



# Maximum Permissible Exposure Evaluation

**FCC ID: 2ATVI-M1S**

## 1. Client Information

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

## 2. General Description of EUT

<b>EUT Name</b>	:	Wireless Pico Projector												
<b>Models No.</b>	:	M1S, P200, T200, P200T, P200 Pro, P3, P3 Pro, M6, M6S												
<b>Model Different</b>	:	All PCB boards and circuit diagrams are the same, the only difference is the model name.												
<b>Product Description</b>	:	<table border="0"> <tr> <td>Operation</td> <td>Bluetooth&amp;LE 4.0: 2402MHz~2480MHz</td> </tr> <tr> <td>Frequency:</td> <td>U-NII-1: 5180MHz~5240MHz</td> </tr> <tr> <td></td> <td>U-NII-2A: 5260MHz~5320MHz</td> </tr> <tr> <td></td> <td>U-NII-2C: 5500MHz~5720MHz</td> </tr> <tr> <td></td> <td>U-NII-3: 5745MHz~5825MHz</td> </tr> <tr> <td></td> <td>802.11b/g/n(HT20): 2412MHz~2462MHz</td> </tr> </table>	Operation	Bluetooth&LE 4.0: 2402MHz~2480MHz	Frequency:	U-NII-1: 5180MHz~5240MHz		U-NII-2A: 5260MHz~5320MHz		U-NII-2C: 5500MHz~5720MHz		U-NII-3: 5745MHz~5825MHz		802.11b/g/n(HT20): 2412MHz~2462MHz
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	U-NII-3: 5745MHz~5825MHz													
	802.11b/g/n(HT20): 2412MHz~2462MHz													
<b>Power Rating</b>	:	Input: DC 12V DC 7.6V by 3420mAh Rechargeable Li-ion battery												
<b>Software Version</b>	:	N/A												
<b>Hardware Version</b>	:	N/A												
<b>Remark</b>	:	The antenna gain provided by the manufacturer, the verified for the RF conduction test provided by TOBY test lab.												



## Method of Measurement for FCC

### 1. Max. Antenna Gain:

Band	Antenna Type	Antenna Gain(dBi)		
		Antenna 1	Antenna 2	Antenna 3
Bluetooth	FPC	/	/	1.81
2.4G Wi-Fi	FPC	2.31	2.18	/
U-NII-1		4.01	3.84	/
U-NII-2A		4.70	3.81	/
U-NII-2C		3.59	3.67	/
U-NII-3		3.12	3.13	/

### 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  $\leq 1.0$ .

This means that:

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





4. Test Result:

Worst MPE Result							
Test Mode	Antenna	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]
Bluetooth&LE	/	8.08	8±1	9	1.81	20	0.0024
2.4G b	Ant1	15.86	15±1	16	2.31	20	0.0135
	Ant2	16.43	16±1	17	2.18	20	0.0165
2.4G g	Ant1	10.80	10±1	11	2.31	20	0.0043
	Ant2	11.02	11±1	12	2.18	20	0.0052
2.4G n20	Ant1	11.38	11±1	12	2.31	20	0.0053
	Ant2	11.72	11±1	12	2.18	20	0.0052
5G a	Ant1	11.27	11±1	12	4.70	20	0.0093
	Ant2	10.37	10±1	11	3.84	20	0.0061
5G n20	Ant1	11.02	11±1	12	4.70	20	0.0093
	Ant2	10.7	10±1	11	3.84	20	0.0061
5G n40	Ant1	11.24	11±1	12	4.70	20	0.0093
	Ant2	9.88	9±1	10	3.84	20	0.0048
5G ac20	Ant1	11.21	11±1	12	4.70	20	0.0093
	Ant2	9.94	9±1	10	3.84	20	0.0048
5G ac40	Ant1	9.23	9±1	10	4.70	20	0.0059
	Ant2	9.59	9±1	10	3.84	20	0.0048
5G ac80	Ant1	7.15	7±1	8	4.70	20	0.0037
	Ant2	7.05	7±1	8	3.84	20	0.0030

Note: The antenna gain used max. antenna gain





**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 <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

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

MPE limit S: 1mW/ cm<sup>2</sup>

The MPE is calculated as **0.0324mW / cm<sup>2</sup> < limit 1mW / cm<sup>2</sup>**.

**6. Summary simultaneous transmission information**

Modulation Type	Work Frequency Band	Transmit Antenna			MIMO
		Antenna 1	Antenna 2	Antenna 3	
Bluetooth	2.4GHz	/	/	Yes	/
Bluetooth LE	2.4GHz	/	/	Yes	/
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes
IEEE 802.11b	2.4GHz	Yes	Yes	/	No
IEEE 802.11g	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	/	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	/	Yes

**7. Summary simultaneous transmission results**

Antenna 1 & Antenna 2 & Antenna for 2.4GWLAN & 5GWLAN & Bluetooth & LE

MPE Antenna 1 (mW/cm <sup>2</sup> )	MPE Antenna 2 (mW/cm <sup>2</sup> )	MPE Antenna 3 (mW/cm <sup>2</sup> )	ΣMPE ratios	Limit	Results
0.0135	0.0165	0.0024	0.0324	1.0	PASS

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 CFR 2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

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

