



Maximum Permissible Exposure Evaluation

FCC ID: 2BCTE-TS-1

1. Client Information

Applicant	:	Shenzhen Feichang Huapin Technology Co., Ltd.
Address	:	11th Floor, Xingbaohe Building, Xianian, Gongmingshang Village, Guangming District, Shenzhen City, Guangdong Province, China
Manufacturer	:	Shenzhen Feichang Huapin Technology Co., Ltd.
Address	:	11th Floor, Xingbaohe Building, Xianian, Gongmingshang Village, Guangming District, Shenzhen City, Guangdong Province, China

2. General Description of EUT

EUT Name	:	projector
Models No.	:	TS-1, T-1, T-2, T-3, T-4, T-5, T-6, T-7, T-8, T-9, TZ-1, TZ-2, TZ-3, TZ-4, TZ-5, TZ-6, TZ-7, TZ-8, TZ-9, TS-2, TS-3, TS-4, TS-5, TS-6, TS-7, TS-8, TS-9
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that appearance.
Sample ID	:	202308-0329-1-1# & 202308-0329-1-2#
Product Description	:	Operation Frequency: U-NII-1: 5180MHz~5240MHz U-NII-3: 5745MHz~5825MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz Bluetooth 5.2(BR+EDR): 2402MHz~2480MHz Bluetooth 5.2(BLE): 2402MHz~2480MHz
Power Rating	:	Adapter (Model: RSF-DY113B-2202180US) Input: 100-240V~ 50/60Hz, 1.5A Output: 22V=2.2A
Software Version	:	----
Hardware Version	:	FCHP-X4352-V1.0
Remark	:	The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.

Method of Measurement for FCC

1. Max. Antenna Gain:

Bluetooth				
Antenna	Brand	Model Name	Type	Antenna Gain (dBi)
ANT. 1	N/A	N/A	PCB	1.73
2.4G WIFI				
Antenna	Brand	Model Name	Type	Antenna Gain (dBi)
ANT. 1	N/A	N/A	PCB	1.73
U-NII-1 5180~5240MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	PCB	5.25
U-NII-3 5745~5825MHz				
Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 1	N/A	N/A	PCB	5.25

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	7.099	7±1	8	1.73	20	0.0019
		2441	7.025	7±1	8	1.73	20	0.0019
		2480	7.187	7±1	8	1.73	20	0.0019
π/4-DQPSK	1	2402	6.545	7±1	8	1.73	20	0.0019
		2441	6.534	7±1	8	1.73	20	0.0019
		2480	6.472	6±1	7	1.73	20	0.0015
8-DPSK	1	2402	6.775	7±1	8	1.73	20	0.0019
		2441	7.013	7±1	8	1.73	20	0.0019
		2480	7.013	7±1	8	1.73	20	0.0019

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	4.819	5±1	6	1.73	20	0.0012
		2440	2.839	3±1	4	1.73	20	0.0007
		2480	2.748	3±1	4	1.73	20	0.0007
BLE (2Mbps)	1	2402	5.054	5±1	6	1.73	20	0.0012
		2440	3.064	3±1	4	1.73	20	0.0007
		2480	3.25	3±1	4	1.73	20	0.0007

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	16.434	16±1	17	1.73	20	0.0149
		2437	15.708	16±1	17	1.73	20	0.0149
		2462	15.425	15±1	16	1.73	20	0.0118
802.11g	1	2412	11.722	12±1	13	1.73	20	0.0059
		2437	10.875	11±1	12	1.73	20	0.0047
		2462	10.657	11±1	12	1.73	20	0.0047
802.11n20	1	2412	12.007	12±1	13	1.73	20	0.0059
		2437	11.2	11±1	12	1.73	20	0.0047
		2462	10.89	11±1	12	1.73	20	0.0047
802.11n40	1	2422	8.478	8±1	9	1.73	20	0.0024
	1	2437	8.027	8±1	9	1.73	20	0.0024
	1	2452	8.111	8±1	9	1.73	20	0.0024
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	13.552	14±1	15	5.25	20	0.0211
		5200	14.381	14±1	15	5.25	20	0.0211
		5240	14.502	15±1	16	5.25	20	0.0265
802.11n20	1	5180	13.507	14±1	15	5.25	20	0.0211
		5200	13.895	14±1	15	5.25	20	0.0211
		5240	14.759	15±1	16	5.25	20	0.0265
802.11n40	1	5190	13.829	14±1	15	5.25	20	0.0211
		5230	14.618	15±1	16	5.25	20	0.0265
802.11ac20	1	5180	13.804	14±1	15	5.25	20	0.0211
		5200	14.261	14±1	15	5.25	20	0.0211
		5240	15.071	15±1	16	5.25	20	0.0265
802.11ac40	1	5190	13.843	14±1	15	5.25	20	0.0211
		5230	14.578	15±1	16	5.25	20	0.0265
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	11.660	12±1	13	5.25	20	0.0133
		5785	10.981	11±1	12	5.25	20	0.0106
		5825	11.518	12±1	13	5.25	20	0.0133
802.11n20	1	5745	11.783	12±1	13	5.25	20	0.0133
		5785	11.832	12±1	13	5.25	20	0.0133
		5825	11.803	12±1	13	5.25	20	0.0133
802.11n40	1	5755	11.846	12±1	13	5.25	20	0.0133
		5795	11.133	11±1	12	5.25	20	0.0106
802.11ac20	1	5745	11.783	12±1	13	5.25	20	0.0133
		5785	11.295	11±1	12	5.25	20	0.0106
		5825	11.738	12±1	13	5.25	20	0.0133
802.11ac40	1	5755	11.840	12±1	13	5.25	20	0.0133
		5795	11.082	11±1	12	5.25	20	0.0106
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&5180~5240MHz&5745~5825MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.0265mW / cm² < limit 1mW / cm²**.

Bluetooth Antenna1 + (2.4G&5G) WIFI Antenna1 support Synchronization transmit the

$$\sum \text{MPE}_{\text{ratios}} = 0.0019 + 0.0265 = 0.0284 < 1$$

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-----

