

**RADIO FREQUENCY EXPOSURE****LIMIT**

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §15.247(b)(4) and §1.1307(b)(1) of this chapter.

**Conducted Power Results***Bluetooth*

Mode	Channel	Frequency(MHz)	PeakConducted Output Power (dBm)
GFSK-BLE	00	2402	6.49
	19	2440	6.96
	39	2480	6.73
GFSK	00	2402	1.68
	39	2441	1.96
	78	2480	1.75
8DPSK	00	2402	1.69
	39	2441	2.10
	78	2480	1.96
$\pi/4$ DQPSK	00	2402	1.65
	39	2441	2.08
	78	2480	1.87

**Manufacturing tolerance***Bluetooth*

GFSK -BLE(Peak)			
Channel	Channel 00	Channel 19	Channel 39
Target (dBm)	6.0	6.0	6.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
GFSK (Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	1.0	1.0	1.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
8DPSK (Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	1.0	2.0	1.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
$\pi/4$ DQPSK (Peak)			
Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	1.0	2.0	1.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0



## Compliance Certification Services Inc.

Report No: C150602Z02-RP1\_MPE FCC ID: QWHIP1000-2000 Date of Issue: July 15, 2015

### EUT Specification

<b>EUT</b>	Powered Loudspeaker
<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"/> Bluetooth: 2.402GHz~ 2.480GHz <input type="checkbox"/> Others _
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5mW/cm^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1mW/cm^2$ )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Tx diversity  <input type="checkbox"/> Rx diversity  <input type="checkbox"/> Tx/Rx diversity           </div>
<b>Max. output power</b>	7dBm (5.01mW)
<b>Antenna gain (Max)</b>	0dBi (Numeric gain:1)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

#### Note:

1. The maximum output power(including turn tolerance) is 7dBm (5.01mW) and maximum antenna gain is 0.dBi
2. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.



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### **TEST RESULT**

*No non-compliance noted.*

### **Calculation**

Given  $S = \frac{P \times G}{4\pi d^2}$  ***Equation 1***

*Where d = distance in cm*

*P = Power in mW*

*G = Numeric antenna gain*

*S = Power Density in mW / cm<sup>2</sup>*

### **Maximum Permissible Exposure**

EUT Output Power=5.01mW

Numeric antenna gain=1

Substituting the MPE safe distance using d=20 cm into ***Equation 1*** :

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The power density  $S = 5.01 \times 1 / (4\pi \times 400) \text{ cm}^2 = 9.97 \times 10^{-4} \text{ mW/cm}^2$

(For mobile or fixed location transmitters, the maximum power density is  $1.0 \text{ mW/cm}^2$  even if the calculation indicates that the power density would be larger.)