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)**
(ⅰ) Limits For Occupational / Controlled Exposure				
0.3 ~ 3.0	614	1.63	*(100)	≤6
3.0 ~ 30	1842/f	4.89/f	*($900/f^2$)	<6
30 ~ 300	61.4	0.163	1.0	<6
300 ~ 1,500			f/300	<6
1,500 ~ 100,000			5	<6
(ⅱ) Limits For General Population / Uncontrolled Exposure				
0.3 ~ 1.34	614	1.63	*(100)	<30
1.34 ~ 30	824/f	2.19/f	*($180/f^2$)	<30
30 ~ 300	27.5	0.073	0.2	<30
300 ~ 1,500			f/15	<30
1,500 ~ 100,000			1.0	<30

*f = frequency in MHz. * = Plane-wave equivalent power density.*

Friis formula

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

r = √ (Pout * G) / 4 * π * Pd))

Where

Pd = Power density in ㎽ / ㎠

Pout = Output power to antenna in ㎽

G = Gain of antenna in linear scale

π = 3.1416

r = Distance between observation point center of radiator in cm

Maximum Permissible Exposure

Pd is the limit of MPE, 1 ㎽ / ㎠. If we know 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.

Test Result :

The maximum antenna gain is 1.12 dBi or 1.29(Numeric) for 2.4GHz band.

Maximum Conducted output power at antenna input terminal:	14.72	(dBm)
Maximum Conducted output power at antenna input terminal:	29.63	(mW)
Antenna gain(typical):	1.12	(dBi)
Maximum antenna gain:	1.29	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)

Power density at prediction frequency : ***0.007628*** ***(mW/cm^2)***

Test result: PASS

The maximum antenna gain is 3.15 dBi or 2.07(Numeric) for 5GHz band.

Maximum Conducted output power at antenna input terminal:	12.22	(dBm)
Maximum Conducted output power at antenna input terminal:	16.67	(mW)
Antenna gain(typical):	3.15	(dBi)
Maximum antenna gain:	2.07	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5785	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)

Power density at prediction frequency : ***0.006851*** ***(mW/cm^2)***

Test result: PASS

Conclusion :

The test result shows that WT10FACNDW0HSM is compliance with the exposure limit in 47 CFR § 1.1310.