



Maximum Permissible Exposure Evaluation

FCC ID: 2A5TU-XCMNPL

1. Client Information

Applicant	:	Zhejiang Unionx Electric Machinery Technology Co., LTD.
Address	:	NO.28 YUNSHAN MIDDLE ROAD, SANQISHI TOWN, YUYAO, ZHEJIANG PROVINCE, China
Manufacturer	:	Zhejiang Unionx Electric Machinery Technology Co., LTD.
Address	:	NO.28 YUNSHAN MIDDLE ROAD, SANQISHI TOWN, YUYAO, ZHEJIANG PROVINCE, China

2. General Description of EUT

EUT Name	:	Automatic Key Cutting Machine
Models No.	:	XC-MINI PLUS II
Model Different	:	----
Product Description	:	Operation Frequency: Bluetooth5.0(BLE):2402MHz~2480MHz Bluetooth5.0(BDR+EDR):2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11b/g/n(HT40): 2422MHz~2452MHz U-NII-1:5180MHz~5240MHz, U-NII-3: 5745MHz~5825MHz
Power Rating	:	AC 90-264V, 3A, 50/60Hz
Software Version	:	1.0.1
Hardware Version	:	0.1.1
Connecting I/O Port(S)	:	Please refer to the User's Manual
Remark	:	the evaluation report used the EUT(202202-0114-11-2#.).

MPE Calculations for WIFI

1. Antenna Gain:

Antenna	Brand	Model Name	Type	BT&BLE Antenna Gain(dBi)
/	N/A	N/A	FPC	1.8

Antenna	Brand	Model Name	Type	2.4G&5G WIFI Antenna Gain(dBi)
/	N/A	N/A	FPC	2.5

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: Only show the worst.

Mode	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm2) [S]	Limit of Power Density (mW/ cm2) (S)
Buletooth (GFSK)	-0.93	0±1	1	1.8	20	0.00038	1
2.4GWiFi (802.11G)	17.49	17±1	18	2.5	20	0.02232	1
5GWiFi (11N20)	18.05	18±1	19	2.5	20	0.02810	1

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&2412~2462 MHz&5180~5825MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.02810 \text{ mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$.

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.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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