

## 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: RB8U1A

### EUT Specification

|                                   |                                                                                                                                                                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                        | Android TV Dongle                                                                                                                                                                                                              |
| <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  |
| <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>          | 17.95dBm (62.37mW)                                                                                                                                                                                                             |
| <b>Antenna gain</b>               | -2.5 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                                                     | --                            | --                            | 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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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

| Channel               | Channel Frequency (MHz) | Output Peak power (mW) | Antenna Gain (dBi) | Power density at 20cm ( $mW/cm^2$ ) | Power density Limits ( $mW/cm^2$ ) |
|-----------------------|-------------------------|------------------------|--------------------|-------------------------------------|------------------------------------|
| <b>802.11b</b>        |                         |                        |                    |                                     |                                    |
| Lowest                | 2412                    | 29.31                  | -2.5               | 0.003279                            | 1                                  |
| Middle                | 2437                    | 35.73                  | -2.5               | 0.003997                            | 1                                  |
| Highest               | 2462                    | 41.30                  | -2.5               | 0.004620                            | 1                                  |
| <b>802.11g</b>        |                         |                        |                    |                                     |                                    |
| Lowest                | 2412                    | 32.58                  | -2.5               | 0.003645                            | 1                                  |
| Middle                | 2437                    | 40.09                  | -2.5               | 0.004850                            | 1                                  |
| Highest               | 2462                    | 46.77                  | -2.5               | 0.005232                            | 1                                  |
| <b>802.11n( HT20)</b> |                         |                        |                    |                                     |                                    |
| Lowest                | 2412                    | 46.56                  | -2.5               | 0.005209                            | 1                                  |
| Middle                | 2437                    | 54.70                  | -2.5               | 0.006120                            | 1                                  |
| Highest               | 2462                    | 62.37                  | -2.5               | 0.006978                            | 1                                  |
| <b>802.11n( HT40)</b> |                         |                        |                    |                                     |                                    |
| Lowest                | 2422                    | 49.55                  | -2.5               | 0.005543                            | 1                                  |
| Middle                | 2437                    | 55.08                  | -2.5               | 0.006162                            | 1                                  |
| Highest               | 2452                    | 59.98                  | -2.5               | 0.006710                            | 1                                  |

Sincerely,

(signature)

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