RF Exposure Evaluation

FCC ID: 2AZ2P-X5M

1. Client Information

Applicant	:	Shenzhen Zijing Optoelectronics Technology Co., Ltd.
Address	:	4 / F, No.66, Baotian Industrial Park, Xixiang Street, Baoan District, Shenzhen Ciyt , China
Manufacturer	:	Shenzhen Zijing Optoelectronics Technology Co., Ltd.
Address	:	4 / F, No.66, Baotian Industrial Park, Xixiang Street, Baoan District, Shenzhen Ciyt , China

2. General Description of EUT

EUT Name	:	Projector	
Models No.	:	X5M, X5A, X5P, X2A, X2M, X2P, X3A, X3M, X3P	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
Sample ID	:	20210510-22-01#& 20210510-22-04#	
Product Description	:	Operation Frequency:	Bluetooth 5.0: 2402~2480 MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
		Modulation Type:	GFSK (1 Mbps) π /4-DQPSK (2 Mbps) 802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM,64QAM)
Power Rating	:	Adapter 1#(PS65B190Y3420S) Input: 100-240V~, 50/60Hz,1.5A MAX Output: DC 19.0V 3.42A 64.98W Adapter 2#(CW1903420) Input: 100-240V~, 50/60Hz,1.2A MAX Output: DC 19.0V 3.42A 64.98W	
Software Version	:	N/A	
Hardware Version	:	N/A	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note: More test information about the EUT please refer the RF Test Report.

1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

MPE Calculations

1. Antenna Gain:

Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
Bluetooth	N/A	N/A	PCB	-0.58
2.4G Wi-Fi	N/A	N/A	Internal	2

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density
P: power input to the antenna
G: power gain of the antenna in the direction of interest relative to an isotropic radiator.
R: distance to the center of radiation of the antenna

4. Test Result:

Worst Maximum MPE Result								
Mode	N_{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
802.11b	1	2412	10.77	10±1	11	2	20	0.0040
		2437	10.37	10±1	11	2	20	0.0040
		2462	10.11	10±1	11	2	20	0.0040
802.11g	1	2412	15.83	16±1	17	2	20	0.0158
		2437	16.01	16±1	17	2	20	0.0158
		2462	15.36	16±1	17	2	20	0.0158
802.11n (HT20)	1	2412	11.92	12±1	13	2	20	0.0063
		2437	12.30	12±1	13	2	20	0.0063
		2462	12.13	12±1	13	2	20	0.0063
802.11n (HT40)	1	2422	11.97	12±1	13	2	20	0.0063
		2437	12.02	12±1	13	2	20	0.0063
		2452	12.52	12±1	13	2	20	0.0063

Note:
(1) N_{TX}= Number of Transmit Antennas
(2) RF Output power specifies that Maximum Conducted Peak Output Power.

Worst Maximum MPE Result							
Mode	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]
Bluetooth (GFSK)	2402	3.963	4±1	5	-0.58	20	0.0006
	2441	4.377	4±1	5	-0.58	20	0.0006
	2480	3.652	4±1	5	-0.58	20	0.0006
Bluetooth (π /4-DQPSK)	2402	4.639	5±1	6	-0.58	20	0.0007
	2441	5.050	5±1	6	-0.58	20	0.0007
	2480	4.295	5±1	6	-0.58	20	0.0007
BLE	2402	4.950	5±1	6	-0.58	20	0.0007
	2442	5.392	5±1	6	-0.58	20	0.0007
	2480	4.653	5±1	6	-0.58	20	0.0007

Note:
(3) N_{TX}= Number of Transmit Antennas
(4) RF Output power specifies that Maximum Conducted Peak Output Power.

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm^2)
300-1,500	F/1500
1,500-100,000	1.0

MPE limit: 1 mW/ cm^2
The 2.4G WLAN and the Bluetooth can transmit at the same time.
The MPE is calculated as 0.0158+0.0007mW /cm^2 =0.0165 mW /cm^2< limit 1 mW / cm^2. So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

Note

For a more detailed features description, please refer to the RF Test Report.

-----END OF REPORT-----