

## RF EXPOSURE EVALUATION

### EUT Specification

|                            |                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                 | COB strip light                                                                                                                    |
| <b>Model Number</b>        | PAK544600                                                                                                                          |
| <b>FCC ID</b>              | 2BLSZ-03                                                                                                                           |
| <b>Antenna Gain</b>        | 2.2dBi                                                                                                                             |
| <b>Operation Frequency</b> | BLE: 2402 MHz to 2480 MHz<br>WIFI: 2412 MHz to 2462 MHz                                                                            |
| <b>Modulation</b>          | BLE: GFSK<br>802.11b: DSSS(DBPSK/DQPSK/CCK)<br>802.11g/n: OFDM(BPSK/QPSK/16QAM/64QAM)                                              |
| <b>Power Supply</b>        | AC120V/60Hz                                                                                                                        |
| <b>Max. output power</b>   | BLE: 2.45dBm<br>IEEE 802.11b: 15.39 dBm<br>IEEE 802.11g: 14.69 dBm<br>IEEE 802.11n-HT20: 14.36 dBm<br>IEEE 802.11n-HT40: 13.53 dBm |

### Test Requirement:

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF)

Radiation as specified in §1.1307(b)

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 |
|--------------------------------------------------------------|------------------------------|------------------------------|------------------------------------|--------------|
| <b>(A) Limits for Occupational/Control Exposures</b>         |                              |                              |                                    |              |
| 300-1500                                                     | --                           | --                           | F/300                              | 6            |
| 1500-100000                                                  | --                           | --                           | 5                                  | 6            |
| <b>(B) Limits for General Population/Uncontrol Exposures</b> |                              |                              |                                    |              |
| 300-1500                                                     | --                           | --                           | F/1500                             | 6            |
| 1500-100000                                                  | --                           | --                           | 1                                  | 30           |

**Friis transmission formula:  $P_d = \frac{P_{out} \cdot G}{4 \cdot \pi \cdot R^2}$**

Where

$P_d$  = Power density in  $\text{mW}/\text{cm}^2$

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

$G$  = Numeric gain of the antenna relative to isotropic antenna

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in cm = 20cm

$P_d$  the limit of MPE,  $1\text{mW}/\text{cm}^2$ . If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

### **Measurement Result**

Antenna gain: 2.2dBi

BLE:

| Mode | Channel Freq. (MHz) | Measured power (dBm) | Tune-up power (dBm) | Max tune-up power (dBm) | Antenna Gain (Numeric) | Evaluation result (mW/cm <sup>2</sup> ) | Power density Limits (mW/cm <sup>2</sup> ) |
|------|---------------------|----------------------|---------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------|
| GFSK | 2402                | 2.2                  | 2±1                 | 3                       | 1.6                    | 0.000635                                | 1                                          |
| GFSK | 2440                | 2.45                 | 2±1                 | 3                       | 1.6                    | 0.000635                                | 1                                          |
| GFSK | 2480                | 1.82                 | 2±1                 | 3                       | 1.6                    | 0.000635                                | 1                                          |

WIFI:

| Mode         | Channel Freq. (MHz) | Measured power (dBm) | Tune-up power (dBm) | Max tune-up power (dBm) | Antenna Gain (Numeric) | Evaluation result (mW/cm <sup>2</sup> ) | Power density Limits (mW/cm <sup>2</sup> ) |
|--------------|---------------------|----------------------|---------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------|
| 802.11b      | 2412                | 15.39                | 15±1                | 16                      | 1.66                   | 0.012672                                | 1                                          |
|              | 2437                | 15.07                | 15±1                | 16                      | 1.66                   | 0.012672                                | 1                                          |
|              | 2462                | 15.27                | 15±1                | 16                      | 1.66                   | 0.012672                                | 1                                          |
| 802.11g      | 2412                | 14.34                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |
|              | 2437                | 14.54                | 15±1                | 16                      | 1.66                   | 0.012672                                | 1                                          |
|              | 2462                | 14.69                | 15±1                | 16                      | 1.66                   | 0.012672                                | 1                                          |
| 802.11n HT20 | 2412                | 14.26                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |
|              | 2437                | 14.26                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |
|              | 2462                | 14.36                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |
| 802.11n HT40 | 2422                | 13.53                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |
|              | 2437                | 13.3                 | 13±1                | 14                      | 1.66                   | 0.007996                                | 1                                          |
|              | 2452                | 13.07                | 14±1                | 15                      | 1.66                   | 0.010066                                | 1                                          |

Signature:

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