

FCC ID:2BARM-WE1

Maximum Permissible Exposure (MPE)

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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 * P * G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Average RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 * P * G}{377 * D^2}$$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

BLE:

Measurement Result

Operation Frequency: 2402MHz~2480MHz

Power density limited: 1mW/ cm²

Antenna Type: FPC Antenna

Antenna gain: 2.7 dBi;

R=20cm

mW=10^{^(dBm/10)}

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	BLE 1M	0.33	0±1	1	1.259	2.70	1.86	0.0005	1
2440		0.09	0±1	1	1.259	2.70	1.86	0.0005	1
2480		-0.48	0±1	1	1.259	2.70	1.86	0.0005	1
2402	BLE 2M	0.45	0±1	1	1.259	2.70	1.86	0.0005	1
2440		0.12	0±1	1	1.259	2.70	1.86	0.0005	1
2480		-0.38	0±1	1	1.259	2.70	1.86	0.0005	1

2.4GWIFI:

Measurement Result

Operation Frequency: 2412MHz~2462MHz (20M)

2422MHz~2452MHz (40M)

Power density limited: 1mW/ cm²

Antenna Type: PIFA Antenna

Antenna gain: 2.7 dBi;

R=20cm

mW=10^{^(dBm/10)}

antenna gain Numeric=10^{^(dBi/10)}= 10^{^(3.61/10)}=2.30

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2412	11b	12.59	13±1	14	25.119	2.70	1.86	0.0093	1
2437		12.86	13±1	14	25.119	2.70	1.86	0.0093	1
2462		12.71	13±1	14	25.119	2.70	1.86	0.0093	1
2412	11g	7.34	8±1	9	7.943	2.70	1.86	0.0029	1
2437		8.27	8±1	9	7.943	2.70	1.86	0.0029	1
2462		8.21	8±1	9	7.943	2.70	1.86	0.0029	1
2412	11n20	7.36	8±1	9	7.943	2.70	1.86	0.0029	1
2437		8.3	8±1	9	7.943	2.70	1.86	0.0029	1
2462		8.13	8±1	9	7.943	2.70	1.86	0.0029	1
2422	11n40	7.62	8±1	9	7.943	2.70	1.86	0.0029	1
2437		8.53	8±1	9	7.943	2.70	1.86	0.0029	1
2452		8.65	8±1	9	7.943	2.70	1.86	0.0029	1
2412	11ax20	7.44	8±1	9	7.943	2.70	1.86	0.0029	1
2437		8.43	8±1	9	7.943	2.70	1.86	0.0029	1
2462		8.38	8±1	9	7.943	2.70	1.86	0.0029	1
2422	11ax40	7.49	8±1	9	7.943	2.70	1.86	0.0029	1
2437		8.72	8±1	9	7.943	2.70	1.86	0.0029	1
2452		8.5	8±1	9	7.943	2.70	1.86	0.0029	1

5G WIFI:

Operation Frequency:

U-NII-1: 5150 MHz ~5250MHz, U-NII-3: 5725 MHz ~5850 MHz

Power density limited: 1mW/cm

Antenna Type: PIFA Antenna

Antenna gain: 2.59 dBi

R=20cm

mW=10^(dBm/10)

5.2G

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
5180	a	10.62	11±1	12	15.849	2.59	1.82	0.0057	1
5200	a	10.68	11±1	12	15.849	3.69	2.34	0.0074	1
5240	a	11.66	11±1	12	15.849	3.69	2.34	0.0074	1
5180	n20	10.37	11±1	12	15.849	3.69	2.34	0.0074	1
5200	n20	10.78	11±1	12	15.849	3.69	2.34	0.0074	1
5240	n20	11.78	11±1	12	15.849	3.69	2.34	0.0074	1
5190	n40	8.7	9±1	10	10.000	3.69	2.34	0.0047	1
5230	n40	9.78	9±1	10	10.000	3.69	2.34	0.0047	1
5180	ac20	10.37	11±1	12	15.849	3.69	2.34	0.0074	1
5200	ac20	10.85	11±1	12	15.849	3.69	2.34	0.0074	1
5240	ac20	11.78	11±1	12	15.849	3.69	2.34	0.0074	1
5190	ac40	8.67	9±1	10	10.000	3.69	2.34	0.0047	1
5230	ac40	9.57	9±1	10	10.000	3.69	2.34	0.0047	1
5180	ax20	10.51	11±1	12	15.849	3.69	2.34	0.0074	1
5200	ax20	10.84	11±1	12	15.849	3.69	2.34	0.0074	1
5240	ax20	11.75	11±1	12	15.849	3.69	2.34	0.0074	1
5190	ax40	6.86	7±1	8	6.310	3.69	2.34	0.0029	1
5230	ax40	7.9	7±1	8	6.310	3.69	2.34	0.0029	1

5.8G

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
5745	a	13.49	13±1	14	25.119	2.59	1.82	0.0091	1
5785	a	12.47	13±1	14	25.119	2.59	1.82	0.0091	1
5825	a	11.22	12±1	13	19.953	2.59	1.82	0.0072	1
5745	n20	12.76	12±1	13	19.953	2.59	1.82	0.0072	1
5785	n20	11.93	12±1	13	19.953	2.59	1.82	0.0072	1
5825	n20	11.01	12±1	13	19.953	2.59	1.82	0.0072	1
5755	n40	12.58	12±1	13	19.953	2.59	1.82	0.0072	1
5795	n40	12.18	12±1	13	19.953	2.59	1.82	0.0072	1
5745	ac20	12.47	12±1	13	19.953	2.59	1.82	0.0072	1
5785	ac20	11.97	12±1	13	19.953	2.59	1.82	0.0072	1
5825	ac20	11.01	12±1	13	19.953	2.59	1.82	0.0072	1
5755	ac40	12.41	12±1	13	19.953	2.59	1.82	0.0072	1
5795	ac40	11.88	12±1	13	19.953	2.59	1.82	0.0072	1
5745	ax20	12.6	12±1	13	19.953	2.59	1.82	0.0072	1
5785	ax20	11.94	12±1	13	19.953	2.59	1.82	0.0072	1
5825	ax20	10.99	11±1	12	15.849	2.59	1.82	0.0057	1
5755	ax40	12.37	12±1	13	19.953	2.59	1.82	0.0072	1
5795	ax40	12	12±1	13	19.953	2.59	1.82	0.0072	1

SIMULTANEOUS TRANSMISSIONS

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E^2 , H^2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

Max. SIMULTANEOUS TRANSMISSIONS MODE

Band	Evaluation result	Power density Limits	Evaluation result	Power density Limits	Verdict
	(mW/cm ²)	(mW/cm ²)			
Wi-Fi 2.4G + BT	0.0005	1	0.009800	1	PASS
	0.0093	1			

Signature:

Alex Li

Date: 2026-6-4

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