



## 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](http://www.cqa-cert.com)

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# RF Exposure Evaluation Report

**Report No.:** CQASZ20210801401E-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-BH21Q17AL  
**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 |
|----------------------|---------|----------------|------------|
| CQASZ20210801401E-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                              |                                                     |  |
| 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:          | <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> 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  $\leq 50$  mm are determined by:

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

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

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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<br>(dBm) | Tune up tolerance<br>(dBm) | Maximum tune-up Power |       |
|                    |                            |                            | (dBm)                 | (mW)  |
| Lowest(2402MHz)    | -4.090                     | -4.0±1                     | -3.0                  | 0.501 |
| Middle(2441MHz)    | -2.410                     | -2.0±1                     | -1                    | 0.794 |
| Highest(2480MHz)   | -0.590                     | -0.5±1                     | 0.5                   | 1.122 |
| $\pi/4$ DQPSK mode |                            |                            |                       |       |
| Test channel       | Peak Output Power<br>(dBm) | Tune up tolerance<br>(dBm) | Maximum tune-up Power |       |
|                    |                            |                            | (dBm)                 | (mW)  |
| Lowest(2402MHz)    | -3.310                     | -3.0±1                     | -2.0                  | 0.630 |
| Middle(2441MHz)    | -1.620                     | -1.5±1                     | -0.5                  | 0.891 |
| Highest(2480MHz)   | 0.200                      | 0±1                        | 1.0                   | 1.258 |

| Worst case: $\pi/4$ DQPSK mode                                 |                                                    |                               |                           |       |                     |                        |
|----------------------------------------------------------------|----------------------------------------------------|-------------------------------|---------------------------|-------|---------------------|------------------------|
| Channel                                                        | Maximum Peak<br>Conducted<br>Output Power<br>(dBm) | Tune up<br>tolerance<br>(dBm) | Maximum tune-<br>up Power |       | Calculated<br>value | Exclusion<br>threshold |
|                                                                |                                                    |                               | (dBm)                     | (mW)  |                     |                        |
| Lowest<br>(2402MHz)                                            | -3.310                                             | -3.0±1                        | -2.0                      | 0.630 | 0.196               | 3.0                    |
| Middle<br>(2441MHz)                                            | -1.620                                             | -1.5±1                        | -0.5                      | 0.891 | 0.278               |                        |
| Highest<br>(2480MHz)                                           | 0.200                                              | 0±1                           | 1.0                       | 1.258 | 0.397               |                        |
| Conclusion: the calculated value $\leq 3.0$ , SAR is exempted. |                                                    |                               |                           |       |                     |                        |

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210801401E-01