



## 6.8 RF Exposure Compliance Requirement

### 6.8.1 Standard requirement

15.247(b)(4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TCB Exclusion List (7 July 2002)

Exposure category	low threshold	high threshold
General population	(60/fGHz) mW. $d < 2.5$ cm (120/fGHz) mW. $d \geq 2.5$ cm	(900/fGHz) mW. $d < 20$ cm
Occupational	(375/fGHz) mW. $d < 2.5$ cm (900/fGHz) mW. $d \geq 2.5$ cm	(2250/fGHz) mW. $d < 20$ cm

### 6.8.2 EUT RF Exposure

The Max Conducted Peak Output Power is -1.37dBm(0.73mW) at 2480MHz.

And the antenna gain at 2480MHz is -1.53dBi PCB integrated in the actual use logarithmic terms convert to numeric result is nearly 0.703;

Remark: for Bluetooth antenna efficiency and gain, please see the following table.

Frequency	Efficiency	Gain(dBi)
2400MHz	34.32%	-1.36
2410MHz	32.11%	-1.51
2420MHz	31.13%	
2430MHz	34.31%	
2440MHz	32.55%	-1.47
2450MHz	36.85%	-1.25
2460MHz	35.54%	
2470MHz	33.47%	
2480MHz	31.94%	-1.53

According to the formula, calculate the EIRP test result:

$$\text{EIRP} = P \times G = 0.73 \text{ mW} \times 0.703 = 0.513 \text{ mW} \text{ ①}$$

SAR requirement:

$$S = 60 / f(\text{GHz}) = 60 / 2.48 = 24.2 \text{ mW} \text{ ②};$$

$$\text{①} < \text{②}.$$

So the SAR test for Bluetooth is not required.