*September 05, 2005*

*Tandy Electronics (China) Ltd.*
*6/F. & 7/F., M.C. Plaza, 9th Sub-District,*
*Lian Tang Industrial Estate,*
*Shenzhen, China.*

*Dear Mr. Alex Lui:*

*Enclosed you will find your file copy of a Part 15 report (FCC ID: AAO1501892R).*

*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*
*Assistant Manager*

*Enclosure*

*FCC ID: AAO1501892R*

# Tandy Electronics (China) Ltd.

Application
For
Certification
**(FCC ID: AAO1501892R)**

Indoor HDTV Antenna with RF Remote Control

0511938
TC/el
September 05, 2005

FCC ID: AAO1501892R




**Intertek Testing Services Hong Kong Ltd.**
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

# LIST OF EXHIBITS

# MEASUREMENT/TECHNICAL REPORT

## Tandy Electronics (China) Ltd. - MODEL: RadioShack 15-1892
## FCC ID: AAO1501892R

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

Equipment Type: Indoor HDTV Antenna with RF Remote Control (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 [10-01-04 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: 852-2173-8491
Fax: 852-2371-0914

## Table of Contents

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.pdf |
| Test Setup Photo | Conducted Emission | Conducted Photos.pdf |
| Test Report | Conducted Emission Test Result | Conduct.pdf |
| External Photo | External Photo | External Photos.pdf |
| Internal Photo | Internal Photo | Internal Photos.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 |
| Test Report | Stabilization Waveform | Superreg.pdf |

# EXHIBIT 1

# GENERAL DESCRIPTION

## 1.0 General Description

### 1.1 Product Description

This Equipment Under Test (EUT) is indoor HDTV antenna with RF remote control. The main function of the EUT is used to receive the broadcasting TV signal. It can amplify the TV signal in order to provide the best received signals to the TV. It can allows you rotate the antenna in difference positions either clockwise or counterclockwise for best reception. And the gain of the antenna have 3 difference level available to amplify weak signal. It is powered by an AC/DC adaptor (Model: DV-1235). There are two 75ohm terminals at the back of EUT, one is used to connect the TV, another is used to connect second video source to the TV. Four buttons at the front panel is used to select the antenna direction and the gain of the antenna. The LCD display is used indicate the antenna direction and which channel receiving. On the other hand, the antenna direction, gain of antenna and the channel receiving can be controlled by the remote control which use 433.92MHz RF signal.

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

### 1.2 Related Submittal(s) Grants

The Certification procedure of transmitter for this receiver (with FCC ID: AAO1501892T) is being processed as the same time of 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. Radiated measurement was performed in an Open Area Test Site and Conducted Emission measurement was performed in Shield Room. 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

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.

# EXHIBIT 2

# SYSTEM TEST CONFIGURATION

## 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 - 2003.

The EUT is powered by an AC/DC Adaptor (Model: DV-1235).

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 on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

Antenna power conduction does not applicable for the EUT since the antenna terminal was not used to connect an external receiving antenna.

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

### 2.2 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

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 Measurement Uncertainty

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

2.6 Support Equipment List and Description

1. Transmitter with FCC ID: AAO1501892T

2. 75ohm Resistive Load(s)
   (Provided by Intertek)

3. Signal Generator EW-1244
   (Provided by Intertek)

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

*Confirmed by:*

*Billy Chow*
*Assistant Manager*
*Intertek Testing Services Hong Kong Ltd. - ETL SEMKO*
*Agent for Tandy Electronics (China) Ltd.*

Signature

September 05, 2005 Date

# 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.

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 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)

Example

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

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

AV = -10dB

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

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

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
433.841MHz

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

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 9.6dB margin

***TEST PERSONNEL:***

*Signature*

Terry C. H. Chan, Compliance Engineer
*Typed/Printed Name*

September 05, 2005
*Date*

Company: Tandy Electronics (China) Ltd. Date of Test: August 01, 2005
Model: RadioShack 15-1892
Worst case operating mode: Receiving

**Table 1**

**Radiated Emissions**

| Polarization | Frequency (MHz) | Net at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) |
|---|---|---|---|---|
| H | 429.571 | 35.1 | 46.0 | -10.9 |
| H | 431.529 | 34.8 | 46.0 | -11.2 |
| H | 433.841 | 36.4 | 46.0 | -9.6 |
| H | 435.707 | 36.1 | 46.0 | -9.9 |
| H | 438.842 | 34.9 | 46.0 | -11.1 |
| H | 443.577 | 34.8 | 46.0 | -11.2 |
| H | 849.749 | 33.9 | 46.0 | -12.1 |
| H | 855.607 | 35.0 | 46.0 | -11.0 |
| H | 861.204 | 35.1 | 46.0 | -10.9 |
| H | 867.488 | 34.4 | 46.0 | -11.6 |
| H | 1292.591 | 38.1 | 54.0 | -15.9 |
| H | 1295.755 | 38.0 | 54.0 | -16.0 |

NOTES:
1. Peak Detector Data 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 margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. '*' Emission within restricted band fulfill the requirement of section 15.205.

Test Engineer: Terry C. H. Chan

Company: Tandy Electronics (China) Ltd. Date of Test: August 01, 2005
Model: RadioShack 15-1892
Worst case operating mode: Power On

**Table 2**

**Radiated Emissions**

| Polarization | Frequency (MHz) | Net at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) |
|---|---|---|---|---|
| V | 40.227 | 28.9 | 40.0 | -11.1 |
| V | 48.341 | 29.3 | 40.0 | -10.7 |
| V | 56.129 | 29.7 | 40.0 | -10.3 |
| V | 64.241 | 29.9 | 40.0 | -10.1 |
| V | 72.249 | 28.7 | 40.0 | -11.3 |
| H | 80.331 | 28.6 | 40.0 | -11.4 |

NOTES: 1. Peak Detector Data 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 margin column shows emission below limit.

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

5. '*' Emission within restricted band fulfill the requirement of section 15.205.

Test Engineer: Terry C. H. Chan

3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Emission
at
0.150MHz

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

Company: Tandy Electronics (China) Ltd. Date of Test: August 01, 2005
Model: RadioShack 15-1892

**Conducted Emissions**
**Section 15.107 Requirements**

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

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 >20dB margin

***TEST PERSONNEL:***

*Signature*

Terry C. H. Chan, Compliance Engineer
*Typed/Printed Name*

September 05, 2005
*Date*

# EXHIBIT 4

# EQUIPMENT PHOTOGRAPHS

## 4.0 Equipment Photographs

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

# EXHIBIT 5

# PRODUCT LABELLING

## 5.0 **Product Labelling**

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

# EXHIBIT 6

# TECHNICAL SPECIFICATIONS

## 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.

# EXHIBIT 7

# INSTRUCTION MANUAL

## 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.

# EXHIBIT 8

# MISCELLANEOUS INFORMATION

## 8.0 **Miscellaneous Information**

The miscellaneous information includes details of the test procedure.

8.1 Stabilization Waveform (for superregenerative receiver)

Previous to the testing, the superregenerative receiver was stabilized as outlined in the test procedure. For the electronic filing, the plot saved with filename: superreg.pdf show the fundamental emission when a signal generator was used to stabilize the receiver. Please note that the antenna was placed as close as possible to the EUT for clear demonstration of the waveform and that accurate readings are not possible from this plot.

8.2 Calculation of Average Factor

The average factor is not applicable for this device as the received signal is a continuously signal.

8.3 Emissions Test Procedures

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

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of Indoor HDTV Antenna with RF Remote Control 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 - 2003.

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 8.2.

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

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.

Conducted measurements were made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 100kHz or greater when frequency is below 1000MHz. 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 1000MHz, a resolution bandwidth of 1MHz 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.