

Maximum Permissible Exposure Evaluation

FCC ID: 2ATPP-US201

1. Client Information

Applicant	:	Shenzhen Bobotel Technology Dev. Co.,Ltd
Address	:	Block 130-131, Pinghuan Bld., Pinghuan Rd., Pingshan District, Shenzhen, China
Manufacturer	:	Shenzhen Bobotel Technology Dev. Co.,Ltd
Address	:	Block 130-131, Pinghuan Bld., Pinghuan Rd., Pingshan District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Smart Plug
Models No.	:	KW-US-201, KW-US-SA23, KW-US-P201, KW-US-BS04, KW-US-P200, KW-US-H320, XS-A23
Model Different	:	All these models are the same PCB, layout and electrical circuit, the only difference is product appearance.
Product Description	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
	RF Output Power:	802.11b: 10.22dBm 802.11g: 9.51dBm 802.11n (HT20): 8.92dBm
	Antenna Gain:	1.7dBi 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 100~240V,50/ 60Hz, 16A(max)
Software Version	:	1.0.1
Hardware Version	:	V1.0
Connecting Port(S)	I/O :	Please refer to the User's Manual

TB-RF-075-1.0

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna: 1.7dBi.

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	10.22	10±1	11	1.7	20	0.00370
802.11g	9.51	9±1	10	1.7	20	0.00294
802.11n (HT20)	8.92	8±1	9	1.7	20	0.00234

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 $0.00370 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{ mW} / \text{cm}^2$. 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.

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