

## 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: 2ABC5-E0003

### EUT Specification

| EUT                               | Android Tablet                                                                                                                                                                                                                                 |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 checked="" 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>          | WiFi 2.4GHz : 13.24dBm (0.0211W)<br>BLE: -1.103dBm (0.0008W)                                                                                                                                                                                   |
| <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>         |                              |                              |                                    |              |
| <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: $P_d = \frac{P_{out} * G}{4 * \pi * R^2}$

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 & BT:

| 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              | 12.09          | 12.09±1           | 13.09              | 1.5          | 0.0057                 | 1                                          |
|                | 2437              | 11.71          | 11.71±1           | 12.71              | 1.5          | 0.0052                 | 1                                          |
|                | 2462              | 11.29          | 11.29±1           | 12.29              | 1.5          | 0.0048                 | 1                                          |
| 802.11g        | 2412              | 13.24          | 13.24±1           | 14.24              | 1.5          | 0.0075                 | 1                                          |
|                | 2437              | 12.94          | 12.94±1           | 13.94              | 1.5          | 0.0070                 | 1                                          |
|                | 2462              | 12.30          | 12.30±1           | 13.3               | 1.5          | 0.0060                 | 1                                          |
| 802.11n (HT20) | 2412              | 13.01          | 13.01±1           | 14.01              | 1.5          | 0.0071                 | 1                                          |
|                | 2437              | 12.69          | 12.69±1           | 13.69              | 1.5          | 0.0066                 | 1                                          |
|                | 2462              | 11.62          | 11.62±1           | 12.62              | 1.5          | 0.0051                 | 1                                          |
| BLE            | 2402              | -1.103         | -1.103±1          | -0.103             | 1.5          | 0.0003                 | 1                                          |
|                | 2440              | -1.619         | -1.619±1          | -0.619             | 1.5          | 0.0002                 | 1                                          |
|                | 2480              | -2.765         | -2.765±1          | -1.765             | 1.5          | 0.0002                 | 1                                          |