

Maximum Permissible Exposure Evaluation

FCC ID: 2APQN-US-PR1

1. Client Information

Applicant	:	Shenzhen Yuandian Photoelectric Technology CO.,LTD
Address	:	Room 423A and 426, 4th floor, China Electronics Factory, No.2, Fuan Avenue, Pinghu street, Longgang District, Shenzhen, China
Manufacturer	:	Shenzhen Yuandian Photoelectric Technology CO.,LTD
Address	:	Room 423A and 426, 4th floor, China Electronics Factory, No.2, Fuan Avenue, Pinghu street, Longgang District, Shenzhen, China

2. General Description of EUT

EUT Name	:	American gauge 10-16A round WiFi socket
Models No.	:	US-PR1, US-PR1, US-PR1+, US-P1, US-P2, US-P3, US-P1+, US-P2+, US-P3+, US-P1L
Models Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is the appearance and size.
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz
		RF Output Power: 802.11b: 17.52dBm 802.11g: 16.48dBm 802.11n (HT20): 16.35dBm
		Antenna Gain: 2 dBi PCB Antenna
		Modulation Type: 802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM, 64QAM)
Power Supply	:	AC Voltage supplied
Power Rating	:	Input: AC 85-230V, 50/60Hz, 10A
Software Version	:	oem_esp_switch V0.1.2
Hardware Version	:	V1.0.2
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna: 2dBi.

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:

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/ cm ²) [S]
802.11b	17.52	17 ± 1	18	2	20	0.01989
802.11g	16.48	16 ± 1	17	2	20	0.01580
802.11n (HT20)	16.35	16 ± 1	17	2	20	0.01580

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 802.11b/g/n:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.01989mW / 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.

Note

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

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