

## 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 KDB 447498 D01 V06 and §1.1307(b)

FCC ID: 2ABC5-E0081

### EUT Specification

| EUT                               | Android Tablet   |
|-----------------------------------|--|
| <b>Frequency band (Operating)</b> | <input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz<br><input type="checkbox"/> WLAN: 5.725GHz ~ 5.850GHz<br><input checked="" type="checkbox"/> Others: 13.56MHz         |
| <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 type="checkbox"/> Single antenna<br><input checked="" 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>          | 55.18 (dB $\mu$ V/m)   |
| <b>Antenna gain (Max)</b>         | 0 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   | --                           | --                           | 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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

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

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

$G$  = gain of antenna in linear scale

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in  $\text{cm}$

$P_d$  the limit of MPE,  $1\text{mW/cm}^2$ . 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

### NFC:

| Mode | Channel | Frequency<br>(MHz) | Field strength of<br>fundamental @ 3m |         | Field strength of<br>fundamental @ 0.2m |        | Electric Field<br>Strength (V/m) |
|------|---------|--------------------|---------------------------------------|---------|---|--------|----------------------------------|
|      |         |                    | (dBuV/m)                              | V/m     | (dBuV/m)                                | V/m    |                                  |
| ASK  | 1       | 13.56              | 58.18                                 | 0.00081 | 105.22                                  | 0.1825 | 60.77                            |

Device also contains WLAN/BT modular, maximum MPE ratio is 0.0996 (Test Report No. FA412210).

## Simultaneous Transmission MPE

WLAN/BT and NFC share difference modular and antenna, Need consider simultaneous transmission;

According to KDB447498 D01 General RF Exposure Guidance v06 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;  
 $\sum$  of MPE ratios  $\leq 1.0$

### 6.2.1 Summary simultaneous transmission results

Maximum Simultaneous transmission MPE Ratios for **NFC,2.4G WLAN**

| Maximum MPE<br>ratio NFC | Maximum MPE<br>ratio<br>2.4G WLAN | $\sum$ MPE<br>ratios | Limit | Results |
|--------------------------|-----------------------------------|----------------------|-------|---------|
| 0.0030                   | 0.0201                            | 0.1026               | 1.0   | PASS    |

**Test Result: Pass**