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 * π)	=	S	(mW/cm^2)
(0.260015956 (mw) 1.58489 (gain)) / (4 * 20^2 (cm) * π)	=	S	(mW/cm^2)
(0.412097519) / (4 * 400 * π $_3$)	=	S	(mW/cm^2)
(0.412097519) / (5026.548246)	=	0.000082	(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 * π)	=	S	(mW/cm^2)
(0.532108259 (mw) 1.62181 (gain)) / (4 * 20^2 (cm) * π)	=	S	(mW/cm^2)
(0.862978548) / (4 * 400 * π 3)	=	S	(mW/cm^2)
(0.862978548) / (5026.548246)	=	0.000172	(mW/cm^2)

Power Density for 802.11g/n

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

Device FCC ID OXM000104

Date August 13, 2020

Prepared By Kyle F.

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.
>
> 447498 D01