

RF EXPOSURE EVALUATION

According to FCC 1.1310 and KDB 447498 D01 V06, 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.

Measurement Result

BT:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

Power density limited: 1mW/cm

Antenna Type: Chip Antenna

Antenna :6.1dBi

R=20cm

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

Mode	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		
BT	2402	GFSK	5.71	5±1	6	3.981	6.10	4.07	0.0032	1
	2441		5.29	5±1	6	3.981	6.10	4.07	0.0032	1
	2480		5.36	5±1	6	3.981	6.10	4.07	0.0032	1
BT	2402	π/4-DQPSK	4.95	4±1	5	3.162	6.10	4.07	0.0026	1
	2441		4.45	4±1	5	3.162	6.10	4.07	0.0026	1
	2480		4.59	4±1	5	3.162	6.10	4.07	0.0026	1
BT	2402	8-DPSK	5.2	5±1	6	3.981	6.10	4.07	0.0032	1
	2441		4.79	5±1	6	3.981	6.10	4.07	0.0032	1
	2480		4.92	5±1	6	3.981	6.10	4.07	0.0032	1
BLE	2402	GFSK	1.16	1±1	2	1.585	6.10	4.07	0.0013	1
	2440		0.83	1±1	2	1.585	6.10	4.07	0.0013	1
	2480		0.87	1±1	2	1.585	6.10	4.07	0.0013	1

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

Power density limited: 1mW/ cm²

Power density limited: 1mW/cm

Antenna Type: Chip Antenna

2.4G WIFI Antenna :6.1dBi;

R=20cm

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

Antenna	Freq. (MHz)	modulation	(dBm)	power (dBm)	tune-up power		Gain		(mW/cm2)	(mW/cm2)
					(dBm)	(mW)	(dBi)	Numeric		
Ant 1	2412	802.11b	15.77	15±1	16	39.811	6.10	4.07	0.0323	1
Ant 1	2437		15.09	15±1	16	39.811	6.10	4.07	0.0323	1
Ant 1	2462		14.52	15±1	16	39.811	6.10	4.07	0.0323	1
Ant 1	2412	802.11g	14.55	14±1	15	31.623	6.10	4.07	0.0256	1
Ant 1	2437		13.69	14±1	15	31.623	6.10	4.07	0.0256	1
Ant 1	2462		13.1	14±1	15	31.623	6.10	4.07	0.0256	1
Ant1	2412	802.11n20	12.62	12±1	13	19.953	6.10	4.07	0.0162	1
Ant 1	2437		11.76	11±1	12	15.849	6.10	4.07	0.0128	1
Ant 1	2462		10.77	11±1	12	15.849	6.10	4.07	0.0128	1

Note: Bluetooth and Wi-Fi do not support simultaneous transmission.

Conclusion:

For the max result : 0.0323≤ 1.0, SAR is not required.

Signature:

Date: 2026-07-24



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