

Maximum Permissible Exposure Evaluation

FCC ID: 2A65P-WIFI-V1

1. Client Information

Applicant	:	Yiwu GuanSen Electronic Commerce Co., LTD.
Address	:	2 / F, building 38, zone 2, Kongcun, Jiangdong Street, Yiwu City, Zhejiang, China
Manufacturer	:	Shanghai Esoung Electronics Co., LTD.
Address	:	No.280, Cheteng Road, Songjiang District, Shanghai, China

2. General Description of EUT

EUT Name	:	Intelligent watering machine
Models No.	:	WIFI-1, WIFI-2
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is that appearance.
Product Description	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
	Number of Channel:	802.11b/g/n(HT20):11 channels 802.11n(HT40): 7 channels
	RF Output Power:	802.11b: 16.911dBm 802.11g: 16.069dBm 802.11n (HT20): 16.784dBm 802.11n (HT40): 15.932dBm
	Antenna Gain:	1.3dBi PCB Antenna
Power Rating	:	Input:5V
Software Version	:	210628-03_wifi V1.3
Hardware Version	:	210628 WIFI-V1.11
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna:1.3dBi.

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	16.443	16±1	17	1.3	20	0.0135
		2437	9.192	9±1	10	1.3	20	0.0027
		2462	16.911	17±1	18	1.3	20	0.0169
802.11g	1	2412	16.069	16±1	17	1.3	20	0.0135
		2437	15.902	16±1	17	1.3	20	0.0135
		2462	15.802	16±1	17	1.3	20	0.0135
802.11n(HT20)	1	2412	16.784	17±1	18	1.3	20	0.0169
		2437	15.808	16±1	17	1.3	20	0.0135
		2462	15.593	16±1	17	1.3	20	0.0135
802.11n(HT40)	1	2422	15.932	16±1	17	1.3	20	0.0135
		2437	15.698	16±1	17	1.3	20	0.0135
		2452	15.56	15±1	16	1.3	20	0.0107
Note: (1) N _{TX} = Number of Transmit Antennas (2) 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

For 2.4WIFI:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0169 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{mW} / \text{cm}^2$. 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.

6. Conclusion:

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

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