

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Bluetooth 37" HD Sound Bar
<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>	-1.84dBm(0.65mW)
<b>Antenna gain</b>	0dBi
<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: $Pd=(Pout \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

$Pd$ = Power density in  $mW/cm^2$

$Pout$ =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

$Pd$  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	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Output power (mW)	Power density at 20cm ( $mW/cm^2$ )	Power density Limits ( $mW/cm^2$ )
GFSK						
Low	2402.00	-3.68	$\pm 0.2$	0.45	$8.95e-5$	1
Middle	2441.00	-5.25	$\pm 0.2$	0.31	$6.17e-5$	1
High	2480.00	-6.55	$\pm 0.2$	0.23	$4.58e-5$	1
$\pi/4$ -DQPSK						
Low	2402.00	-1.86	$\pm 0.2$	0.68	$1.35e-4$	1
Middle	2441.00	-3.49	$\pm 0.2$	0.47	$9.35e-5$	1
High	2480.00	-4.70	$\pm 0.2$	0.35	$6.96e-5$	1
8DPSK						
Low	2402.00	-1.84	$\pm 0.2$	0.69	$1.37e-4$	1
Middle	2441.00	-3.46	$\pm 0.2$	0.47	$9.35e-5$	1
High	2480.00	-4.92	$\pm 0.2$	0.34	$6.76e-5$	1