

**FCC RF EXPOSURE REPORT**

EUT	Wireless Speaker
Frequency band (Operating)	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.180GHz ~ 5.240GHz <input checked="" type="checkbox"/> Wireless 2.4GHz: <u>2.412GHz ~ 2.464 GHz</u> <input checked="" type="checkbox"/> Wireless 5.8GHz: <u>5.736GHz ~ 5.814 GHz</u>
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
Max. output power	For 2.4GHz Band:17.81dBm (60.39mW) For 5.8GHz Band: 15.78dBm (37.84mW)
Antenna gain (Max)	2.4GHz with 2.0dBi (Chain 0 and Chain 1) 5.8GHz with 3.0dBi (Chain 0 and Chain 1)
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A

Note:

1. For 2.4GHz Band: The maximum output power is 17.81dBm (60.39mW) at 2412MHz (with 1.58 numeric antenna gain on Chain 0.)
2. For 5.8GHz Band: The maximum output power is 15.78dBm (37.84mW) at 5736MHz (with 1.99 numeric antenna gain on Chain 0.)
3. 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.

**TEST RESULTS**

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²



Maximum Permissible Exposure

For 2.4GHz Band

EUT Output Power=60.39mW

Numeric antenna gain=1.58

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

Yields

The power density $S = 30 \times 60.39 \times 1.58 / (3770 \times 400) \text{ cm}^2 = 1.898 \times 10^{-3} \text{ mW/cm}^2$

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

For 5.8GHz Band

EUT Output Power=37.84mW

Numeric antenna gain=1.99

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

Yields

The power density $S = 30 \times 37.84 \times 1.99 / (3770 \times 400) \text{ cm}^2 = 1.498 \times 10^{-3} \text{ mW/cm}^2$

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