

POWER DENSITY ESTIMATIONS BASED ON POWER OUTPUT, ANTENNA GAIN, AND DISTANCE FROM ANTENNA

$$(P G) / (4 R^2 \pi) = S$$

where: $S =$ maximum power density (mW/cm ²)		transmitter operating variables:		must be blank if dB values are entered	
$P =$	power input to the antenna ----->>	=	-5.85 (dBm) - or -		(mW)
$G =$	gain of the antenna - worst case ----->>	=	2 (dBi) - or -		(numeric gain)
$R =$	distance to the center of the radiation of the antenna -->>	=	20		(cm)

$$(P G) / (4 * R^2 * \pi) = S \quad (mW/cm^2)$$

$$\left(\frac{0.260015956 \text{ (mw)}}{1.58489 \text{ (gain)}} \right) / \left(4 * \frac{20^2 \text{ (cm)}}{\pi} \right) = S \quad (mW/cm^2)$$

$$(0.412097519) / (4 * 400 * \pi) = S \quad (mW/cm^2)$$

$$(0.412097519) / (5026.548246) = 0.000082 \quad (mW/cm^2)$$

Power Density of the BLE Module

POWER DENSITY ESTIMATIONS BASED ON POWER OUTPUT, ANTENNA GAIN, AND DISTANCE FROM ANTENNA

$$(P G) / (4 R^2 \pi) = S$$

where: $S =$ maximum power density (mW/cm ²)		transmitter operating variables:		must be blank if dB values are entered	
$P =$	power input to the antenna ----->>	=	-2.74	(dBm) - or -	(mW)
$G =$	gain of the antenna - worst case ----->>	=	2.1	(dBi) - or -	(numeric gain)
$R =$	distance to the center of the radiation of the antenna -->>	=	20		(cm)

$(P G) / (4 * R^2 * \pi)$	=	S	(mW/cm ²)
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$(0.532108259 \text{ (mw)} * 1.62181 \text{ (gain)}) / (4 * 20^2 \text{ (cm)} * \pi)$	=	S	(mW/cm ²)
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$(0.862978548) / (4 * 400 * \pi)$	=	S	(mW/cm ²)
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$(0.862978548) / (5026.548246)$	=	0.000172	(mW/cm ²)
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Power Density for 802.11g/n

MPE Ratio of simultaneous operation based on highest power density compared to the **FCC** limits

Device FCC ID OXM000104

Date August 13, 2020

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e.i.r.p

-3.85 0.000082 Ratio 1 BLE

-0.64 0.000172 Ratio 2 WiFi

0.00025 Total Ratio Must be <=1

0.999746 Remaining

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0 , according to calculated/estimated, numerically modeled, or measured field strengths or power density.

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