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# RF Exposure Evaluation Report

**Report No.:** CQASZ20201001195E-02  
**Applicant:** Chengdu Ebyte Electronic Technology Co., Ltd.  
**Address of Applicant:** Building B5, Mould Industrial Park, 199# Xiqu Ave, West High-tech Zone, Chengdu, 611731, Sichuan, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Bluetooth  
**Model No.:** E104-BT5032A  
**Brand Name:** EBYTE  
**FCC ID:** 2ALPH-E104BT5032A  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 2.1093  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2020-10-13  
**Date of Test:** 2020-10-13 to 2020-10-23  
**Date of Issue:** 2020-10-23  
**Test Result:** **PASS\***

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

Tested By:

*Martin Lee*

( Martin Lee )

Reviewed By:

*Sheek Luo*

( Sheek Luo )

Approved By:

*Jack Ai*

( Jack Ai )



## 1 Version

### Revision History Of Report

| Report No.           | Version | Description    | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20201001195E-02 | Rev.01  | Initial report | 2020-10-23 |

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### 3 General Information

#### 3.1 Client Information

|                          |   |
|--------------------------|---|
| Applicant:               | Chengdu Ebyte Electronic Technology Co., Ltd.   |
| Address of Applicant:    | Building B5, Mould Industrial Park, 199# Xiqu Ave, West High-tech Zone, Chengdu, 611731, Sichuan, China |
| Manufacturer:            | Chengdu Ebyte Electronic Technology Co., Ltd.   |
| Address of Manufacturer: | Building B5, Mould Industrial Park, 199# Xiqu Ave, West High-tech Zone, Chengdu, 611731, Sichuan, China |

#### 3.2 General Description of EUT

|                       |  |
|-----------------------|--|
| Product Name:         | Bluetooth  |
| Model No.:            | E104-BT5032A   |
| Trade Mark:           | EBYTE  |
| Hardware Version:     | v1.0   |
| Software Version:     | v1.0   |
| Operation Frequency:  | 2402MHz~2480MHz  |
| Bluetooth Version:    | V5.0   |
| Modulation Type:      | GFSK   |
| Transfer Rate:        | 1Mbps, 2Mbps   |
| Number of Channel:    | 40   |
| Sample Type:          | <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Test Software of EUT: | Direct Test Mode Tool (manufacturer declare)   |
| Antenna Type:         | Ceramic antenna  |
| Antenna Gain:         | 1.0dBi   |
| EUT Power Supply:     | DC 3.3V  |

## 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:

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

##### Measurement Data

| GFSK mode(1Mbps) |                            |                            |                       |       |
|------------------|----------------------------|----------------------------|-----------------------|-------|
| Test channel     | Peak Output Power<br>(dBm) | Tune up tolerance<br>(dBm) | Maximum tune-up Power |       |
|                  |                            |                            | (dBm)                 | (mW)  |
| Lowest(2402MHz)  | -5.93                      | -6.5±1                     | -5.5                  | 0.282 |
| Middle(2440MHz)  | -4.79                      | -5.5±1                     | -4.5                  | 0.355 |
| Highest(2480MHz) | -4.82                      | -5.5±1                     | -4.5                  | 0.355 |
| GFSK mode(2Mbps) |                            |                            |                       |       |
| Test channel     | Peak Output Power<br>(dBm) | Tune up tolerance<br>(dBm) | Maximum tune-up Power |       |
|                  |                            |                            | (dBm)                 | (mW)  |
| Lowest(2402MHz)  | -5.91                      | -6.5±1                     | -5.5                  | 0.282 |
| Middle(2440MHz)  | -4.76                      | -5.5±1                     | -4.5                  | 0.355 |
| Highest(2480MHz) | -4.83                      | -5.5±1                     | -4.5                  | 0.355 |

| Worst case: GFSK mode(2Mbps)                            |  |                               |                           |       |                     |                        |
|---|--|-------------------------------|---------------------------|-------|---------------------|------------------------|
| 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)                                     | -5.91  | -6.5±1                        | -5.5                      | 0.282 | 0.087               | 3.0                    |
| Middle<br>(2440MHz)                                     | -4.76  | -5.5±1                        | -4.5                      | 0.355 | 0.111               |                        |
| Highest<br>(2480MHz)                                    | -4.83  | -5.5±1                        | -4.5                      | 0.355 | 0.112               |                        |
| Conclusion: the calculated value ≤3.0, SAR is exempted. |  |                               |                           |       |                     |                        |

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20201001195E-01