

Char-Broil

Application
For
Certification
FCC ID: 2AARR4885637CB-R

Superheterodyne Receiver

Sample Description : Wireless Multi-sensor Thermometer
Model: 4885637

Report No.: 130802001SZN-002

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, mention 47 CFR [10-1-12]

Prepared and Checked by:

Approved by:

Sign on file

Chris Chen
Engineer

Billy Li
Supervisor
Date: October 23, 2013

- 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 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 copy or distribute this report. 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 referenced from 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.
- 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.

TRF No.: FCC 15C_RX_b



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
<i>EXHIBIT 10:</i>	Test Equipment List



MEASUREMENT/TECHNICAL REPORT

Char-Broil
Model: 4885637
FCC ID: 2AARR4885637CB-R

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: CYY – Communications Receiver used w/Pt 15 Transmitter

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 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart B for unintentional radiator - the new 47 CFR [10-1-12 Edition] provision.

Report prepared by:

Chris Chen
Intertek Testing Services Shenzhen Ltd.
Kejiyuan Branch
6/F, Block D, HuaHan Building, Longshan
Road, Nanshan District, Shenzhen, China.
Phone: (86 755) 8601 0629
Fax: (86 755) 8601 6751

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	2
1.4	Test Facility	2
2.0	<u>System Test Configuration</u>	4
2.1	Justification	4
2.2	EUT Exercising Software	4
2.3	Special Accessories	4
2.4	Equipment Modification	5
2.5	Measurement Uncertainty	5
2.6	Support Equipment List and Description	5
3.0	<u>Emission Results</u>	7
3.1	Field Strength Calculation	8
3.2	Radiated Emission Configuration Photograph	9
3.3	Radiated Emission Data	10
4.0	<u>Equipment Photographs</u>	13
5.0	<u>Product Labelling</u>	15
6.0	<u>Technical Specifications</u>	17
7.0	<u>Instruction Manual</u>	19
8.0	<u>Miscellaneous Information</u>	21
8.1	Emissions Test Procedures	21
9.0	<u>Confidentiality Request</u>	24
10.0	<u>Test Equipment List</u>	26



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
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 Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf



EXHIBIT 1

GENERAL DESCRIPTION

1.0 **General Description**

1.1 Product Description

The equipment under test (EUT) is a receiver for a Wireless Multi-sensor Thermometer operating at 915 MHz. The EUT is powered by 2 x 1.5V AAA batteries. For more detailed features description, please refer to the user's manual.

Antenna Type: Integral antenna

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. The transmitter, associated with this receiver, has FCC ID: 2AARR4885637CB-T and has been filed at the same time.

1.3 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Radiated Emission measurement was performed in a Semi-anechoic chamber. Preliminary scans were performed in the Semi-anechoic chamber 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 Semi-anechoic chamber facility used to collect the radiated data is Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch and located at 6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).



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 (2009).

The EUT was power by two new 1.5V AAA batteries during testing.

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.

The frequency range from 30MHz to 2GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

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

2.3 Special Accessories

N/A



2.4 Equipment Modification

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

No modifications were installed by Intertek Testing Services Shenzhen Ltd Kejiyuan Branch.

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

N/A



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 Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

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

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

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where FS = Field Strength in dB μ V/m
 RR = RA - AG in dB μ V
 LF = CF + AF in dB

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V/m	
AF = 7.4 dB	RR = 23.0 dB μ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
FS = RR + LF	
FS = 23 + 9 = 32 dB μ V/m	

Level in μ V/m = Common Antilogarithm [(32 dB μ V/m)/20] = 39.8 μ V/m



3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
374.835 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.doc.



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 7.2 dB

TEST PERSONNEL:

Chris Chen, Engineer
Typed/Printed Name

October 23, 2013
Date



Applicant: Char-Broil
Model: 4885637
Test Mode: Receive

Date of Test: October 23, 2013

Table 1

FCC Class B Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
V	189.080	35.7	20.0	10.7	26.4	43.5	-17.1
V	205.085	35.2	20.0	11.1	26.3	43.5	-17.2
V	223.515	37.0	20.0	11.9	28.9	46.0	-17.1
V	335.550	34.1	20.0	15.7	29.8	46.0	-16.2
V	374.835	42.8	20.0	16.0	38.8	46.0	-7.2
V	481.050	33.7	20.0	18.5	32.2	46.0	-13.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
V	1252.360	52.7	36.8	24.6	40.5	54.0	-13.5
V	1651.340	50.1	36.8	28.2	41.5	54.0	-12.5

- 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 column shows value below limit.
4. All emissions below 1000MHz are below the QP limit and all emissions above 1000MHz are below the average limit.

Test Engineer: Chris Chen



EXHIBIT 4

EQUIPMENT PHOTOGRAPHS



4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc and internal photos.doc.



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**

This miscellaneous information includes emission measuring procedure.

8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of Superheterodyne Receiver operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2009.

The Superheterodyne Receiver 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 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 above 1GHz is in peak mode and Quasi-Peak mode is used below 1GHz.

For radiated emission, the frequency range scanned is 30MHz to 2GHz.



8.1 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 - 2009.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. 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.



EXHIBIT 9

CONFIDENTIALITY REQUEST



9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.



EXHIBIT 10

TEST EQUIPMENT LIST



10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	02-Jul-13	02-Jul-14
SZ061-08	Horn Antenna	ETS	3115	00092346	11-Mar-13	11-Mar-14
SZ185-01	EMI Receiver	R&S	ESCI	100547	11-Mar-13	11-Mar-14
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	03-Mar-13	03-Mar-14
SZ062-02	RF Cable	RADIAL	RG 213U	--	11-Mar-13	11-Mar-14
SZ062-06	RF Cable	RADIAL	0.04-26.5GHz	--	11-Mar-13	11-Mar-14
SZ062-12	RF Cable	RADIAL	0.04-26.5GHz	--	11-Mar-13	11-Mar-14
SZ180-01	Signal Generator	R&S	SML03	103286	11-Mar-13	11-Mar-14