

FCC ID:WA5HP2560BU

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)

KDB447498 D01 General RF Exposure Guidance v06

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(20cm)

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.

$mW = 10^{(dBm/10)}$

11.2 Measurement Result

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,
Power density limited: $1\text{mW}/\text{cm}^2$

Antenna Type: PCB antenna

Antenna gain: 1.5dBi;

R=20cm

$\text{mW}=10^{(\text{dBm}/10)}$

antenna gain Numeric= $10^{(\text{dBi}/10)}=10^{(1.5/10)}=1.41$

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density
		(dBm)		tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Numeric		
2412	802.11b	16.98	17±1	18	63.096	1.50	1.41	0.0177	1
2437		17.13	17±1	18	63.096	1.50	1.41	0.0177	1
2462		17.47	17±1	18	63.096	1.50	1.41	0.0177	1
2412	802.11g	16.47	16±1	17	50.119	1.50	1.41	0.0141	1
2437		16.51	16±1	17	50.119	1.50	1.41	0.0141	1
2462		16.9	16±1	17	50.119	1.50	1.41	0.0141	1
2412	802.11n H20	16.63	16±1	17	50.119	1.50	1.41	0.0141	1
2437		16.62	16±1	17	50.119	1.50	1.41	0.0141	1
2462		16.91	16±1	17	50.119	1.50	1.41	0.0141	1

Conclusion:

For the max result : $0.0177 \leq 0.61$ for 1g SAR, No SAR is required.



Signature:

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