



Shenzhen Huaxia Testing Technology Co., Ltd

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640

Fax: +86-755-26648637

Website: www.cqa-cert.com

Report Template Version: V04

Report Template Revision Date: 2018-07-06

RF Exposure Evaluation Report

Report No. : CQASZ20210700038EX-02

Applicant: Dongguan Hiper Song Electronic Technology Co Ltd.

Address of Applicant: Room 1001, Building 4, No.25 Huailin Road, Humen Town, Dongguan City, Guangdong Province

Manufacturer: Dongguan Hiper Song Electronic Technology Co Ltd.

Address of Manufacturer: Room 1001, Building 4, No.25 Huailin Road, Humen Town, Dongguan City, Guangdong Province

Equipment Under Test (EUT):

Product: Mini Soundbar Speaker

All Model No.: Jun. 04, 2021 – Jun. 22, 2021

Test Model No.: Jun. 22, 2021

Brand Name: N/A

FCC ID: 2A2OG-HS-BT611

47 CFR Part 1.1307

Standards: 47 CFR Part 1.1310

KDB447498D01 General RF Exposure Guidance v06

Date of Test: Jun. 04, 2021 – Jun. 22, 2021

Date of Issue: Jun. 22, 2021

Test Result : PASS

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack ai
(Jack ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210700038EX-02	Rev.01	Initial report	Jun. 22, 2021

2 Contents

1	VERSION.....	2
2	CONTENTS.....	3
3	GENERAL INFORMATION.....	4
3.1	CLIENT INFORMATION.....	4
3.2	GENERAL DESCRIPTION OF EUT.....	4
4	RF EXPOSURE EVALUATION.....	5
4.1	RF EXPOSURE COMPLIANCE REQUIREMENT.....	5
4.1.1	<i>Standard Requirement</i>	5
4.1.2	<i>Limits</i>	6
4.1.3	<i>EUT RF Exposure</i>	6

3 General Information

3.1 Client Information

Applicant:	Dongguan Hiper Song Electronic Technology Co Ltd.
Address of Applicant:	Room 1001, Building 4, No.25 Huailin Road, Humen Town, Dongguan City, Guangdong Province
Manufacturer:	Dongguan Hiper Song Electronic Technology Co Ltd.
Address of Manufacturer:	Room 1001, Building 4, No.25 Huailin Road, Humen Town, Dongguan City, Guangdong Province

3.2 General Description of EUT

Product Name:	Mini Soundbar Speaker
All Model No.:	HS-BT611, 90093PI, HS-BT164B
Test Model No.:	HS-BT611
Trade Mark:	/
Hardware Version:	V1.0
Software Version:	V1.8
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Bluetooth Version:	BT-V5.0
Hopping Channel Type:	Adaptive Frequency Hopping systems
Antenna Type:	PCB antenna
Product Type:	☒ Mobile ☐ Portable ☐ Fix Location
Power Supply:	DC 3.7V from battery Charging : DC 5.0V 1A

Note:

All model: HS-BT611, 90093PI, HS-BT164B

Only the model HS-BT611 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being model name.

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is 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.

4.1.2 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

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:

Measurement Data

GFSK mode				
Test Channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-8.147	-8±1	-7	0.200
Middle(2441MHz)	-7.011	-7±1	-6	0.251
Highest(2480MHz)	-6.328	-7±1	-6	0.251
π/4DQPSK mode				
Lowest(2402MHz)	-7.38	-7±1	-6	0.251
Middle(2441MHz)	-6.218	-6±1	-5	0.316
Highest(2480MHz)	-5.446	-6±1	-5	0.316
8DPSK mode				
Lowest(2402MHz)	-6.674	-6±1	-5	0.316
Middle(2441MHz)	-5.499	-5±1	-4	0.398
Highest(2480MHz)	-4.698	-5±1	-4	0.398

Worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
0.398	0	0.000079	1	PASS

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210700038EX-01