

8. RF Exposure Evaluation

8.1 Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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
1 500 – 100 000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300 – 1 500	--	--	F/1 500	6
<u>1 500 – 100 000</u>	--	--	<u>1</u>	<u>30</u>

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

Where P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

$\pi = 3.1416$

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

P_d the limit of MPE, 1 mW/cm^2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

8.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

8.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

DSSS : 802.11b

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20cm (mW/cm ²)	LIMITS (mW/cm ²)
Low	2 412	14.87	5.25	0.020 45	1
Middle	2 437	13.68	5.25	0.015 55	1
High	2 462	14.20	5.25	0.017 53	1

OFDM : 802.11g

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20cm (mW/cm ²)	LIMITS (mW/cm ²)
Low	2 412	15.48	5.25	0.023 54	1
Middle	2 437	14.06	5.25	0.016 97	1
High	2 462	14.69	5.25	0.019 62	1

OFDM : 802.11n_HT20

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20cm (mW/cm ²)	LIMITS (mW/cm ²)
Low	2 412	15.16	5.25	0.021 86	1
Middle	2 437	13.86	5.25	0.016 21	1
High	2 462	14.57	5.25	0.019 09	1

Note :

1. The power density Pd (5th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².