RF EXPOSURE REPORT



Report No.: 18070631-FCC-H

Applicant	Monoprice, Inc.			
Product Name	Bluetooth Speaker System			
Model No.	33394	33394		
	33393, Soundstage3			
Serial No.	(Note: All m	odels have same circuits diag	ram, PCB Layout,	
Seriai No.	constructio	n and rated power, only differe	ent was model name and	
	appearance	e color.)		
Test Standard	FCC 2.1091			
Test Date	June 23 to July 01, 2018			
Issue Date	July 02, 2018			
Test Result	est Result Pass Fail			
Equipment complied with the specification				
Equipment did not comply with the specification				
Agram Liang David		David Huang		
Aaron Liang		David Huang		
Test Engineer		Checked By		
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Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety



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1. Report Revision History

Report No.	Report Version	Description	Issue Date
18070631-FCC-H	NONE	Original	July 02, 2018

2. Customer information

Applicant Name	Monoprice, Inc.
Applicant Add	11701 6th St., Rancho Cucamonga, CA 91730, United State
Manufacturer	Monoprice, Inc.
Manufacturer Add	11701 6th St., Rancho Cucamonga, CA 91730, United State

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES	
	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park	
Lab Address	South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China	
	518108	
FCC Test Site No.	535293	
IC Test Site No.	4842E-1	
Test Software	Labview of SIEMIC version 2.0	



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4. Equipment under Test (EUT) Information

Description of EUT:	Bluetooth Speaker System
Main Model:	33394
Serial Model:	33393, Soundstage3 (Note: All models have same circuits diagram, PCB Layout, construction and rated power, only different was model name and appearance color.)
Equipment Category :	DSS
Antenna Gain:	Bluetooth/BLE: 0dBi
Antenna Type:	PCB antenna
Input Power:	N/A
Trade Name :	Monoprice, IIIP
FCC ID:	2ADDH-SOUNDSTAGE3
Type of Modulation:	Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK
RF Operating Frequency (ies):	Bluetooth& BLE: 2402-2480 MHz
Number of Channels:	Bluetooth: 79CH BLE: 40CH
Port:	Please refer to the user's manual

June 22, 2018

June 23 to July 01, 2018

Date EUT received:

Test Date(s):



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5. FCC §2.1091 - Maximum Permissible exposure (MPE)

6.1 Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure					
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)	
0.3-1.34	614	1.63	*(100)	30	
1.34-30	824/f	2.19/f	*(180/f²)	30	
30-300	27.5	0.073	0.2	30	
300-1500	/	/	f/1500	30	
1500-100,000	1	1	1.0	30	

f = frequency in MHz

^{* =} Plane-wave equivalent power density



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6.2 Test Result

Bluetooth:

Туре	Test mode	СН	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)
Output power	GFSK	Low	2402	2.898	3±1
		Mid	2441	3.379	3±1
		High	2480	3.110	3±1
	π /4 DQPSK	Low	2402	2.105	3±1
		Mid	2441	3.169	3±1
		High	2480	2.739	3±1
	8DPSK	Low	2402	2.308	3±1
		Mid	2441	3.459	3±1
		High	2480	3.996	3±1

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For the antenna manufacturer provide only used limited to ERP/EIRP or radiated spurious emission test. The MPE evaluation as below:

Maximum output power at antenna input terminal: 4(dBm)

Maximum output power at antenna input terminal: 2.512(mW)

Prediction distance: >20 (cm)

Predication frequency: 2480(MHz) High frequency

Antenna Gain (typical): 0(dBi)

The worst case is power density at predication frequency at 20 cm: 0.0005(mW/cm²)



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MPE limit for general population exposure at prediction frequency: <u>1.0(mW/cm²)</u>

 $0.0005(mW/cm^2) < 1 (mW/cm^2)$



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BLE:

Туре	Test mode	СН	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)
Output power	GFSK	Low	2402	0.96	1±1
		Mid	2440	1.99	1±1
		High	2480	1.34	1±1

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For the antenna manufacturer provide only used limited to ERP/EIRP or radiated spurious emission test. The MPE evaluation as below:

Maximum output power at antenna input terminal: 2(dBm)

Maximum output power at antenna input terminal: 1.585(mW)

Prediction distance: >20 (cm)

Predication frequency: 2440(MHz) Middle frequency

Antenna Gain (typical): 0(dBi)

The worst case is power density at predication frequency at 20 cm: 0.0003(mW/cm²)

MPE limit for general population exposure at prediction frequency: 1.0(mW/cm²)

 $0.0003(mW/cm^2) < 1 (mW/cm^2)$

Result: Pass