

## RF EXPOSURE EVALUATION

### EUT Specification

|                                       |                                                                                                                                                                                                                                                                |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                            | Digital Media receiver                                                                                                                                                                                                                                         |
| <b>Frequency band<br/>(Operating)</b> | <input 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 ~ 5.825GHz<br><input checked="" type="checkbox"/> Others(Bluetooth: 2.402GHz ~ 2.480GHz) |
| <b>Device category</b>                | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)<br><input type="checkbox"/> Others ____                                                                                                  |
| <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>              | 4.134 dBm (2.59mW)                                                                                                                                                                                                                                             |
| <b>Antenna gain</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> ) |
|----------------------|------------------------------|------------------------------|------------------------------------|
| 300-1500             | --                           | --                           | F/1500                             |
| 1500-100000          | --                           | --                           | 1                                  |

## 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

| Channel          | Gain | Channel Frequency (MHz) | Max Output power (dBm) | Tolerance | Max Tune-UP power (mW) | Power density at 20cm (mW/ cm <sup>2</sup> ) | Power density Limits (mW/cm <sup>2</sup> ) |
|------------------|------|-------------------------|------------------------|-----------|------------------------|----------------------------------------------|--------------------------------------------|
| <b>GFSK</b>      |      |                         |                        |           |                        |                                              |                                            |
| Low              | 0    | 2402                    | 4.134                  | ±0.5      | 2.91                   | 0.00058                                      | 1                                          |
| Middle           | 0    | 2441                    | 3.621                  | ±0.5      | 2.58                   | 0.00051                                      | 1                                          |
| High             | 0    | 2480                    | 3.632                  | ±0.5      | 2.59                   | 0.00052                                      | 1                                          |
| <b>π/4-DQPSK</b> |      |                         |                        |           |                        |                                              |                                            |
| Low              | 0    | 2402                    | 3.882                  | ±0.5      | 2.74                   | 0.00055                                      | 1                                          |
| Middle           | 0    | 2441                    | 3.340                  | ±0.5      | 2.42                   | 0.00048                                      | 1                                          |
| High             | 0    | 2480                    | 3.349                  | ±0.5      | 2.43                   | 0.00048                                      | 1                                          |
| <b>8DPSK</b>     |      |                         |                        |           |                        |                                              |                                            |
| Low              | 0    | 2402                    | 3.888                  | ±0.5      | 2.75                   | 0.00055                                      | 1                                          |
| Middle           | 0    | 2441                    | 3.371                  | ±0.5      | 2.44                   | 0.00049                                      | 1                                          |
| High             | 0    | 2480                    | 3.308                  | ±0.5      | 2.40                   | 0.00048                                      | 1                                          |