



Maximum Permissible Exposure Evaluation

FCC ID: 2ATVI-P07S

1. Client Information

Applicant	:	Shenzhen Suichen Technology Co., Ltd
Address	:	Room 3510, Building A, Building A, B, C, D, Mangrove Huaifu, No. 8, Shazui Road, Shazui Community, Shatou Street, Futian District, Shenzhen, China
Manufacturer	:	Shenzhen Suichen Technology Co., Ltd
Address	:	Room 3510, Building A, Building A, B, C, D, Mangrove Huaifu, No. 8, Shazui Road, Shazui Community, Shatou Street, Futian District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Pico Projector
Models No.	:	P07S, P07-D, P12, P12S, P12 Pro
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is different customers, different model name.
Sample ID	:	202307-0061-4-#1 & 202307-0061-4-#2
Product Description	:	Operation Frequency: U-NII-1: 5180MHz~5240MHz U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5700MHz U-NII-3: 5745MHz~5825MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz Bluetooth 4.2: 2402MHz~2480MHz
Power Rating	:	USB Input: DC 5V2.4A
Li-ion Polymer Battery	:	DC 3.7V by 4200mAh 15.54Wh Rechargeable Li-ion battery
Software Version	:	N/A
Hardware Version	:	N/A
Remark	:	The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.

TB-RF-074-1.0

Method of Measurement for FCC

1. Max. Antenna Gain:

Bluetooth				
Antenna	Brand	Model Name	Type	Antenna Gain (dBi)
ANT. 1	N/A	N/A	FPC	2.43
2.4G WIFI				
Antenna	Brand	Model Name	Type	Antenna Gain (dBi)
ANT. 1	N/A	N/A	FPC	2.30
U-NII-1 5180~5240MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	FPC	2.28
U-NII-2A 5260~5320MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	FPC	2.53
U-NII-2C 5500~5700MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	FPC	1.84
U-NII-3 5745~5825MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	FPC	1.42

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

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$



4. Test Result:

Bluetooth 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]
GFSK	1	2402	5.86	6±1	7	2.43	20	0.0017
		2441	5.231	5±1	6	2.43	20	0.0014
		2480	2.573	3±1	4	2.43	20	0.0009
π/4-DQPSK	1	2402	5.814	6±1	7	2.43	20	0.0017
		2441	3.182	3±1	4	2.43	20	0.0009
		2480	2.553	3±1	4	2.43	20	0.0009
8-DPSK	1	2402	8.08	8±1	9	2.43	20	0.0028
		2441	7.454	7±1	8	2.43	20	0.0022
		2480	6.812	7±1	8	2.43	20	0.0022

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

BLE 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]
BLE (1Mbps)	1	2402	4.34	4±1	5	2.43	20	0.0011
		2440	3.438	3±1	4	2.43	20	0.0009
		2480	2.821	3±1	4	2.43	20	0.0009

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



2.4G WiFi MPE Result Antenna 1

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	16.182	16±1	17	2.30	20	0.0169
		2437	15.811	16±1	17	2.30	20	0.0169
		2462	15.264	15±1	16	2.30	20	0.0135
802.11g	1	2412	14.917	15±1	16	2.30	20	0.0135
		2437	14.678	15±1	16	2.30	20	0.0135
		2462	14.078	14±1	15	2.30	20	0.0107
802.11n2 0	1	2412	14.048	14±1	15	2.30	20	0.0107
		2437	13.712	14±1	15	2.30	20	0.0107
		2462	13.125	13±1	14	2.30	20	0.0085
802.11n4 0	1	2422	12.993	13±1	14	2.30	20	0.0085
	1	2437	12.822	13±1	14	2.30	20	0.0085
	1	2452	11.588	12±1	13	2.30	20	0.0067
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted Peak Output Power.								



5.2G WiFi MPE Result Antenna 1								
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]
802.11a	1	5180	16.68	17±1	18	2.28	20	0.0212
		5200	17.06	17±1	18	2.28	20	0.0212
		5240	17.67	18±1	19	2.28	20	0.0267
802.11n20	1	5180	17.26	17±1	18	2.28	20	0.0212
		5200	17.71	18±1	19	2.28	20	0.0267
		5240	17.47	17±1	18	2.28	20	0.0212
802.11n40	1	5190	12.32	12±1	13	2.28	20	0.0067
		5230	14.78	15±1	16	2.28	20	0.0134
802.11ac20	1	5180	14.13	14±1	15	2.28	20	0.0106
		5200	14.59	15±1	16	2.28	20	0.0134
		5240	15.54	16±1	17	2.28	20	0.0169
802.11ac40	1	5190	12.48	12±1	13	2.28	20	0.0067
		5230	12.75	13±1	14	2.28	20	0.0084
802.11ac80	1	5210	13.32	13±1	14	2.28	20	0.0084
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted average Output Power.								



5.3G WiFi MPE Result Antenna 1								
Mode	N _T x	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]
802.11a	1	5260	17.61	18±1	19	2.53	20	0.0283
		5280	17.69	18±1	19	2.53	20	0.0283
		5320	16.76	17±1	18	2.53	20	0.0225
802.11n20	1	5260	17.60	18±1	19	2.53	20	0.0283
		5280	17.68	18±1	19	2.53	20	0.0283
		5320	16.49	16±1	17	2.53	20	0.0179
802.11n40	1	5270	14.71	15±1	16	2.53	20	0.0142
		5310	12.95	13±1	14	2.53	20	0.0089
802.11ac20	1	5260	15.31	15±1	16	2.53	20	0.0142
		5280	15.41	15±1	16	2.53	20	0.0142
		5320	15.09	15±1	16	2.53	20	0.0142
802.11ac40	1	5270	12.72	13±1	14	2.53	20	0.0089
		5310	10.50	11±1	12	2.53	20	0.0056
802.11ac80	1	5290	11.41	11±1	12	2.53	20	0.0056
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted average Output Power.								



5.5G WiFi MPE Result Antenna1								
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]
802.11a	1	5500	16.24	16±1	17	1.84	20	0.0152
		5580	17.72	18±1	19	1.84	20	0.0241
		5700	15.17	15±1	16	1.84	20	0.0121
802.11n20	1	5500	16.02	16±1	17	1.84	20	0.0152
		5580	17.65	18±1	19	1.84	20	0.0241
		5700	14.72	15±1	16	1.84	20	0.0121
802.11n40	1	5510	12.99	13±1	14	1.84	20	0.0076
		5550	13.94	14±1	15	1.84	20	0.0096
		5670	13.30	13±1	14	1.84	20	0.0076
802.11ac20	1	5500	13.54	14±1	15	1.84	20	0.0096
		5580	15.27	15±1	16	1.84	20	0.0121
		5700	14.40	14±1	15	1.84	20	0.0096
802.11ac40	1	5510	10.71	11±1	12	1.84	20	0.0048
		5550	10.46	10±1	11	1.84	20	0.0038
		5670	10.56	11±1	12	1.84	20	0.0048
802.11ac80	1	5530	11.52	12±1	13	1.84	20	0.0061
		5610	12.27	12±1	13	1.84	20	0.0061
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted average Output Power.								



5.8G WiFi MPE Result Antenna 1								
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]
802.11a	1	5745	17.59	18±1	19	1.42	20	0.0219
		5785	17.83	18±1	19	1.42	20	0.0219
		5825	17.70	18±1	19	1.42	20	0.0219
802.11n20	1	5745	16.99	17±1	18	1.42	20	0.0174
		5785	17.71	18±1	19	1.42	20	0.0219
		5825	17.71	18±1	19	1.42	20	0.0219
802.11n40	1	5755	13.35	13±1	14	1.42	20	0.0069
		5795	13.68	14±1	15	1.42	20	0.0087
802.11ac20	1	5745	13.98	14±1	15	1.42	20	0.0087
		5785	14.40	14±1	15	1.42	20	0.0087
		5825	14.77	15±1	16	1.42	20	0.0110
802.11ac40	1	5755	12.55	13±1	14	1.42	20	0.0069
		5795	12.68	13±1	14	1.42	20	0.0069
802.11ac80	1	5775	12.62	13±1	14	1.42	20	0.0069
Note: N _{TX} = Number of Transmit Antennas RF Output power specifies that Maximum Conducted average 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

For:2402~2480MHz&2412~2462MHz&5180~5825MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.0283mW / cm² < limit 1mW / cm²**.

2.4G WIFI Antenna1 + BT&5G WIFI Antenna1 support Synchronization transmit the

$$\sum \text{MPE}_{\text{ratios}} = 0.0169 + 0.0283 = 0.0452 < 1$$

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.

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

