

Maximum Permissible Exposure

RF Exposure Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the Environmental of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency	Electric Field	Magnetic Field	Power Density	Averaging Time					
Range(MHz)	Strength(V/m)	Strength(A/m)	(mW/cm ²)	(Minutes)					
(A) Limits for occupational / Contral Exposure									
30 - 300	61.4	0.163	1	6					
300 - 1500			F/300	6					
1500 - 100000			5	6					
(B) Limits for General Population / Uncontrolled Exposure									
30 - 300	27.5	0.073	0.2	30					
300 - 1500			F/1500	30					
1500 - 100000			1	30					

F = Frequency (MHz)

Fries formula

Fries transmission formula : Pd = (Pout * G) / (4 * π * r²)

 $r = \sqrt{((Pout * G) / 4 * \pi * Pd))}$

Where

Pd = Power density in mW/cm²

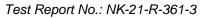
Pout = Output power to antenna in mW

G = Gain of antenna in linear scale

 π = 3.1416

r = Distance between observation point center of the radiator in cm

Pd is the limit of MPE, <u>1 mW/cm²</u>. If we know the Maximum Gain of the antenna and the total power input to the antenna, through the calculation, we will know the Maximum distance r where the MPE limit is reached and Power density at prediction frequency.







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Test Result:

The maximum antenna gain is 2.1 dBi or 1.62(Numeric).

		Test result:				
	Power dens	0.002354	(mW/cm^2)			
MPE limit for uncontrolled exposure at prediction frequency:					1	(mW/cm^2)
		Р	Prediction frequency:			(MHz)
		Prediction distance:			20	(cm)
		Maximum antenna gain:			1.62	(numeric)
		Antenna gain(Peak):			2.10	(dBi)
Maximu	Maximum peak output power at antenna input terminal:					(mW)
Maximum peak output power at antenna input terminal:					8.63	(dBm)
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