

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

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

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RF Exposure Evaluation Report

- Application No.:	SZEM1702000696CR
Applicant:	New Audio LLC
Address of Applicant:	132 W. 31st 7th Floor New York, NY 10001
Manufacturer:	New Audio LLC
Address of Manufacturer:	132 W. 31st 7th Floor New York, NY 10001
Factory:	Eastech Elctronics (Hui Tang) Co., Ltd
Address of Factory:	Dong Feng District, XinXu, HuiYang Huizhou, Guangdong, P.R.China
EUT Name:	Wireless Speaker
Model No.:	MA770
Trade mark:	Master&Dynamic
FCC ID:	2AGA7MA770
Standards:	47 CFR Part 1.1307 (2016)
	47 CFR Part 1.1310 (2016)
Date of Receipt:	2017-02-07
Date of Test:	2017-02-27 to 2017-03-24
Date of Issue:	2017-04-04
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.

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2 Version

Revision Record						
Version	Chapter	Date	Modifier	Remark		
01		2017-04-04		Original		

Authorized for issue by:		
Tested By	Benson Wong	2017-03-24
	Benson Wang /Project Engineer	Date
Checked By	Eric Fu	2017-04-04
	Eric Fu /Reviewer	Date

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5745-5825

5745-5825

5755-5795

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4 General Description of EUT

Product Name:	Wireless Spe	eaker				
Model No.:	MA770					
For BLE:						
Operation Frequency:	2402MHz~24	180MHz				
Bluetooth Version:	V 4.0 Dual m	ode				
Modulation Type:	GFSK					
Number of Channel:	40	40				
Antenna Type:	Dipole	Dipole				
Antenna Gain:	4.64dBi					
For BT:						
Operation Frequency:	2402MHz~24	180MHz				
Bluetooth Version:	V 4.0 Dual m	ode				
Modulation Technique:	Frequency H	opping Spread Spectrum(FH	SS)			
Modulation Type:	GFSK, π/4D	QPSK, 8DPSK				
Number of Channel:	79					
Hopping Channel Type:	Adaptive Fre	quency Hopping systems				
Antenna Type:	Dipole					
Antenna Gain:	4.64dBi					
For 2.4G wifi:						
Operation Frequency:		b/g/n(HT20): 2412MHz to 240 n(HT40): 2422MHz to 2452M				
Channel Numbers:		b/g, IEEE 802.11n HT20: 11 n HT40: 7 Channels	Channels			
Channel Separation:	5MHz					
Type of Modulation:	IEEE for 802	.11b: DSSS(CCK,DQPSK,DE .11g : OFDM(64QAM, 16QAI .11n(HT20 and HT40) : OFD)	M, QPSK, BPSK)	И,		
Antenna Type:	Dipole					
Antenna Gain:	4.41dBi					
For 5G wifi:						
	Band	Mode	Frequency Range(MHz)	Number of channels		
	UNII Band	IEEE 802.11a	5180-5240	4		
		IEEE 802.11n/ac 20MHz	5180-5240	4		
Operation Frequency:				2		
		IEEE 802.11n/ac 40MHz	5190-5230			
		IEEE 802.11ac 80MHz	5210	1		

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IEEE 802.11n/ac 20MHz

IEEE 802.11n/ac 40MHz

UNII Band | IEEE 802.11a

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	IEEE 802.11ac 80MHz 5775 1
Type of Modulation:	IEEE 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
Antenna type:	Dipole
Antenna gain	6.67dBi

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4.1 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.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.2 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.

4.3 Deviation from Standards

None.

4.4 Abnormalities from Standard Conditions

None.

4.5 Other Information Requested by the Customer

None.

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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) Lim	(A) Limits for Occupational/Controlled Exposures								
0.3–3.0 3.0–30 30–30 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f2) 1.0 f/300 5	6 6 6 6 6					
(B) Limits	for General Populati	on/Uncontrolled Ex	posure						
0.3–1.34 1.34–30 30–300 300–1500 1500–100,000	614 824/f 27.5	1.63 2.19/f 0.073	*(100) *(180/f ²) 0.2 f/1500 1.0	30 30 30 30 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.

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4.1.3 EUT RF Exposure Evaluation

For BT

Antenna Gain: 4.64dBm

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.91 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
Lowest	2402MHz	3.85	2.43	0.001	1.0	PASS

Note: Refer to report No. SZEM170200069602 for EUT test Max Conducted Peak Output Power value. The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For BLE

Antenna Gain: 4.64dBm

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.91 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency	Max Conducted	Output Power	Power Density	Limit	Result
	(MHz)	Peak Output Power (dBm)	to Antenna (mW)	at R = 20 cm (mW/cm ²)		
Lowest	2402MHz	3.90	2.45	0.001	1.0	PASS

Note: Refer to report No. SZEM170200069603 for EUT test Max Conducted Peak Output Power value. The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

For 2.4G WIFI

Antenna Gain: 4.41dBm

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.76 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency	Max Conducted	Output Power	Power Density	Limit	Result
	(MHz)	Peak Output	to Antenna	at R = 20 cm		
		Power (dBm)	(mW)	(mW/cm ²)		
Lowest	2422MHz	24.02	252.35	0.139	1.0	PASS

Note: Refer to report No. SZEM170200069604 for EUT test Max Conducted Peak Output Power value.

The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

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For 5GHz

Antenna Gain:6.67 dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is4.65 in linear scale. Output Power Into Antenna & RF Exposure Evaluation Distance:

Band I

Frequency	Max Conducted	Output Power	Power Density	Limit	Result
(MHz)	Peak Output	to Antenna	at R = 20 cm		
	Power (dBm)	(mW)	(mW/cm ²)		
5210 MHz	16.88	48.75	0.045	1.0	PASS

BandIV

Frequency	Max Conducted	Output Power	Power Density	Limit	Result
(MHz)	Peak Output	to Antenna	at R = 20 cm		
	Power (dBm)	(mW)	(mW/cm ²)		
5745 MHz	17.04	50.58	0.047	1.0	PASS

Note: Refer to report No. SZEM170200069605 for EUT test Max Conducted Peak Output Power value. The distancer (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.