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RF Exposure Evaluation Report

Report No. :	CQASZ20200500396E-02
Applicant:	Soul Electronics Limited
Address of Applicant:	Suite 2108, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong
Equipment Under Test (EUT):	
EUT Name:	Universal True Wireless Earphones
Model No.:	S-GEAR, SS56
Test Model No.:	S-GEAR
Brand Name:	Soul
FCC ID:	2AAWE-SS56
Standards:	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2020-05-15
Date of Test:	2020-05-15 to 2020-05-26
Date of Issue:	2020-05-26
Test Result :	**PASS***

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

Tested By: Tom Chen. ***(Tom Chen)***

Reviewed By: Sheek Luo ***(Sheek Luo)***

Approved By: ***(Jack Ai)***

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20200500396E-02	Rev.01	Initial report	2020-05-26

2 Contents

3 General Information

3.1 Client Information

Applicant:	Soul Electronics Limited
Address of Applicant:	Suite 2108, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong
Manufacturer:	Soul Electronics Limited
Address of Manufacturer:	Suite 2108, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong
Factory:	Soul Electronics Limited
Address of Factory:	Suite 2108, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong

3.2 General Description of EUT

Product Name:	Universal True Wireless Earphones	
Model No.:	S-GEAR, SS56	
Test Model No.:	S-GEAR	
Brand Name:	Soul	
Hardware Version:	V1.5	
Software Version:	V0.1.3	
Operation Frequency:	2402MHz~2480MHz	
Bluetooth Version:	V5.0	
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)	
Modulation Type:	GFSK, π/4DQPSK	
Transfer Rate:	1Mbps/2Mbps	
Number of Channel:	79	
Hopping Channel Type:	Adaptive Frequency Hopping systems	
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location	
Test Software of EUT:	FCC_assist_1.0.1.1 (manufacturer declare)	
Antenna Type:	Chip Antenna	
Antenna Gain:	2.75dBi	
Power Supply:	Left ear:	lithium battery: DC 3.7V 50mAh, Charge by DC 5.0V
	Right ear:	lithium battery: DC 3.7V 50mAh, Charge by DC 5.0V

Note:

1. Model: S-GEAR, SS56

Only the model S-GEAR was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

2. Each model comes in five colors (black, red, blue, brown and white), and only the black samples of model S-GEAR have been tested.

3. Since the RF parameters of the left and right earplugs are the same, only the right ear was tested in this report.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

4.1.3 EUT RF Exposure

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.570	-4.5±1	-3.5	0.447
Middle(2441MHz)	-4.900	-4.5±1	-3.5	0.447
Highest(2480MHz)	-5.030	-4.5±1	-3.5	0.447
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-3.840	-4.0±1	-3	0.501
Middle(2441MHz)	-4.100	-4.0±1	-3	0.501
Highest(2480MHz)	-4.240	-4.0±1	-3	0.501

Worst case: π/4DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-3.840	-4.0±1	-3	0.501	0.155	3.0
Middle (2441MHz)	-4.100	-4.0±1	-3	0.501	0.157	
Highest (2480MHz)	-4.240	-4.0±1	-3	0.501	0.158	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20200500396E-01