

8. 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
<u>1500 - 100000</u>	--	--	<u>1</u>	<u>30</u>

8.1 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 = gain of antenna in linear scale

π = 3.1416

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

P_d the limit of MPE, 1 mW/cm². 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.

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8.2 Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

8.2.1 Output Power into Antenna & RF Exposure Evaluation Distance

Antenna: 8 dBi(Patch Antenna)

Test Mode: Down link_64QAM 3/4

Channel	Frequency (MHz)	Output Power to Antenna (dBm)	Antenna Gain (dBi)	R (cm)
Low	2508.5	23.78	8	10.9523
Middle	2630.5	24.64	8	12.0922
High	2683.5	23.39	8	10.4714

Test Mode Mode: Up link_16QAM 3/4

Channel	Frequency (MHz)	Output Power to Antenna (dBm)	Antenna Gain (dBi)	R (cm)
Low	2508.5	23.78	8	10.9523
Middle	2630.5	24.40	8	11.7627
High	2683.5	23.45	8	10.5440

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