

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	PORTABLE 40-WATT BLUETOOTH PARTY 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 ~ 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>	-0.526 dBm (0.886mW)
<b>Antenna gain</b>	0.0 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> )	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: $P_d = \frac{P_{out} * G}{4 * \pi * R^2}$

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	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	-3.603	± 0.5	0.49	9.75E-05	1
Middle	0	2441	-4.374	± 0.5	0.41	8.16E-05	1
High	0	2480	-4.986	± 0.5	0.36	7.16E-05	1
<b>π/4-DQPSK</b>							
Low	0	2402	-0.979	± 0.5	0.90	1.79E-04	1
Middle	0	2441	-1.654	± 0.5	0.77	1.53E-04	1
High	0	2480	-2.195	± 0.5	0.68	1.35E-04	1
<b>8DPSK</b>							
Low	0	2402	-0.526	± 0.5	0.99	1.97E-04	1
Middle	0	2441	-1.176	± 0.5	0.86	1.71E-04	1
High	0	2480	-1.700	± 0.5	0.76	1.51E-04	1