

## 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: [2ASAQD10C](#)

### EUT Specification

|                                   |                                                                                                                                                                                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                        | <b>Wire-Free Video Doorbell 2K</b>                                                                                                                                                                                                               |
| <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: BLE: 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>          | <a href="#">16.70 dBm (0.0468W)</a>                                                                                                                                                                                                              |
| <b>Antenna gain (Max)</b>         | <a href="#">2.5 dBi</a>                                                                                                                                                                                                                          |
| <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>         |                              |                              |                                    |              |
| <b>300-1500</b>                                              | --                           | --                           | <b>F/300</b>                       | <b>6</b>     |
| <b>1500-100000</b>                                           | --                           | --                           | <b>5</b>                           | <b>6</b>     |
| <b>(B) Limits for General Population/Uncontrol Exposures</b> |                              |                              |                                    |              |
| <b>300-1500</b>                                              | --                           | --                           | <b>F/1500</b>                      | <b>6</b>     |
| <b>1500-100000</b>                                           | --                           | --                           | <b>1</b>                           | <b>30</b>    |

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

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, 1mW/cm<sup>2</sup>. 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) | Maximum output power (dBm) | Tune up tolerance (dBm) | Max. Tune up Power (dBm) | Antenna Gain (dBi) | Power density at 20cm (mW/ cm2 ) | Power density Limits (mW/cm2 ) |
|----------------|-------------------------|----------------------------|-------------------------|--------------------------|--------------------|----------------------------------|--------------------------------|
| 802.11b        | 2412                    | 13.85                      | 13.85 ± 1               | 14.85                    | 2.5                | 0.0108                           | 1                              |
|                | 2437                    | 13.95                      | 13.95 ± 1               | 14.95                    | 2.5                | 0.0111                           | 1                              |
|                | 2462                    | 14.44                      | 14.44 ± 1               | 15.44                    | 2.5                | 0.0124                           | 1                              |
| 802.11g        | 2412                    | 16.70                      | 16.70 ± 1               | 17.70                    | 2.5                | 0.0208                           | 1                              |
|                | 2437                    | 15.90                      | 15.90 ± 1               | 16.90                    | 2.5                | 0.0173                           | 1                              |
|                | 2462                    | 16.41                      | 16.41 ± 1               | 17.41                    | 2.5                | 0.0195                           | 1                              |
| 802.11n (HT20) | 2412                    | 16.20                      | 16.20 ± 1               | 17.20                    | 2.5                | 0.0186                           | 1                              |
|                | 2437                    | 15.90                      | 15.90 ± 1               | 16.90                    | 2.5                | 0.0173                           | 1                              |
|                | 2462                    | 16.42                      | 16.42 ± 1               | 17.42                    | 2.5                | 0.0195                           | 1                              |