz.

* The corresponding limit as per 15.109 is based on Quasi peak detector data for frequencies below 1000 MHz and average detector data for frequencies over 1000 MHz.

Test Engineer: Lawrence H. C. Chow

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 **Equipment Photographs**4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: ophoto1.jpg, ophoto2.jpg for external photo, and iphoto1.jpg to iphoto7.jpg for internal photo.

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label1.pdf to label2.pdf.

EXHIBIT 6

TECHNICAL SPECIFICATIONS

6.0 **Technical Specifications**.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.

EXHIBIT 7

INSTRUCTION MANUAL

7.0 **Instruction Manual**.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual1.pdf to manual3.pdf.

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

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 **Miscellaneous Information**.0 **Miscellaneous Information**

This miscellaneous information includes details of the test procedure and calculation of factors such as pulse desensitization and averaging factor.

8.1 Discussion of Pulse Desensitization8.2 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

This device is a superheterodyne receiver. The emission are continuous, and no desensitization of the measurement equipment occurs.

8.2 Calculation of Average Factor .2 Discussion of Pulse Desensitization

This device is a superheterodyne receiver.

It is not necessary to apply average factor to the measurement results.

8.3 Emissions Test Procedures.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 Superheterodyne Receivers operating under the Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 1992.

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 groundplane. 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 8.2.

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 450 kHz to 30 MHz.

8.3 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.

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 (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

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.