

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Active Speaker
<b>Frequency band (Operating)</b>	<input 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 ~ 5.825GHz <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>	-4.33 dBm (0.37mW)
<b>Antenna gain</b>	1 dBi
<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: $P_d = \frac{P_{out} * G}{4 * \pi * R^2}$

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

Channel	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> )
Test mode: GFSK						
Low	2402	-5.161	±0.1	0.31	0.0010	1
Middle	2441	-5.425	±0.1	0.29	0.0009	1
High	2480	-6.707	±0.1	0.22	0.0007	1
Test mode: π/4-DQPSK						
Low	2402	-4.537	±0.1	0.36	0.0011	1
Middle	2441	-4.874	±0.1	0.33	0.0011	1
High	2480	-6.587	±0.1	0.22	0.0007	1
Test mode: 8DPSK						
Low	2402	-4.330	±0.1	0.38	0.0012	1
Middle	2441	-4.662	±0.1	0.35	0.0011	1
High	2480	-6.221	±0.1	0.24	0.0008	1