

# RF Exposure Evaluation

## FCC ID: 2ABES-KR7013

### 1. Client Information

|                     |   |                                                                                                                                                  |
|---------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>    | : | Pathway Innovations and Technologies, Inc                                                                                                        |
| <b>Address</b>      | : | 9985 Pacific Heights Blvd., Suite 100, San Diego, CA 92121, USA                                                                                  |
| <b>Manufacturer</b> | : | ShenZhen Kerun Visual Technology Co., LTD                                                                                                        |
| <b>Address</b>      | : | AUnit A, F/11, Bldg.1, Senyang Electronic Technology Park, Tianliao Community, Guangming High Tech Zone, Guangming New District, Shenzhen, China |

### 2. General Description of EUT

|                               |                      |                                                                                                                                           |
|-------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT Name</b>               | :                    | G-BOOK                                                                                                                                    |
| <b>Models No.</b>             | :                    | KR7013, KR0512, G-BOOK, G1300                                                                                                             |
| <b>Model Difference</b>       | :                    | All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance color.                   |
| <b>Product Description</b>    | Operation Frequency: | 802.11b/g/n(HT20): 2412MHz~2462MHz<br>Bluetooth 4.2(BT): 2402MHz~2480MHz                                                                  |
|                               | RF Output Power:     | 802.11b: 9.36dBm<br>802.11g: 9.83dBm<br>802.11n (HT20): 8.83dBm<br>GFSK: 0.78dBm<br>π/4-DQPSK: 0.316dBm<br>8-DPSK: 0.427dBm<br>BLE:-0.714 |
|                               | Antenna Gain:        | 4.5dBi FPC Antenna                                                                                                                        |
| <b>Power Supply</b>           | :                    | DC Voltage Supply from USB Port.<br>DC Voltage supplied by Li-ion battery.                                                                |
| <b>Power Rating</b>           | :                    | DC 5.0V by USB cable<br>DC 3.7V by 7000mAh Li-ion battery                                                                                 |
| <b>Software Version</b>       | :                    | Q410801620180409                                                                                                                          |
| <b>Hardware Version</b>       | :                    | V2.0                                                                                                                                      |
| <b>Connecting I/O Port(S)</b> | :                    | Please refer to the User's Manual                                                                                                         |

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

## SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

- (1) Clause 4.3: General SAR test reduction and exclusion guidance

- Sub clause 4.31: Standalone SAR test exclusion considerations

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance  $\leq 5$  mm are determined by:

- $$\frac{[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 3.0 \text{ for 1-g SAR}$$

- $$\frac{[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 7.5.0 \text{ for 10-g SAR}$$

## 2. Calculation:

| Test separation: 5mm     |                       |                              |                                      |                                     |                   |                 |
|--------------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| WiFi Mode(802.11b)       |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)          | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.412                    | 8.87                  | 8±1                          | 9                                    | 7.943                               | 2.467             | 3.0             |
| 2.437                    | 8.96                  | 8±1                          | 9                                    | 7.943                               | 2.480             | 3.0             |
| 2.462                    | 8.41                  | 8±1                          | 9                                    | 7.943                               | 2.493             | 3.0             |
| WiFi Mode(802.11g)       |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)          | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.412                    | 8.49                  | 8±1                          | 9                                    | 7.943                               | 2.467             | 3.0             |
| 2.437                    | 8.83                  | 8±1                          | 9                                    | 7.943                               | 2.480             | 3.0             |
| 2.462                    | 8.29                  | 8±1                          | 9                                    | 7.943                               | 2.493             | 3.0             |
| WiFi Mode(802.11n(HT20)) |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)          | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.412                    | 8.36                  | 8±1                          | 9                                    | 7.943                               | 2.467             | 3.0             |
| 2.437                    | 8.83                  | 8±1                          | 9                                    | 7.943                               | 2.480             | 3.0             |
| 2.462                    | 8.37                  | 8±1                          | 9                                    | 7.943                               | 2.493             | 3.0             |

| Test separation: 5mm       |                       |                              |                                      |                                     |                   |                 |
|----------------------------|-----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| Bluetooth Mode (GFSK)      |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)            | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                      | 0.78                  | 0±1                          | 1                                    | 1.259                               | 0.390             | 3.0             |
| 2.441                      | 0.50                  | 0±1                          | 1                                    | 1.259                               | 0.393             | 3.0             |
| 2.480                      | 0.37                  | 0±1                          | 1                                    | 1.259                               | 0.397             | 3.0             |
| Bluetooth Mode (π/4-DQPSK) |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)            | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                      | 0.316                 | 0±0.5                        | 0.5                                  | 1.122                               | 0.348             | 3.0             |
| 2.441                      | 0.143                 | 0±0.5                        | 0.5                                  | 1.122                               | 0.351             | 3.0             |
| 2.480                      | -0.451                | 0±0.5                        | 0.5                                  | 1.122                               | 0.353             | 3.0             |
| Bluetooth Mode (8-DPSK)    |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)            | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                      | 0.427                 | 0±0.5                        | 0.5                                  | 1.122                               | 0.348             | 3.0             |
| 2.441                      | 0.327                 | 0±0.5                        | 0.5                                  | 1.122                               | 0.351             | 3.0             |
| 2.480                      | -0.436                | 0±0.5                        | 0.5                                  | 1.122                               | 0.353             | 3.0             |
| BLE Mode (GFSK)            |                       |                              |                                      |                                     |                   |                 |
| Frequency (GHz)            | Conducted Power (dBm) | Turn-up Power Tolerance (dB) | Max power of tune up tolerance (dbm) | Max power of tune up tolerance (mw) | Calculation Value | Threshold Value |
| 2.402                      | -0.714                | -1±0.5                       | -0.5                                 | 0.891                               | 0.276             | 3.0             |
| 2.442                      | -1.061                | -1±0.5                       | -0.5                                 | 0.891                               | 0.279             | 3.0             |
| 2.480                      | -1.492                | -1±0.5                       | -0.5                                 | 0.891                               | 0.281             | 3.0             |

| Test separation: 5mm             |                |                         |                 |
|----------------------------------|----------------|-------------------------|-----------------|
| The worst RF Exposure Evaluation |                |                         |                 |
| Worst Calculation Value          |                | Total Calculation Value | Threshold Value |
| WiFi Mode                        | Bluetooth Mode |                         |                 |
| 2.493                            | 0.397          | 2.89                    | 3.0             |

Because the WiFi and Bluetooth can be operated simultaneously, So the worst RF Exposure Evaluation is calculated as  $2.493+0.397=2.89 / cm^2 < limit 3.0$ , So standalone SAR measurements are not required.

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