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)	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

SRD
Operation Frequency: GFSK: 905 MHz~926.5MHz
Antenna Type: Inverted-L antenna
Antenna gain: Antenna: -5 dBi
R=20cm

OCW=120KHz-jeweller

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		
905.00	GFSK	7.18	7±1	8	6.310	-5.00	0.32	0.0004	0.60
915.85	GFSK	7.04	7±1	8	6.310	-5.00	0.32	0.0004	0.61
926.5	GFSK	6.74	7±1	8	6.310	-5.00	0.32	0.0004	0.62

OCW=140KHz-wings

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		
905.00	GFSK	5.84	6.5±1	7.5	5.623	-5.00	0.32	0.0004	0.60
915.85	GFSK	6.65	6.5±1	7.5	5.623	-5.00	0.32	0.0004	0.61
926.5	GFSK	7.6	7±1	8	6.310	-5.00	0.32	0.0004	0.62

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,
WIFI 802.11n HT40:2422-2452MHz
Power density limited: 1mW/ cm^2
Antenna Type: Inverted-F antenna
Antenna gain: 3.2dBi;
R=20cm
mW=10^(dBm/10)
antenna gain Numeric=10^(dBi/10)= 10^(2.1/10)=1.62

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2412	802.11b	11.57	12±1	13	19.953	3.20	2.09	0.0083	1
2437		11.58	12±1	13	19.953	3.20	2.09	0.0083	1
2462		11.6	12±1	13	19.953	3.20	2.09	0.0083	1
2412	802.11g	11.58	12±1	13	19.953	3.20	2.09	0.0083	1
2437		11.61	12±1	13	19.953	3.20	2.09	0.0083	1
2462		11.58	12±1	13	19.953	3.20	2.09	0.0083	1
2412	802.11n H20	11.57	12±1	13	19.953	3.20	2.09	0.0083	1
2437		11.61	12±1	13	19.953	3.20	2.09	0.0083	1
2462		11.58	12±1	13	19.953	3.20	2.09	0.0083	1

Conclusion:
For the max result : 0.0004≤ 0.60 for Max Power Density, compliance RF exposure..
0.0083≤ 1 for Max Power Density, compliance RF exposure..

Note: This product does not support simultaneous delivery.

Signature: **Date:** 2025/4/21

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