

# RF Exposure Evaluation

## FCC ID: 2A54D-MK321

### 1. Client Information

|              |   |  |
|--------------|---|--|
| Applicant    | : | SHENZHEN RDING TECH CO., LIMITED   |
| Address      | : | 4/F, Building C (South), Zhongliantongtai industrial area, No.271 Liangbai road, Liangtian, Pinghu town, Longgang district Shenzhen, Guangdong province, China |
| Manufacturer | : | SHENZHEN RDING TECH CO., LIMITED   |
| Address      | : | 4/F, Building C (South), Zhongliantongtai industrial area, No.271 Liangbai road, Liangtian, Pinghu town, Longgang district Shenzhen, Guangdong province, China |

### 2. General Description of EUT

|   |                  |  |  |
|---|------------------|--|--|
| EUT Name  | :                | Mini Keyboard  |  |
| Model(s) No.  | :                | MK321-Pro, MK321BT, MK321G   |  |
| Model Difference  | :                | All PCB boards and circuit diagrams are the same, the only difference is that names. |  |
| Product Description   | RF Output Power: | BLE: 3.423dBm<br>2.4G: 1.697dBm  |  |
|   | Antenna Gain:    | 1.2dBi PCB Antenna   |  |
| Power Supply  | :                | Input: DC 5V<br>DC 3.7V by 140mAh Rechargeable Li-ion battery                        |  |
| Software Version  | :                | MK321-Pro_V1.2   |  |
| Hardware Version  | :                | MK321-Pro_P1   |  |
| <b>Remark:</b> The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab. |                  |  |  |

**Note:** More test information about the EUT please refer the RF Test Report.

TD-RF-074-1.0

## The RF Exposure Evaluation for FCC:

### SAR Test Exclusion Calculations

FCC: According to 447498 D04 Interim General RF Exposure Guidance v01.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold  $P_{th}$  (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and  $f$  is in GHz,  $d$  is the separation distance (cm), and  $ERP_{20\text{cm}}$  is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

| Frequency (MHz) | Distance (mm) |    |    |     |     |     |     |     |     |     |
|-----------------|---------------|----|----|-----|-----|-----|-----|-----|-----|-----|
|                 | 5             | 10 | 15 | 20  | 25  | 30  | 35  | 40  | 45  | 50  |
| 300             | 39            | 65 | 88 | 110 | 129 | 148 | 166 | 184 | 201 | 217 |
| 450             | 22            | 44 | 67 | 89  | 112 | 135 | 158 | 180 | 203 | 226 |
| 835             | 9             | 25 | 44 | 66  | 90  | 116 | 145 | 175 | 207 | 240 |
| 1900            | 3             | 12 | 26 | 44  | 66  | 92  | 122 | 157 | 195 | 236 |
| 2450            | 3             | 10 | 22 | 38  | 59  | 83  | 111 | 143 | 179 | 219 |
| 3600            | 2             | 8  | 18 | 32  | 49  | 71  | 96  | 125 | 158 | 195 |
| 5800            | 1             | 6  | 14 | 25  | 40  | 58  | 80  | 106 | 136 | 169 |

**Calculation:**

| Test separation: 5mm |                       |                              |                                      |                                     |                            |
|----------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|----------------------------|
| BLE(1Mbps)           |                       |                              |                                      |                                     |                            |
| Frequency (GHz)      | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dBm) | Max power of tune up tolerance (mW) | Limit P <sub>th</sub> (mW) |
| 2.402                | 2.176                 | 2±1                          | 3                                    | 1.995                               | 3                          |
| 2.440                | 2.955                 | 3±1                          | 4                                    | 2.512                               | 3                          |
| 2.480                | 3.334                 | 3±1                          | 4                                    | 2.512                               | 3                          |
| BLE(2Mbps)           |                       |                              |                                      |                                     |                            |
| Frequency (GHz)      | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dBm) | Max power of tune up tolerance (mw) | Limit P <sub>th</sub> (mW) |
| 2.402                | 2.347                 | 2±1                          | 3                                    | 1.995                               | 3                          |
| 2.440                | 3.023                 | 3±1                          | 4                                    | 2.512                               | 3                          |
| 2.480                | 3.423                 | 3±1                          | 4                                    | 2.512                               | 3                          |

| 2.4G            |                       |                              |                                      |                                     |                            |
|-----------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|----------------------------|
| Frequency (GHz) | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dBm) | Max power of tune up tolerance (mw) | Limit P <sub>th</sub> (mW) |
| 2.405           | 1.697                 | 2±1                          | 3                                    | 1.995                               | 3                          |
| 2.440           | 0.939                 | 1±1                          | 2                                    | 1.585                               | 3                          |
| 2.476           | 0.232                 | 0±1                          | 1                                    | 1.259                               | 3                          |

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 D04, No SAR is required.

**Conclusion:**

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06, No SAR is required.

-----END OF REPORT-----