

FCC ID : 2BEA6M2MR105

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: $Pd = (Pout * G) / (4 * \pi * R^2)$

Where

Pd = Power density in mW/cm^2

$Pout$ = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

Pi = 3.1416

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

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

RF Exposure Information: The radiated output power of this device meets the limits of FCC/IC radio frequency exposure limits. This device should be operated with a minimum separation distance of 20cm (8 inches) between the equipment and a person's body.

11.2 Measurement Result

WIFI 2.4G:

Antenna gain: 1.78 dBi

TestMode	Frequency[MHz]	Antenna	Measured power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
11B	2462	Ant1	15.17	15.5	1.51	0.01063	1

WIFI 5G:

Antenna Gain Combined A+B: 10.1 dBi

Frequency band	TestMode	Antenna	Measured power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
5150MHz-5250MHz	11AC20	total	15.36	15.5	10.23	0.07223	1
5725MHz-5850MHz	11N20	total	16.14	16.5	10.23	0.09093	1

LTE:

Protocol	ANT Gain(gain of antenna in linear scale)	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Band12	1.24	716	24	251.19	0.06	0.48
Band13	1.67	787	23	199.53	0.05	0.52
Band14	1.65	798	22	158.49	0.05	1.00
Band25	1.54	1915	23	199.53	0.06	1.00
Band26	1.38	849	25	316.23	0.10	0.57
Band26(Part90)	1.38	849	25	316.23	0.10	0.57
Band41	2.09	2690	25	316.23	0.13	1.00
Band66	2.05	1780	23	199.53	0.08	1.00
Band71	0.90	698	22	158.49	0.03	1.00

MAX RF EXPOSURE EVALUATION

WIFI 5G	LTE	Summation of Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
0.09093	0.10	0.19093	<1