

## RF EXPOSURE EVALUATION

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)

FCC ID: 2AQA6-H6089

### EUT Specification

| EUT                               | LED Bulb  |
|-----------------------------------|---|
| <b>Frequency band (Operating)</b> | <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz<br><input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz<br><input type="checkbox"/> Others: 2402-2480MHz |
| <b>Device category</b>            | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)<br><input type="checkbox"/> Others _____  |
| <b>Exposure classification</b>    | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> )<br><input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )   |
| <b>Antenna diversity</b>          | <input checked="" type="checkbox"/> Single antenna<br><input type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity              |
| <b>Max. output power</b>          | 16.10 dBm (0.0407W)   |
| <b>Antenna gain (Max)</b>         | 1.5 dBi   |
| <b>Evaluation applied</b>         | <input checked="" type="checkbox"/> MPE Evaluation<br><input type="checkbox"/> SAR Evaluation   |

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

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

Where

$P_d$  = Power density in  $mW/cm^2$

$P_{out}$  = 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,  $1mW/cm^2$ . 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

| Operating Mode | Channel Frequency (MHz) | Measured Power (dBm) | Tune up tolerance (dBm) | Max. Tune up Power (dBm) | Antenna Gain (dBi) | Power density at 20cm ( $mW/cm^2$ ) | Power density Limits ( $mW/cm^2$ ) |
|----------------|-------------------------|----------------------|-------------------------|--------------------------|--------------------|-------------------------------------|------------------------------------|
| 802.11b        | 2412                    | 14.69                | 14.69±1                 | 15.69                    | 1.5                | 0.0104                              | 1                                  |
|                | 2437                    | 14.68                | 14.68±1                 | 15.68                    | 1.5                | 0.0104                              | 1                                  |
|                | 2462                    | 14.36                | 14.36±1                 | 15.36                    | 1.5                | 0.0097                              | 1                                  |
| 802.11g        | 2412                    | 13.82                | 13.82±1                 | 14.82                    | 1.5                | 0.0085                              | 1                                  |
|                | 2437                    | 15.65                | 15.65±1                 | 16.65                    | 1.5                | 0.0130                              | 1                                  |
|                | 2462                    | 16.10                | 16.10±1                 | 17.10                    | 1.5                | 0.0144                              | 1                                  |
| 802.11n (HT20) | 2412                    | 13.88                | 13.88±1                 | 14.88                    | 1.5                | 0.0086                              | 1                                  |
|                | 2437                    | 15.73                | 15.73±1                 | 16.73                    | 1.5                | 0.0132                              | 1                                  |
|                | 2462                    | 15.51                | 15.51±1                 | 16.51                    | 1.5                | 0.0126                              | 1                                  |