# Maximum Permissible Exposure Evaluation

## *FCC ID: 2A4PQ-AP-SS-005*

## 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-005, AP-SS-005-USFBA-NEW, AP-SS-005-BLA-New<br>AP-SS-005-BLA-USNEW, GRD-AP-SS-005-BLA-USNEW<br>AP-SS-005-BLA-CA, AP-SS-005-BLA-US<br>AP-SS-288WH-US, AP-SS-288WH-CA<br>AP-SS-005-372WH, WHF-AP-SS-005-BLA-USNEW<br>WHF-AP-SS-005-BLA-NEW, AP-SS-011<br>AP-SS-011-BLA-US, AP-SS-011-BLA-CA<br>AP-SS-011-BLA-NEW-US, AP-SS-011-BLA-NEW-CA<br>AP-SS-011-BLA-USFBA, AP-SS-4000W-US<br>AP-SS-4000W-NEW-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）: 0.3 dBm |
| | | Antenna Gain: | 1.58dBi PCB Antenna |
| **Power Rating** | : | Input:<br>AC 110-240V<br>Car charger: 12-20V, 5A<br>solar energy:16.6-24V<br>Output:<br>AC 110-240 V<br>USB-C: 5V, 3A<br>USB: 5V, 7.2A，<br>Cigarette lighter: 12V,10A<br>Wireless Charging: 5W(Max) | |

| | | |
|---|---|---|
| **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 | 0.26 | 0±1 | 1 | 1.58 | 20 | 0.0004 |
| | | 2440 | -0.57 | 0±1 | 1 | 1.58 | 20 | 0.0004 |
| | | 2480 | -1.47 | -1±1 | 0 | 1.58 | 20 | 0.0003 |
| BLE（2 Mbps） | 1 | 2402 | 0.3 | 0±1 | 1 | 1.58 | 20 | 0.0004 |
| | | 2440 | -0.57 | 0±1 | 1 | 1.58 | 20 | 0.0004 |
| | | 2480 | -1.43 | -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/ $cm^2$

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.

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