

FCC ID : 2AN3C-TFM7

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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

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 (R=20cm)

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

11.2 Measurement Result

Antenna Gain: 2.48dBi

DSS

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm^2)	Power density Limits (mW/cm^2)
2402	GFSK	9.61	9 ± 1	10	1.770	0.0035	1
2441	GFSK	9.35	9 ± 1	10	1.770	0.0035	1
2480	GFSK	9.01	9 ± 1	10	1.770	0.0035	1
2402	$\pi/4$ -DQPSK	7.40	7 ± 1	8	1.770	0.0022	1
2441	$\pi/4$ -DQPSK	7.15	7 ± 1	8	1.770	0.0022	1
2480	$\pi/4$ -DQPSK	6.92	7 ± 1	8	1.770	0.0022	1
2402	8DPSK	7.95	7 ± 1	8	1.770	0.0022	1
2441	8DPSK	7.64	7 ± 1	8	1.770	0.0022	1
2480	8DPSK	7.32	7 ± 1	8	1.770	0.0022	1

BLE

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
2402	GFSK	6.889	6 ± 1	7	1.770	0.0018	1
2440	GFSK	6.368	6 ± 1	7	1.770	0.0018	1
2480	GFSK	6.047	6 ± 1	7	1.770	0.0018	1

WIFI

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
802.11b	2412	18.39	18 ± 1	19	1.770	0.0280	1
	2437	18.11	18 ± 1	19	1.770	0.0280	1
	2462	17.91	18 ± 1	19	1.770	0.0280	1
802.11g	2412	22.33	21.5 ± 1	22.5	1.770	0.0626	1
	2437	22.08	21.5 ± 1	22.5	1.770	0.0626	1
	2462	21.87	21.5 ± 1	22.5	1.770	0.0626	1
802.11n (HT20)	2412	21.13	21.5 ± 1	22.5	1.770	0.0626	1
	2437	21.10	21.5 ± 1	22.5	1.770	0.0626	1
	2462	20.84	21.5 ± 1	22.5	1.770	0.0626	1

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