

RadioShack Corporation

Application
For
Certification
(FCC ID: AAO120362)

FM Transmitter

0715187
TC/el
August 03, 2007

- The evaluation data of the report will be kept for 3 years from the date of issuance.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

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-ettsemko.com

INTERTEK TESTING SERVICES

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	General Description
<i>EXHIBIT 2:</i>	System Test Configuration
<i>EXHIBIT 3:</i>	Emission Results
<i>EXHIBIT 4:</i>	Equipment Photographs
<i>EXHIBIT 5:</i>	Product Labelling
<i>EXHIBIT 6:</i>	Technical Specifications
<i>EXHIBIT 7:</i>	Instruction Manual
<i>EXHIBIT 8:</i>	Miscellaneous Information
<i>EXHIBIT 9:</i>	Confidentiality Request

INTERTEK TESTING SERVICES

Table of Contents

1.0	<u>General Description</u>	2
1.1	Product Description.....	2
1.2	Related Submittal(s) Grants.....	2
1.3	Test Methodology.....	3
1.4	Test Facility.....	3
2.0	<u>System Test Configuration</u>	5
2.1	Justification.....	5
2.2	EUT Exercising Software.....	5
2.3	Special Accessories.....	5
2.4	Equipment Modification.....	6
2.5	Measurement Uncertainty.....	6
2.6	Support Equipment List and Description.....	6
3.0	<u>Emission Results</u>	8
3.1	Field Strength Calculation.....	9
3.2	Radiated Emission Configuration Photograph.....	11
3.3	Radiated Emission Data.....	12
4.0	<u>Equipment Photographs</u>	17
5.0	<u>Product Labelling</u>	19
6.0	<u>Technical Specifications</u>	21
7.0	<u>Instruction Manual</u>	23
8.0	<u>Miscellaneous Information</u>	25
8.1	Measured Bandwidth.....	26
8.2	Discussion of Pulse Desensitization.....	27
8.3	Calculation of Average Factor.....	28
8.4	Emissions Test Procedures.....	29
9.0	<u>Confidentiality Request</u>	32

INTERTEK TESTING SERVICES

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 Report	Bandwidth Plot	bw.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
Cover Letter	Confidentiality Request	request.pdf

INTERTEK TESTING SERVICES

EXHIBIT 1

GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

1.0 General Description

1.1 Product Description

This EUT is a FM Transmitter that is used for iPod Player. The main function is used to transmit the music stored in yours iPod Player that can be receiving it by a radio. It is powered by yours iPod Player, no battery inside. There is no power indicator on the unit, its will be turned on automatically while plug into the iPod Player. The transmitting frequency covers the complete FM band from 88.1 to 107.9MHz in 0.2MHz step (i.e. 88.1MHz, 88.3MHz, 88.5MHz and so on). The transmitting frequency is shown on the LED panel. There is three buttons on the top of the unit, press button 'up' or 'down' to scroll to the desired FM frequency, 'Menu' for two seconds to store the frequency to the memory locations '1' and '2'. A mini USB jack on the bottom of the unit is used to charging up the iPod Player and once the iPod Player is under charging mode, iPod Player will not give supply to the EUT and it cannot be operated.

Antenna Type: Internal, Integral

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 transmitter.

INTERTEK TESTING SERVICES

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated Emission measurement was performed in Open Area Test Sites. 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 fully placed on file with the FCC.

INTERTEK TESTING SERVICES

EXHIBIT 2
SYSTEM TEST CONFIGURATION

INTERTEK TESTING SERVICES

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 was powered by iPod player.

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 unit was operated standalone and placed in the center of the turntable.

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.

2.2 EUT Exercising Software

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

2.3 Special Accessories

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

INTERTEK TESTING SERVICES

2.4 Equipment Modification

Any modifications installed previous to testing by RadioShack Corporation will be incorporated in each production model sold / leased in the United States.

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

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. iPod Video (EW-2272)
(Provided by Intertek)
2. 1.17m USB Cable

All the items listed under section 2.0 of this report are

Confirmed by:

*Chow Chi Ming, Billy
Manager
Intertek Testing Services Hong Kong Ltd.
Agent for RadioShack Corporation*



Signature

August 03, 2007

Date

INTERTEK TESTING SERVICES

EXHIBIT 3
EMISSION RESULTS

INTERTEK TESTING SERVICES

3.0 Emission Results

Data is included 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.

INTERTEK TESTING SERVICES

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 μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ 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:

$$FS = RA + AF + CF - AG + PD + AV$$

INTERTEK TESTING SERVICES

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dB μ V is obtained. The antenna factor of 7.4dB 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 32dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

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

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

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

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

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

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

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

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

INTERTEK TESTING SERVICES

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
107.495MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

INTERTEK TESTING SERVICES

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 1.8dB margin

TEST PERSONNEL:



Signature

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

August 03, 2007
Date

INTERTEK TESTING SERVICES

Company: RadioShack Corporation
Model: ACCURIAN 12-362
Worst Case Operating Mode: Transmitting

Date of Test: June 27, 2007

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	89.893	52.5	16	9.0	45.5	48.0	-2.5
H	179.786	28.1	16	20.0	32.1	43.5	-11.4
V	269.679	26.6	16	22.0	32.6	46.0	-13.4
H	359.572	31.2	16	24.0	39.2	46.0	-6.8
H	449.465	22.8	16	26.0	32.8	46.0	-13.2
H	539.358	21.4	16	28.0	33.4	46.0	-12.6
V	629.251	20.6	16	29.0	33.6	46.0	-12.4
H	719.144	19.5	16	30.0	33.5	46.0	-12.5
H	809.037	18.8	16	31.0	33.8	46.0	-12.2
H	898.930	17.0	16	32.0	33.0	46.0	-13.0

- 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 value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. All emissions below the peak limit.

Test Engineer: Terry C. H. Chan

INTERTEK TESTING SERVICES

Company: RadioShack Corporation
Model: ACCURIAN 12-362
Worst Case Operating Mode: Transmitting

Date of Test: June 27, 2007

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	99.300	49.9	16	12.0	45.9	48.0	-2.1
V	198.600	32.7	16	16.0	32.7	43.5	-10.8
H	297.900	27.0	16	22.0	33.0	46.0	-13.0
H	397.200	30.8	16	25.0	39.8	46.0	-6.2
H	496.500	23.4	16	26.0	33.4	46.0	-12.6
H	595.800	20.6	16	29.0	33.6	46.0	-12.4
H	695.100	19.7	16	30.0	33.7	46.0	-12.3
V	794.400	18.8	16	31.0	33.8	46.0	-12.2
H	893.700	16.9	16	32.0	32.9	46.0	-13.1
H	993.000	16.4	16	33.0	33.4	54.0	-20.6

- 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 value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. All emissions below the peak limit.

Test Engineer: Terry C. H. Chan

INTERTEK TESTING SERVICES

Company: RadioShack Corporation
Model: ACCURIAN 12-362
Worst Case Operating Mode: Transmitting

Date of Test: June 27, 2007

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	107.495	48.2	16	14.0	46.2	48.0	-1.8
H	214.990	31.7	16	17.0	32.7	43.5	-10.8
H	322.485	25.6	16	23.0	32.6	46.0	-13.4
V	429.980	31.1	16	25.0	40.1	46.0	-5.9
H	537.475	21.8	16	28.0	33.8	46.0	-12.2
H	644.970	19.4	16	29.0	32.4	46.0	-13.6
H	752.465	19.0	16	30.0	33.0	46.0	-13.0
V	859.960	18.4	16	31.0	33.4	46.0	-12.6
V	967.455	16.6	16	33.0	33.6	54.0	-20.4
H	1074.950	41.7	34	26.1	33.8	54.0	-20.2

- 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 value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. All emissions below the peak limit.

Test Engineer: Terry C. H. Chan

INTERTEK TESTING SERVICES

EXHIBIT 4
EQUIPMENT PHOTOGRAPHS

INTERTEK TESTING SERVICES

4.0 **Equipment Photographs**

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

INTERTEK TESTING SERVICES

EXHIBIT 5
PRODUCT LABELLING

INTERTEK TESTING SERVICES

5.0 **Product Labelling**

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

INTERTEK TESTING SERVICES

EXHIBIT 6
TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

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

INTERTEK TESTING SERVICES

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.

INTERTEK TESTING SERVICES

EXHIBIT 8

MISCELLANEOUS INFORMATION

INTERTEK TESTING SERVICES

8.0 Miscellaneous Information

The miscellaneous information includes details of the measured bandwidth and the test procedure.

INTERTEK TESTING SERVICES

8.1 Measured Bandwidth

For electronic filing, the plot on saved in bw.pdf shows the fundamental emission which is applied iPod Video as audio input source in maximum volume. From the plot, it shows the emission is within 200kHz band.

INTERTEK TESTING SERVICES

8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

INTERTEK TESTING SERVICES

8.3 Calculation of Average Factor

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

INTERTEK TESTING SERVICES

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2003.

The transmitting 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 axes to obtain maximum emission levels. The antenna height and polarization are 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.

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.

INTERTEK TESTING SERVICES

8.4 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 are 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.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

INTERTEK TESTING SERVICES

EXHIBIT 9
CONFIDENTIALITY REQUEST

INTERTEK TESTING SERVICES

9.0 **Confidentiality Request**

For electronic filing, a confidentiality request is saved with filename: request.pdf.