



8.3 MAXIMUM PERMISSIBLE EXPOSURE

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in

1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational / Control Exposures				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

CALCULATIONS

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

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:

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

$$d (cm) = d(m) / 100$$

Yields

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

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

**LIMIT**

$60/f(\text{GHz})\text{mW}$

TEST RESULTS

No non-compliance noted

And according to KDB447498 Section 1) c) Unless excluded by specific FCC test procedures, portable devices with output power $> 60/f(\text{GHz})\text{mW}$ shall include SAR data for equipment approval.

Details please refer to FCC Part 2 and attached KDB447498.

Please note the low power threshold is based upon average output power. If the average output power is below $60/f(\text{GHz})$, then SAR evaluation is not required. In addition, since this device is a Bluetooth device, you may use source-based averaging duty cycle to adjust the average power. After the adjustment, if the average power is greater than $60/f(\text{GHz})$, then SAR is required.

$60/f(\text{GHz})\text{mW}$ $f(\text{the highest frequency}) f=2.474\text{GHz}$
 $60/2.474=24.9\text{mW}=(\log 24.37)*10\text{dBm}=13.4040\text{dBm}$

Mode	Output Power (dBm)	Limit (dBm)	Result
CH Low Mode	-0.14	13.4040	Compliance
CH Mid Mode	-0.23	13.4040	Compliance
CH High Mode	-2.16	13.4040	Compliance