**Acoustmax International Co., Ltd**

Application
For
Certification
**FCC ID: 2AAINBL-1200BT**

**ROCKIN' ROLLER PRO SPEAKER**

**Model: Rockin'Roller PRO(RRPRO)**
Additional Model: RRPRO-1, Rockin' Roller PRO mini, Rockin' Roller PRO, RR-PRO

**Brand name: MONSTER**

Superheterodyne Receiver

Report No.: 160824025SZN-002

| Prepared and Checked by: | Approved by: |
|---|---|
| Sign on file | Digitally signed by Kidd Yang<br>Location: Intertek Testing Services |
| Vincent Chen<br>Engineer | Kidd Yang<br>Senior Project Engineer<br>Date: September 09, 2016 |



TRF No.: FCC 15C_PC_b

# LIST OF EXHIBITS

# MEASUREMENT / TECHNICAL REPORT

## Acoustmax International Co., Ltd
## MODEL: Rockin'Roller PRO(RRPRO)

## Brand name: MONSTER

## FCC ID: 2AAINBL-1200BT

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

Equipment Type: CXX-Communications Rcvr for use w/ licensed Tx and CBs

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 [10-01-15 Edition] provision.

Report prepared by:

Vincent Chen
Intertek Testing Services Shenzhen Ltd.
Kejiyuan Branch
6F, D Block, Huahan Building, Langshan Road
Nanshan District, Shenzhen, P. R. China
Phone: (86 755) 8614 0684
Fax: (86 755) 8601 6751

## Table of Contents

List of attached file

| Exhibit Type | File Description | Filename |
|---|---|---|
| Test Report | Test Report | report.pdf |
| Test Setup Photo | Radiated photos | radiated photos.pdf |
| Test Setup Photo | Conducted photos | conducted photos.pdf |
| External Photo | External Photos | external photos.pdf |
| Internal Photo | Internal Photos | internal photos.pdf |
| Block Diagram | Block Diagram | block.pdf |
| ID Label / Location | Label Artwork and Location | label.pdf |
| User Manual | User Manual | manual.pdf |
| Cover Letter | Confidential 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 ROCKIN' ROLLER PRO SPEAKER with receiving function operating at 192.6MHz. The EUT was powered by an internal DC 12V, 9.0AH Lead-acid Battery that can be recharged from AC 120V, 60Hz. For more detail information pls. refer to the user manual.

The Models: RRPRO-1, Rockin’ Roller PRO mini, Rockin’ Roller PRO, RR-PRO are the same as the Model: Rockin'Roller PRO(RRPRO) in hardware aspect, the electrical parts is the same. The difference in model number serves as marketing strategy.

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

### 1.2 Related Submittal(s) Grants

This is an application for certification of a receiver for the ROCKIN' ROLLER PRO SPEAKER. And related report for Bluetooth function which subjected to FCC Report No.: 160824025SZN-001, is filed at the same time. Other functions are subjected to FCC Report No.: 160824026SZN-001.

### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. 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 and shielding room used to collect the radiated data and conducted data are **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 (2014).

The device was powered by a fully internal DC 12V, 9.0AH Lead-acid Battery that can be recharged from AC 120V, 60Hz during the test.

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 rear of unit was flushed with the rear of the table up to 1GHz and above 1GHz.

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 (Highest working frequency is 192.6MHz). Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

### 2.2 EUT Exercising Software

N/A

### 2.3 Special Accessories

N/A.

### 2.4 Equipment Modification

Any modifications installed previous to testing by Acoustmax International Co., Ltd 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 the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

| Description | Manufacturer | Model No. |
|---|---|---|
| Wireless Microphone | Acoustmax International Co., Ltd | N/A |
| Wired Microphone | N/A | N/A |
| 4 x cement resistors | N/A | 5 ohm, 5W |
| 2 x USB Cables | N/A | Unshielded 80cm |
| Headphone | N/A | Unshielded 100cm |
| AUX In cable | Acoustmax International Co., Ltd | Unshielded 80cm |
| AC cable | N/A | Unshielded 150cm |
| iPad | Apple | A1367 |

# EXHIBIT 3

# EMISSION RESULTS

## 3.0 Emission Results

Data 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.

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

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/m
AG = Amplifier Gain 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

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dBμV is obtained. The antenna factor of 7.4dB/m and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. 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/m
CF = 1.6dB
AG = 29.0dB

FS = 62 + 7.4 + 1.6 – 29 = 42dBμV/m

Level in μV/m = Common Antilogarithm [(42dBμV/m)/20] = 125.9μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
At
60.623MHz (Receiving Mode)

For electronic filing, the worst case radiated emission configuration photograph is 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 5.4dB margin (Receiving Mode)

***TEST PERSONNEL:***

*Sign on file*

Vincent Chen Engineer
*Typed/Printed Name*

06 September 2016
*Date*

Company: Acoustmax International Co., Ltd
Date of Test: 06 September 2016
Worst Model: Rockin'Roller PRO(RRPRO)
Operating Mode: Receiving mode

**Table 1**

**Radiated Emissions**

| Polarization | Frequency (MHz) | Reading (dBµV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Horizontal | 61.525 | 25.6 | 20.0 | 17.5 | 23.1 | 40.0 | -16.9 |
| Horizontal | 180.835 | 23.8 | 20.0 | 21.7 | 25.5 | 43.5 | -18.0 |
| Horizontal | 520.335 | 29.2 | 20.0 | 22.4 | 31.6 | 46.0 | -14.4 |
| Vertical | 60.623 | 45.8 | 20.0 | 8.8 | 34.6 | 40.0 | -5.4 |
| Vertical | 101.023 | 32.7 | 20.0 | 17.5 | 30.2 | 43.5 | -13.3 |
| Vertical | 203.145 | 34.0 | 20.0 | 21.7 | 35.7 | 43.5 | -7.8 |

NOTES:

1. Quasi-Peak detector is used for frequency up to 1GHz and Peak/AV detector is used for frequency from 1-2GHz.

2. All measurements were made at 3 meters.

3. Negative value in the margin column shows emission below limit.

4. All emissions up to 1GHz are below the QP limit and all emissions between 1-2GHz are below the AV limit. No emissions significantly above equipment noise floor between 1-2GHz.

Test Engineer: Vincent Chen

3.4 Conducted Emission at Mains Terminal

3.5 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
0.154 MHz (Receiving Mode)

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

3.6 Conducted Emission Data

Judgement: Passed by 11.4 dB margin(Receiving Mode)

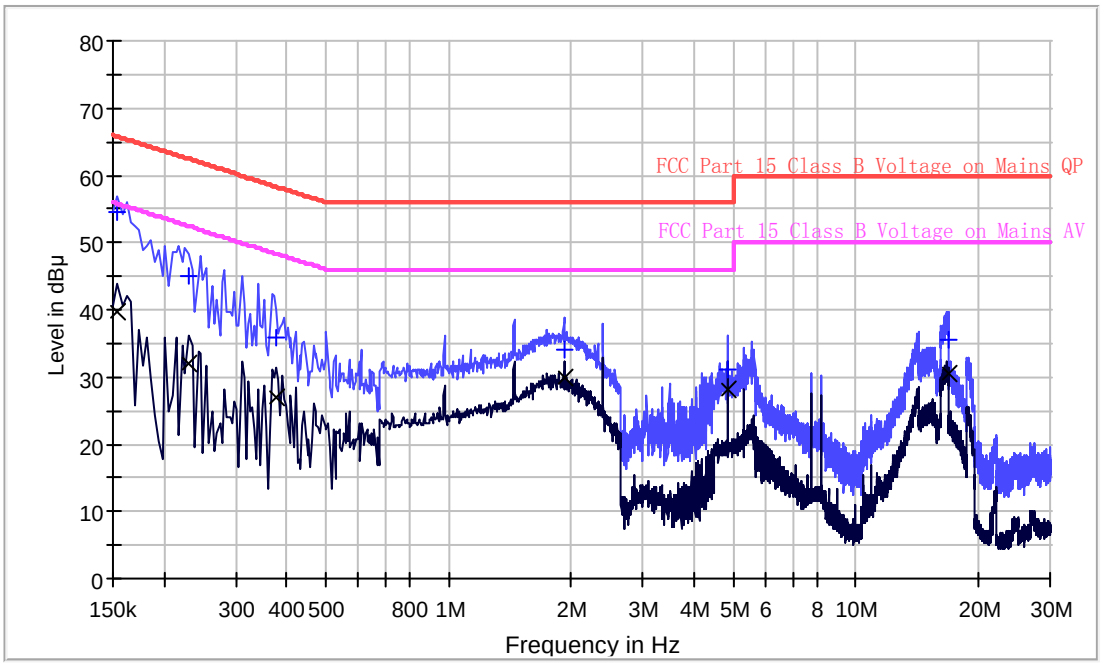
***TEST PERSONNEL:***

*Sign on file*

Vincent Chen Engineer
*Typed/Printed Name*

06 September 2016
*Date*

Company: Acoustmax International Co., Ltd
Date of Test: 06 September 2016
Worst Model: Rockin'Roller PRO(RRPRO)
Operating Mode: Receiving mode
Phase: Live
**Conducted Emission Test - FCC**




## Result Table QP

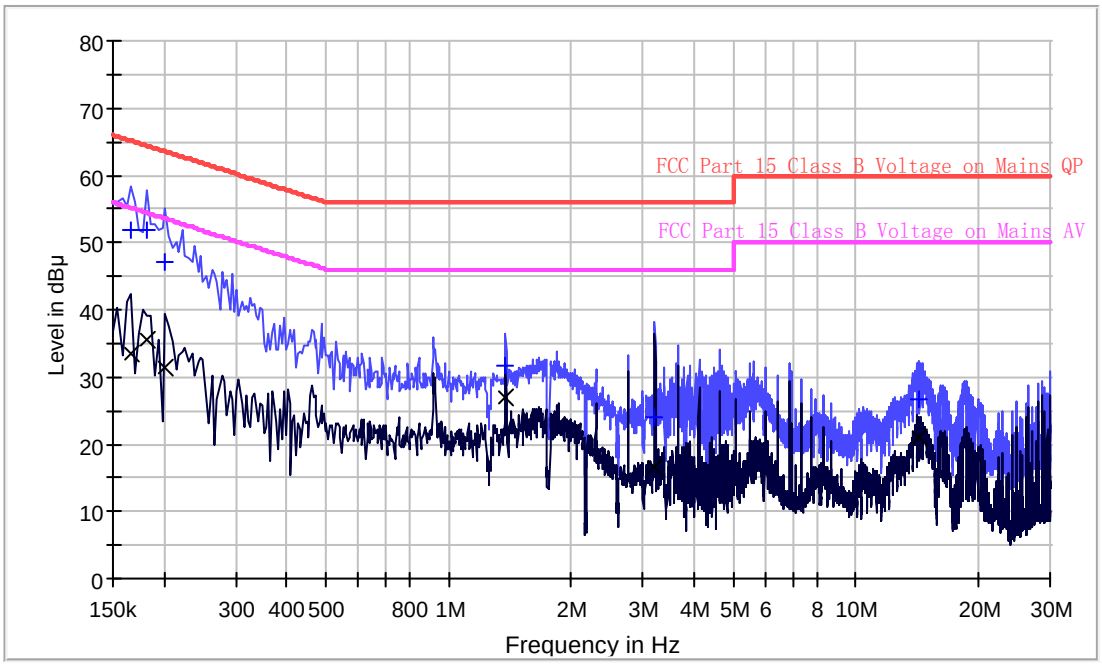
| Frequency (MHz) | QuasiPeak (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.154 | 54.4 | L | 9.5 | 11.4 | 65.8 |
| 0.230 | 45.0 | L | 9.5 | 17.4 | 62.4 |
| 0.378 | 36.0 | L | 9.6 | 22.3 | 58.3 |
| 1.922 | 34.1 | L | 9.6 | 21.9 | 56.0 |
| 4.858 | 31.0 | L | 9.7 | 25.0 | 56.0 |
| 16.818 | 35.5 | L | 10.0 | 24.5 | 60.0 |

## Result Table AV

| Frequency (MHz) | Average (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.154 | 39.7 | L | 9.5 | 16.1 | 55.8 |
| 0.230 | 31.9 | L | 9.5 | 20.5 | 52.4 |
| 0.378 | 26.9 | L | 9.6 | 21.4 | 48.3 |
| 1.922 | 29.8 | L | 9.6 | 16.2 | 46.0 |
| 4.858 | 28.2 | L | 9.7 | 17.8 | 46.0 |
| 16.818 | 30.6 | L | 10.0 | 19.4 | 50.0 |

Test Engineer: Vincent Chen

Company: Acoustmax International Co., Ltd
Date of Test: 06 September 2016
Worst Model: Rockin'Roller PRO(RRPRO)
Operating Mode: Receiving mode
Phase: Neutral
**Conducted Emission Test - FCC**




## Result Table QP

| Frequency (MHz) | QuasiPeak (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.166 | 51.8 | N | 9.6 | 13.4 | 65.2 |
| 0.182 | 51.7 | N | 9.6 | 12.7 | 64.4 |
| 0.202 | 47.1 | N | 9.6 | 16.4 | 63.5 |
| 1.382 | 31.8 | N | 9.6 | 24.2 | 56.0 |
| 3.214 | 24.0 | N | 9.6 | 32.0 | 56.0 |
| 14.290 | 26.7 | N | 9.9 | 33.3 | 60.0 |

## Result Table AV

| Frequency (MHz) | Average (dB µ V) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|
| 0.166 | 33.4 | N | 9.6 | 21.8 | 55.2 |
| 0.182 | 35.6 | N | 9.6 | 18.8 | 54.4 |
| 0.202 | 31.5 | N | 9.6 | 22.0 | 53.5 |
| 1.382 | 26.9 | N | 9.6 | 19.1 | 46.0 |
| 3.214 | 16.6 | N | 9.6 | 29.4 | 46.0 |
| 14.290 | 21.0 | N | 9.9 | 29.0 | 50.0 |

Test Engineer: Vincent Chen

# EXHIBIT 4

# EQUIPMENT PHOTOGRAPHS

## 4.0 Equipment Photographs

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

# 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 of the tested EUT is saved with filename: block.pdf.

# 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 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 – 2014.

The Superheterodyne receiver equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter, 12mm 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 adjust 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.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz and in PK & AV mode from frequency band 1GHz to 2GHz with RBW setting 1MHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 2GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz with RBW 9KHz.

8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2014.

# EXHIBIT 9

# TEST EQUIPMENT LIST

## 9.0 Test Equipment List

| Equipment No. | Equipment | Manufacturer | Model No. | Serial No. | Cal. Date | Due Date |
|---|---|---|---|---|---|---|
| SZ061-12 | Biconilog Antenna | ETS | 3142E | 00166158 | 15-Sep-2015 | 15-Sep-2016 |
| SZ061-09 | Horn Antenna | ETS | 3115 | 00092346 | 31-Oct-2015 | 31-Oct-2016 |
| SZ056-06 | Spectrum Analyzer | R&S | FSV40 | 101101 | 2-Jul-2016 | 2-Jul-2017 |
| SZ185-01 | EMI Receiver | R & S | ESCI | 100547 | 23-Jan-2016 | 23-Jan-2017 |
| SZ188-01 | Anechoic Chamber | ETS | RFD-F/A-100 | 4102 | 16-Apr-2016 | 16-Apr-2018 |
| SZ062-02 | RF Cable | RADIALL | RG 213U | -- | 8-Jul-2016 | 8-Jan-2017 |
| SZ062-05 | RF Cable | RADIALL | 0.04-26.5GHz | -- | 8-Jul-2016 | 8-Jan-2017 |
| SZ062-12 | RF Cable | RADIALL | 0.04-26.5GHz | -- | 8-Jul-2016 | 8-Jan-2017 |
| SZ185-02 | EMI Test Receiver | R&S | ESCI | 100692 | 03-Nov-2015 | 03-Nov-2016 |
| SZ187-01 | Two-Line V-Network | R&S | ENV216 | 100072 | 03-Nov-2015 | 03-Nov-2016 |
| SZ187-02 | Two-Line V-Network | R&S | ENV216 | 100073 | 1-Jul-2016 | 1-Jul-2017 |
| SZ188-03 | Shielding Room | ETS | RFD-100 | 4100 | 17-Aug-2016 | 17-Aug-2018 |