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Shenzhen Branch

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RF Exposure Evaluation Report

Application No.:	SZEM1612010465CR
Applicant:	ACOUSTMAX INTERNATIONAL CO., LTD.
Manufacturer:	ACOUSTMAX INTERNATIONAL CO., LTD.
Factory	Arts Electronics Co., Ltd.
Product Name:	ROCKIN' ROLLER 3 SPEAKER
Model No.(EUT):	ROCKIN ROLLER 3(RR3)
Add Model No.:	RR3-1, RR3 PRO, RR3 mini, RR3
Trade Mark:	Monster
FCC ID:	2AAINYS1349
Standards:	47 CFR Part 1.1307 (2015)
	47 CFR Part 1.1310 (2015)
Date of Receipt:	2016-12-06
Date of Test:	2016-12-12 to 2016-12-24
Date of Issue:	2016-12-28
Test Result :	**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2016-12-28		Original

Authorized for issue by:				
Tested By		Bill Chen **(Bill Chen) /Project Engineer**		2016-12-24 **Date**
Checked By		Eric Fu **(Eric Fu) /Reviewer**		2016-12-28 **Date**

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4 General Information

4.1 Client Information

Applicant:	ACOUSTMAX INTERNATIONAL CO., LTD.
Address of Applicant:	Unit D 16/F Cheuk Nang Plaza 250 Hennessy Road Wanchai HongKong
Manufacturer:	ACOUSTMAX INTERNATIONAL CO., LTD.
Address of Manufacturer:	Unit D 16/F Cheuk Nang Plaza 250 Hennessy Road Wanchai HongKong
Factory:	Arts Electronics Co., Ltd.
Address of Factory:	NO. 1, SHANGXING LU, SHANGJIAO COMMUNITY, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

4.2 General Description of EUT

Product Name:	ROCKIN' ROLLER 3 SPEAKER
Model No.:	ROCKIN ROLLER 3(RR3)
Trade Mark:	Monster
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2 Classic mode
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Fixed production
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply	Input: AC 120V 60Hz Internal rechargeable battery: DC 12V 9Ah
Test Voltage:	AC 120V 60Hz
Cable:	AUX in cable: 190cm unshielded AC cable: 200cm unshielded Microphone cable: 220cm unshielded

Remark:
Model No.: ROCKIN ROLLER 3(RR3), RR3-1, RR3 PRO, RR3 mini, RR3

Only the model ROCKIN ROLLER 3(RR3) was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models, only different on model No..

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• FCC – Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

• Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4* Pi * R 2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure Evaluation

Antenna Gain: 0dBi
Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.
Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit	Result
Highest	2480	-2.35	0.58	0.0001	1.0	PASS

Note: Refer to report No. SZEM161201046503 for EUT test Max Conducted Peak Output Power value.
The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.