

FCC ID : ZHXMPT2700A

RF EXPOSURE EVALUATION

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

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

11.1 Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} =output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π =3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Power density limited:

$P_d = f(\text{MHz}) / 1500 = 900 / 1500 = 0.6 \text{ mW/cm}^2$

Antenna gain: 5.5dBi

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi) Numeric	Power density at 20cm (mW/ cm ²)	Power density Limits (mW/cm ²)
1	909.797974	12.91	19.54	3.55	0.14	0.6
6	915.796509	12.24	16.75	3.55	0.12	0.6
10	920.595337	12.29	16.94	3.55	0.12	0.6

Note 1: Note 2: there is a WiFi module (FCC ID: PD9WM3945ABG) on this EUT; however, there is only WiFi Rx function on this EUT, therefore, the simultaneous MPE evaluation is not required.

Note 2: the RF connections are wired to rear-panel connectors on the HUB, and are then connected to an external splitter/combiner, and then to an external directional antenna. The antenna gain is 9dBi and the splitter loss is 3.5dB, which combine for a total antenna network gain of 5.5dBi.