

MPE evaluation for multiple transmitters that are able to transmit simultaneously

FCC ID: PQA-TV2

The highest measured Peak power for each transmitter in this device:
(Peak leads to worst case calculation compared to average):

For Bluetooth (2402-2480 MHz): 0.185 m W (-7.33 dBm), with 2 dBi antenna gain

For FSK module (2404-2479 MHz): 0.214 mW (-6.96 dBm), with 2 dBi antenna gain

Criterion 1.

The power density for each transmitter must be under the given limit .

For Bluetooth: $P_{\text{radiated}} = P_{\text{conducted}} + G_{\text{linear}} = -7.33 \text{ dBm} + 2 \text{ dBi} = -5.33 \text{ dBm} = 0.29 \text{ mW}$

Power density $S = (P_{\text{radiated}}) / (4\pi \times d^2) = 0.29 / 5026 = 0.00006 \text{ mW/cm}^2$

The calculated power density for this transmitter is far below the limit, so PASS.

For FSK: $P_{\text{radiated}} = P_{\text{conducted}} + G_{\text{linear}} = -6.96 \text{ dBm} + 2 \text{ dBi} = -4.96 \text{ dBm} = 0.32 \text{ mW}$

Power density $S = (P_{\text{radiated}}) / (4\pi \times d^2) = 0.32 / 5026 = 0.00007 \text{ mW/cm}^2$

The calculated power density for this transmitter is far below the limit, so PASS.

Criterion 2.

The sum of (maximum measured Peak power) / (Peak power limit) ratio of each transmitter shall be below 1.

Calculation: $0.000185\text{W} / 1\text{W} + 0.000214\text{W} / 1\text{W} = 0.000396$

The calculated sum value is far below 1, so PASS.

Remark: This device would be also generally exempted for RF exposure, because the sum of the powers lies below 60/f mW. For the 2.4 G band, the limit would be 24mW, and the sum of the powers is 0.396 mW.