

## 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>	-3.354 dBm (0.462mW)
<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  $mW/cm^2$

$P_{out}$  = 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	Gain	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Tune-UP power (mW)	Power density at 20cm ( $mW/cm^2$ )	Power density Limits ( $mW/cm^2$ )
<b>GFSK</b>							
Low	1	2402	-6.510	$\pm 0.5$	0.25	0.00006	1
Middle	1	2441	-7.849	$\pm 0.5$	0.18	0.00005	1
High	1	2480	-8.317	$\pm 0.5$	0.17	0.00004	1
<b><math>\pi/4</math>-DQPSK</b>							
Low	1	2402	-3.646	$\pm 0.5$	0.48	0.00012	1
Middle	1	2441	-5.148	$\pm 0.5$	0.34	0.00009	1
High	1	2480	-7.875	$\pm 0.5$	0.18	0.00005	1
<b>8DPSK</b>							
Low	1	2402	-3.354	$\pm 0.5$	0.52	0.00013	1
Middle	1	2441	-4.828	$\pm 0.5$	0.37	0.00009	1
High	1	2480	-7.455	$\pm 0.5$	0.20	0.00005	1