

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Power Station
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input checked="" type="checkbox"/> Others(Bluetooth: 2.402GHz ~ 2.480GHz)
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	21.770dBm(150.31mW) for WIFI 3.045dBm(2.02mW) for BLE
<b>Antenna gain</b>	2dBi
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <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  $\text{mW/cm}^2$

$P_{out}$ =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,  $1\text{mW/cm}^2$ . 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

Channel	Channel Frequency (MHz)	Max Output power (dBm)	Max Output power (mW)	Power density at 20cm ( $\text{mW/cm}^2$ )	Power density Limits ( $\text{mW/cm}^2$ )
BT BLE					
High	2480	3.045	2.02	0.000635	1
2.4G WIFI 802.11b					
High	2462	21.770	150.31	0.047247	1

When bluetooth and WiFi(2.4G) work together:

Ratio BT	Ratio 2.4G WIFI	BT+2.4G WIFI Ratio Total	Ratio Limits
0.0000635	0.0047247	0.0047882	1

According to KDB447498 D01 V06, Compliance with RF Exposure requirement.