

Maximum Permissible Exposure Evaluation

FCC ID: 2A4PQ- AP-SS-009

1. Client Information

Applicant	:	ALLPOWERS Industrial International Limited
Address	:	Floor 1-4, Building No.2, No.182 Kaiyuan Avenue, Huangpu District, Guangzhou, China
Manufacturer	:	ALLPOWERS Industrial International Limited
Address	:	Floor 1-4, Building No.2, No.182 Kaiyuan Avenue, Huangpu District, Guangzhou, China

2. General Description of EUT

EUT Name	:	Portable Power Station
Models No.	:	AP-SS-009, AP-SS-007, AP-SS-007-BLA-USFBA, AP-SS-007-BLA-US, AP-SS-007-606Wh, GRD-AP-SS-007-BLA-NEW, WHF-AP-SS-007-BLA-NEW, AP-SS-008, AP-SS-008-BLA-US, AP-SS-008-BLA-CA, AP-SS-008-BLA-NEW-US, WHF-AP-SS-008-BLA-US, AP-SS-009-2000W, MONSTER X -009, AP-MONSTER-X-NEW, AP-SS-2000W-NEW, AP-SS-009-PRO, AP-SS-009-PRO-US, AP-SS-009-PRO-NEW-US, AP-SS-009-PRO-BLA-US
Model Different	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is that names.
Product Description	Operation Frequency:	Bluetooth 4.0(BLE): 2402MHz~2480MHz
	Number of Channel:	Bluetooth 4.0(BLE): 40 channels
	RF Output Power:	GFSK (BLE) : 0.35 dBm
	Antenna Gain:	1.58dBi PCB Antenna
Power Rating	:	Type-C: 5V,5A;9V,5A;12V,5A;15V,5A;20V5A; USB-1/USB-3: 5V,3A; 9V,3A; 12V,1.5A; USB-2/USB-4: 5V,3A; 9V,3A; 12V,1.5A; USB1+USB2/USB3+USB4: 5V2.4A+5V4A
Software Version	:	----
Hardware Version	:	----
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna:1.58dBi.

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]
BLE (1 Mbps)	1	2402	0.24	0±1	1	1.58	20	0.0004
		2440	-0.56	0±1	1	1.58	20	0.0004
		2480	-1.45	-1±1	0	1.58	20	0.0003
BLE (2 Mbps)	1	2402	0.35	0±1	1	1.58	20	0.0004
		2440	-0.52	0±1	1	1.58	20	0.0004
		2480	-1.45	-1±1	0	1.58	20	0.0003

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 BLE:2402~2480 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as **0.0004 mW / 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.

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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