

## 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: 2AMV5-SK521-WU

### EUT Specification

|                                   |                                                                                                                                                                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                        | <b>2-Outlet WiFi smart plug with 2 USB charging ports</b>                                                                                                                                                                         |
| <b>Frequency band (Operating)</b> | <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input type="checkbox"/> WLAN: 5.18GHz ~ 5.24GHz<br><input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz<br><input type="checkbox"/> Others: 2.402GHz~2.480GHz BLE |
| <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>          | 2.4G WiFi : 19.05dBm (0.0804W)                                                                                                                                                                                                    |
| <b>Antenna gain (Max)</b>         | 0.5 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>         |                              |                              |                                    |              |
| <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

### 2.4GHz WiFi:

| Operating Mode | Channel Frequency | Measured Power | Tune up tolerance | Max. Tune up Power | Antenna Gain | Power density at 20cm  | Power density Limits (mW/cm <sup>2</sup> ) |
|----------------|-------------------|----------------|-------------------|--------------------|--------------|------------------------|--------------------------------------------|
|                | (MHz)             | (dBm)          | (dBm)             | (dBm)              | (dBi)        | (mW/ cm <sup>2</sup> ) |                                            |
| 802.11b        | 2412              | 18.15          | 18.15±1           | 19.15              | 0.5          | 0.0184                 | 1                                          |
|                | 2437              | 18.65          | 18.65±1           | 19.65              | 0.5          | 0.0206                 | 1                                          |
|                | 2462              | <b>19.05</b>   | <b>19.05±1</b>    | 20.05              | 0.5          | 0.0226                 | 1                                          |
| 802.11g        | 2412              | 16.68          | 16.68±1           | 17.68              | 0.5          | 0.0131                 | 1                                          |
|                | 2437              | 17.77          | 17.77±1           | 18.77              | 0.5          | 0.0168                 | 1                                          |
|                | 2462              | 18.63          | 18.63±1           | 19.63              | 0.5          | 0.0205                 | 1                                          |
| 802.11n (HT20) | 2412              | 16.03          | 16.03±1           | 17.03              | 0.5          | 0.0113                 | 1                                          |
|                | 2437              | 17.53          | 17.53±1           | 18.53              | 0.5          | 0.0159                 | 1                                          |
|                | 2462              | 18.28          | 18.28±1           | 19.28              | 0.5          | 0.0189                 | 1                                          |

**Note: 2.4G WIFI cannot support simultaneous transmission.**