FCC ID: VW3MSBDV00

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Bluetooth Classic Transmitter n°1

Maximum peak output power at the antenna terminal:	6,04	(dBm)
Maximum peak output power at the antenna terminal:	4,017908108	(mW)
Antenna gain(typical):	5,35	(dBi)
Maximum antenna gain:	3,427677865	(numeric)
Prediction distance:	30	(cm)
Prediction frequency:	2480	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0,001218	(mW/cm^2)
Maximum allowable antenna gain:	34,49452373	(dBi)

Bluetooth Low Energy Transmitter n°2

Maximum peak output power at the antenna terminal:	5,31	(dBm)
Maximum peak output power at the antenna terminal:	3,396252726	(mW)
Antenna gain(typical):	5,35	(dBi)
Maximum antenna gain:	3,427677865	(numeric)
Prediction distance:	30	(cm)
Prediction frequency:	2442	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0,001029	(mW/cm^2)
Maximum allowable antenna gain:	35,22452373	(dBi)

WIFI 2,4GHz Transmitter n°3

Maximum peak output power at the antenna terminal:	21,86	(dBm)
Maximum peak output power at the antenna terminal:	153,4616983	(mW)
Antenna gain(typical):	5,14	(dBi)
Maximum antenna gain:	3,265878322	(numeric)
Prediction distance:	30	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0,044315	(mW/cm^2)
Maximum allowable antenna gain:	18,67452373	(dBi)

WIFI 5GHz Transmitter n°4

Maximum peak output power at the antenna terminal:	19,60	(dBm)
Maximum peak output power at the antenna terminal:	91,20108394	(mW)
Antenna gain(typical):	7	(dBi)
Maximum antenna gain:	5,011872336	(numeric)
Prediction distance:	30	(cm)
Prediction frequency:	5580	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0,040415	(mW/cm^2)
Maximum allowable antenna gain:	20,93452373	(dBi)

Collocation evaluation for the following cases:

Pd(n) = Power density of n^{th} transmitter at 30cm
LPd(n)= Power density limit for the n^{th} transmitter

Transmitter n°1 + Transmitter n°2 + Transmitter n°3 + Transmitter n°4 :

+ [Pd(2)/LPd(2)] + [Pd(3)/LPd(3)] + [Pd(4)/LPd(4)] = 0,08698
<1