



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

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RF Exposure Evaluation Report

Report No.: CQASZ20210801400E-02
Applicant: Dongguan Hele Electronics Co.,Ltd
Address of Applicant: Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Equipment Under Test (EUT):
EUT Name: TWS Bluetooth headset
Model No.: BH21Q17A
Brand Name: N/A
FCC ID: RDR-BH21Q17AR
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-08-19
Date of Test: 2021-08-19 to 2021-08-30
Date of Issue: 2021-09-13
Test Result: PASS*

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

Tested By:

Lewis Zhou

(Lewis Zhou)

Reviewed By:

Rock Huang

(Rock Huang)

Approved By:

Jack ai

(Jack ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210801400E-02	Rev.01	Initial report	2021-09-13

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3 General Information

3.1 Client Information

Applicant:	Dongguan Hele Electronics Co.,Ltd
Address of Applicant:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Manufacturer:	Dongguan Hele Electronics Co.,Ltd
Address of Manufacturer:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China
Factory:	Dongguan Hele Electronics Co.,Ltd
Address of Factory:	Dalingya Industrial Zone, Daojiao Town, Dongguan City, Guangdong, China

3.2 General Description of EUT

Product Name:	TWS Bluetooth headset		
Model No.:	BH21Q17A		
Trade Mark:	N/A		
EUT Supports Radios application:	Bluetooth dual mode: 2402-2480MHz		
Hardware Version:	V5.1		
Software Version:	V5.1		
EUT Power Supply:	Left ear:	lithium battery: DC 3.7V, 0.16Wh, Charge by DC 3.7V	
	Right ear:	lithium battery: DC 3.7V, 0.16Wh, Charge by DC 3.7V	
	The earphone box:	lithium battery: DC 3.7V 380mAh, Charge by DC 5.0V	

3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz		
Bluetooth Version:	BT5.1		
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)		
Modulation Type:	GFSK, $\pi/4$ DQPSK		
Number of Channel:	79		
Transfer Rate:	1Mbps/2Mbps		
Hopping Channel Type:	Adaptive Frequency Hopping systems		
Sample Type:	☐ Mobile ☒ Portable ☐ Fix Location		
Test Software of EUT:	FCC Assist 1.0.2.2		
Antenna Type:	Internal antenna		
Antenna Gain:	1.81 dBi		

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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

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

1) For BT

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.010	-4.0±1	-3.0	0.501
Middle(2441MHz)	-2.320	-2.0±1	-1.0	0.794
Highest(2480MHz)	-0.500	-0.5±1	0.5	1.112
$\pi/4$ DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-3.190	-3.0±1	-2.0	0.631
Middle(2441MHz)	-1.530	-1.5±1	-0.5	0.989
Highest(2480MHz)	0.270	0.5±1	1.5	1.412

Worst case: $\pi/4$ DQPSK mode						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-3.190	-3.0±1	-2.0	0.631	0.196	3.0
Middle (2441MHz)	-1.530	-1.5±1	-0.5	0.989	0.309	
Highest (2480MHz)	0.270	0.5±1	1.5	1.412	0.445	
Conclusion: the calculated value ≤ 3.0 , SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210801400E-01