FCC ID: 2A4ND-KY-2027

RF EXPOSURE EVALUATION

According to Standard(s) :
FCC Rules 47 CFR §2.1091
447498 D01 General RF Exposure Guidance v06
FCC Rules 47 CFR § 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 (V/m) = $\frac{\sqrt{30 * P * G}}{d}$

Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

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

Operation Frequency: BT: 2402-2480MHz
Power density limited: 1mW/ cm^2
Antenna Type: PCB Antenna
Antenna gain: 1.9dBi,
R=20 cm

BR+EDR

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
2402	GFSK	-3.36	-4±1	-3	0.501	1.90	1.55	0.00015	1
2441		-4.79	-4±1	-3	0.501	1.90	1.55	0.00015	1
2480		-3.66	-4±1	-3	0.501	1.90	1.55	0.00015	1
2402	π/4 DQPSK	-3.35	-4±1	-3	0.501	1.90	1.55	0.00015	1
2441		-4.83	-4±1	-3	0.501	1.90	1.55	0.00015	1
2480		-3.66	-4±1	-3	0.501	1.90	1.55	0.00015	1
2402	8DPSK	-3.19	-4±1	-3	0.501	1.90	1.55	0.00015	1
2441		-4.62	-4±1	-3	0.501	1.90	1.55	0.00015	1
2480		-3.45	-4±1	-3	0.501	1.90	1.55	0.00015	1

BLE

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
2402	GFSK	-2.81	-3±1	-2	0.631	1.90	1.55	0.00019	1
2440		-2.73	-3±1	-2	0.631	1.90	1.55	0.00019	1
2480		-3.07	-3±1	-2	0.631	1.90	1.55	0.00019	1

Conclusion:
For the max result: 0.00015≤ 1.0 for Max Power Density, compliance RF exposure.

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