

Maximum Permissible Exposure Evaluation

FCC ID: 2A48G-W0088

1. Client Information

Applicant	:	Maoming Yongyao Clock Co., Ltd
Address	:	Room 3, East of Shangxinwu Village, Datang Village Committee, Xinpo Town, Maonan District, Maoming City, Guangdong Province. China.
Manufacturer	:	Maoming Yongyao Clock Co., Ltd
Address	:	Room 3, East of Shangxinwu Village, Datang Village Committee, Xinpo Town, Maonan District, Maoming City, Guangdong Province. China.

2. General Description of EUT

EUT Name	:	LED Electronic clock	
Models No.	:	W0088, W0088R, W0088W, W0088B, W0088G, W0088P, 0066R, 0066G, 0066B, 0066W, 0066P, LEDone, LEDoneC, 0066, YX0080, YX0080R, YX0080G, YX0080B, YX0080W, YX0080P, YX0130C, YX0130	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is Named after a different.	
Sample ID	:	20211229-09-1# & 20211229-09-2#	
Product Description	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz-2452MHz	
	Antenna Gain:	FPC Antenna, Maximum Gain: 3.0dBi	
Power Rating	:	Adapter(GA-0901000) Input: AC100-240V 50/60Hz 0.6A Output: 9V1000mA	
Software Version	:	1.3	
Hardware Version	:	1.0	
Remark	:	The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.	

Method Of Measurement for FCC

1. Max. Antenna Gain:

FPC Antenna: 3.0dBi.

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:

2.4G WiFi 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	13.28	13±1	14	3.0	20	0.0099
		2437	13.38	13±1	14	3.0	20	0.0099
		2462	13.15	13±1	14	3.0	20	0.0099
802.11g	1	2412	13.39	13±1	14	3.0	20	0.0099
		2437	13.41	13±1	14	3.0	20	0.0099
		2462	13.23	13±1	14	3.0	20	0.0099
802.11n20	1	2412	14.08	14±1	15	3.0	20	0.0125
		2437	14.05	14±1	15	3.0	20	0.0125
		2462	13.84	13±1	14	3.0	20	0.0099
802.11n40	1	2422	13.48	13±1	14	3.0	20	0.0099
		2437	13.81	13±1	14	3.0	20	0.0099
		2452	13.87	13±1	14	3.0	20	0.0099

Note:

N_{TX}= Number of Transmit Antennas

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: 2412~2462MHz

MPE limit S: 1mW / cm²

The MPE is calculated as **0.0125mW / cm² < limit 1mW / cm²**.

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.

Remark:

1. Output power including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

Note

For a more detailed features description, please refer to the RF Test Report.

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