SDI Technologies Inc.

Application
For
Certification
(FCC ID: EMO T154)

Superheterodyne Receiver

WO# 03081361
AL/sa
29 May, 2003

FCC ID: EMO T154

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

SDI Technologies Inc. - MODEL: Timex T-154'X'
('X' denoted as the colour of the cabinet)
FCC ID: EMO T154

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 [08-20-02 Edition] provision.

Report prepared by:

Alfred Lo
Intertek Testing Services
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Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated.pdf
Test Setup Photo	Conducted Emission	conducted.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

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is weather band radio with alarm clock and sound generator. This EUT is powered by AC/DC adaptor (120VAC to 6V DC) or 3 "AAA" size batteries. The (CR2032) battery is act as backup power supply for the EUT once the power failure occurs.

The main function of this EUT is receiving weather broadcast (weather forecasts and weather warnings) that are provided by the NOAA (National Oceanic and Atmospheric Administration) in the United States. This EUT can be operated at 7 frequencies (from 162.400MHz to 162.550MHz) which can be selected by switching the button at the back of it. The buttons which equipped at the top/ in front of the body are used to adjust the operational features of the product such as time set, alarm set, mode of sound, dimmer and snooze. Moreover, there have one switch at the back of the body is used to adjust the volume of it.

Furthermore, there have LCD display is for indication of its operational status. Finally, it can be found that there have a bare wire antenna (180cm) attached at the back of the EUT for receiving the RF broadcasting signal.

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 a receiver.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). 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 (1992).

The EUT is powered by AC/DC adaptor (NA-500S, AC 120V, DC 6V (350mA), provided by ITS)

The unit was operated standalone and placed 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.

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.

For simplicity of testing, the unit was operated 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 SDI Technologies Inc. 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 of the test conclusion, the measurement uncertainty of test has been considered.

2.6 Support Equipment List and Description

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

Alfred Lo
Senior Technical Supervisor - Home Entertainment Electronics
Intertek Testing Services Hong Kong Ltd.
Agent for SDI Technologies Inc.

Signature

29 May, 2003 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 62.0 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

Worst Case Radiated Emission
at
162.086 MHz

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

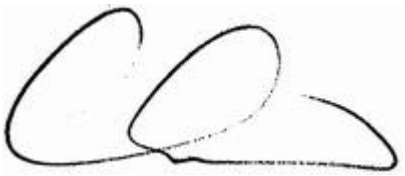
3.3 Radiated Emission Data

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 5.5 dB margin

The radiated emissions test was observed up to 2000MHz.

TEST PERSONNEL:



Signature

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

29 May, 2003
Date

Company: SDI Technologies Inc. Date of Test: May 29, 2003
Model: Timex T-154'X'
Worst case operating mode: Receiving

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	162.086	40.9	13.1	16	38.0	43.5	-5.5
H	324.173	40.7	14.3	16	39.0	46.0	-7.0
H	486.256	36.2	17.3	16	37.5	46.0	-8.5
H	648.343	29.6	19.2	16	32.8	46.0	-13.2
H	810.429	30.0	21.3	16	35.3	46.0	-10.7
H	972.515	27.5	23.2	16	34.7	54.0	-19.3

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.

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

3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Emission
at
16.205 MHz

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

Company: SDI Technologies Inc. Date of Test: May 29, 2003
Model: Timex T-154'X'

Conducted Emissions
Section 15.107 Requirements

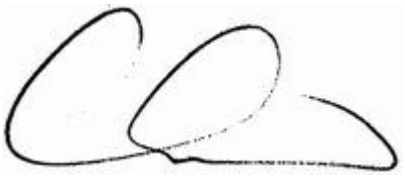
For Electronic filing, the conducted emission test result is saved with filename: conduct.pdf

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 14.5 dB margin

TEST PERSONNEL:



Signature

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

29 May, 2003
Date

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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.

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 and calculation of factor such as pulse desensitization and averaging factor (Calculation and timing diagram).

8.1 Discussion Pulse Desensitivity

This device is a superheterodyne receiver. No desensitization of the measurement equipment is required.

8.2 Calculation of Average Factor

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

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 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 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 9 kHz to 2 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.

Conducted measurements were made as described in ANSI C63.4 - 1992.

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.