

# TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: 2AJKSKG-FLIP-B01

Equipment Under Test : Interactive Flip Book  
Model Name : KG-FLIP-B01  
Applicant : Kum Oh Electronics Co., Ltd.  
Manufacturer : Kum Oh Electronics Co., Ltd.  
Date of Receipt : 2017.08.02  
Date of Test(s) : 2017.08.03 ~ 2017.08.10  
Date of Issue : 2017.08.21

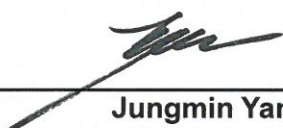
In the configuration tested, the EUT complied with the standards specified above.

Tested By:

  
Jinhyoung Cho

Date: 2017.08.21

Technical  
Manager:

  
Jungmin Yang

Date: 2017.08.21

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-19(2017.07.10)(0)

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A4(210 mm x 297 mm)

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Phone No. : +82 31 688 0901

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### 1.2. Details of Applicant

Applicant : Kum Oh Electronics Co., Ltd.

Address : 35, Gilju-ro 444beon-gil, Bucheon-si, Gyeonggi-do, 14556, Korea

Contact Person : Park, Chan-Hong

Phone No. : +82 10 4407 6607

### 1.3. Details of manufacturer

Company : Kum Oh Electronics Co., Ltd.

Address : 35, Gilju-ro 444beon-gil, Bucheon-si, Gyeonggi-do, 14556, Korea

### 1.4. Description of EUT

|                      |                                              |
|----------------------|----------------------------------------------|
| Kind of Product      | Interactive Flip Book                        |
| Model Name           | KG-FLIP-B01                                  |
| Power Supply         | DC 12.0 V                                    |
| Frequency Range      | 2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy) |
| Modulation Technique | GFSK                                         |
| Number of Channels   | 40 channels (Bluetooth Low Energy)           |
| Antenna Type         | PCB Antenna                                  |
| Antenna Gain         | 3.1 dBi                                      |
| H/W Version          | 1.1                                          |
| S/W Version          | 0.1                                          |

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### 1.5. Test report revision

| Revision | Report number        | Date of Issue | Description |
|----------|----------------------|---------------|-------------|
| 0        | F690501/RF-RTL011750 | 2017.08.21    | Initial     |

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## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency Range (MHz)                                   | Electric Field Strength(V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Average Time     |
|---------------------------------------------------------|------------------------------|-------------------------------|-------------------------------------|------------------|
| (A) Limits for Occupational/Controlled Exposure         |                              |                               |                                     |                  |
| 0.3 – 3.0                                               | 614                          | 1.63                          | *100                                | 6                |
| 3.0 – 30                                                | 1842/f                       | 4.89/f                        | *900/f <sup>2</sup>                 | 6                |
| 30 – 300                                                | 61.4                         | 0.163                         | 1.0                                 | 6                |
| 300 – 1 500                                             | -                            | -                             | f/300                               | 6                |
| 1 500 – 100 000                                         | -                            | -                             | 5                                   | 6                |
| (B) Limits for General Population/Uncontrolled Exposure |                              |                               |                                     |                  |
| 0.3 – 1.34                                              | 614                          | 1.63                          | *100                                | 30               |
| 1.34 – 30                                               | 824/f                        | 2.19/f                        | *180/f <sup>2</sup>                 | 30               |
| 30 – 300                                                | 27.5                         | 0.073                         | 0.2                                 | 30               |
| 300 – 1 500                                             | -                            | -                             | f/1500                              | 30               |
| <b><u>1 500 – 100 000</u></b>                           | -                            | -                             | <b><u>1.0</u></b>                   | <b><u>30</u></b> |

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where  $P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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### 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
Test Mode : Normal Operation

### 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth Low Energy  
- Maximum tune up tolerance

| Operating Frequency (MHz) | Output Average Power to Antenna (dB m) | Antenna Gain (dB i) | Power Density at 20 cm (mW/cm <sup>2</sup> ) | Limits (mW/cm <sup>2</sup> ) |
|---------------------------|----------------------------------------|---------------------|----------------------------------------------|------------------------------|
| 2 402 ~ 2 480             | 2.5                                    | 3.1                 | 0.000 722                                    | 1                            |

Note :

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be colocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

**- End of the Test Report -**

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