FCC ID : 2AFIW-LWR01

1. 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**

Friis transmission formula: Pd= (Pout*G)\ ($4*pi*R^2$)

Where

Pd= Power density in mW/cm^2.

Pout=output power to antenna in mW.

G= Numeric gain of the antenna relative to isotropic antenna.

Pi=3.1416.

R= distance between observation point and center of the radiator in 20cm.

Pd the limit of MPE, $1mW/cm^2$. 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.

2. EUT TECHNICAL DESCRIPTION

Product Name:	Wireless Human Presence Sensor
Model Number:	LWR01
Power Supply:	Battery AA (1.5Vx2) AC 120V/60Hz by Adapter
Temperature Range:	0℃~40℃

BLE Version:	V5.4
Device Type:	Bluetooth with BLE mode
Data Rate :	1Mbps
Modulation:	GFSK
Operating Frequency Range:	2402-2480MHz
Number of Channels:	40 Channels
Antenna Type:	Integrated Antenna
Antenna Gain:	0.55dBi

Device Type:	Thread
Wireless Protocol:	IEEE 802.15.4
Modulation:	DSSS, QPSK
Operating Frequency Range:	2405-2480MHz
Number of Channels:	16 Channels
Antenna Type:	Integrated Antenna
Antenna Gain:	0.55dBi

Device Type:	24G Radar
Modulation:	FMCW
Operating Frequency Range:	24GHz-24.25GHz

Number of Channels:	1 Channel
Antenna Type:	Integrated Antenna
Antenna Gain:	-0.17dBi

3. Measurement Result

Mode	Frequency （MHz）	Max Power (dBm)	Antenna gain (dBi)	Antenna Gain Numeric	R (cm)	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
BLE	2402	5.71	0.55	1.14	20	0.00084	1.0000
Thread	2405	5.74	0.55	1.14	20	0.00085	1.0000
24G Radar	24000	-2.34	-0.17	0.96	20	0.00011	1.0000

NOTE:
(1) All the modes are tested, only the worst data are described in the table.
(2) 24G Radar Max power refer to the report No. GJWSZ2025-0226, and the dBm = dBμv - 107, as a result, the 24G Radar Max power is 104.66-107=-2.34dBm.

Conclusion of simultaneous transmitter:
Both of the module 1 and module 2 can transmit simultaneously, the formula of calculated the MPE is:

CPD1/LPD1+CPD2/LPD2+……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Therefore the worst-case situation is 0.00084 /1+0.00085/1+0.00011/1= 0.0018, which is less than 1, this confirmed that the device comply with FCC 1.1310 MPE limit.

----- The End -----