

FCC ID:2AAU7-ALSP

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(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

Operation Frequency: 908.4-916MHz
Antenna Type: stamped metal antenna
Antenna gain: -0.24dBi,
R=20cm
 $mW=10^{(dBm/10)}$

Transmit power

Frequency (MHz)	Max Output power (dBuV/m)	EIRP power (dBm)	EIRP power (W)
908.40	91.10	-4.16	0.00038
908.42	90.80	-4.46	0.00036
912.00	91.80	-3.46	0.00045
916.00	91.90	-3.36	0.00046

$EIRP=E-104.8+20\log(D)$

Maximum Permissible Exposure:

Channel Freq. (MHz)	modulation	EIRP power (dBm)	EIRP power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
908.40	FSK	-4.16	0.384	-4±1	-3	0.000076	0.606
908.42		-4.46	0.358	-4±1	-3	0.000071	0.606
912.00		-3.46	0.451	-4±1	-3	0.000090	0.608
916.00		-3.36	0.460	-4±1	-3	0.000092	0.611

Conclusion:

For the max result : $0.000092 \leq 0.611$ for Max Power Density, compliance RF exposure..



Signature:

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