

FCC Maximum Permissible Exposure (MPE) Estimation Report

Report Number : **68.950.23.0887.01A** Date of Issue: **November 16, 2023**

Model : **A1790**

Product : Anker SOLIX F3800 Portable Power Station

Applicant : Anker Innovations Limited

Address : Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok,
Kowloon, HONG KONG

Manufacturer : Anker Innovations Limited

Address : Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok,
Kowloon, HONG KONG

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : **9**

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu,
Nantou, Nanshan District,
Shenzhen, Guangdong, China

Telephone: 86 755 8828 6998

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FCC Registration No.: 514049

FCC Designation Number: CN5009

3 Description of the Equipment Under Test

Product:	Anker SOLIX F3800 Portable Power Station
Model no.:	A1790
Brand name:	Anker
FCC ID:	2AOKB-A1790
Options and accessories:	AC Charging Cable, MC4 Solar Charging Cable
Rating:	AC Input: 120V~ 15A (3hours Max), 12A (continue), 60Hz AC Input Power (Charging): 1800W Max AC Input Power (Bypass Mode): 1440W Max; Solar Panel Input: 11-32V=10A; 32V-60V=25A (1200W Max Each) USB-C Output: 5V=3A / 9V=3A / 15V=3A / 20V=3A / 20V=5A (100W Max Per Port) USB-A Output: 5V=2.4A (12W Max Per Port); AC Output Power (Total): 6000W Max; AC Output 1: 120V~ 20A Max, 60Hz, 2400W Max AC Output 2: 120V~ 20A Max, 60Hz, 2400W Max Car Charger Output: 12V=10A AC Output (NEMA 14-50/ L14-30): 120V/240V~ 25A Max, 60Hz, 6000W Max Home Panel Power Port: 3800W Max (AC Input), 6000W Max (AC Output), 120V/240V
RF Transmission Frequency:	2402-2480MHz for BLE 2412MHz-2462MHz for 802.11b/g/n20/n40 (2.4G Wi-Fi)
Antenna Type:	2.4G Wi-Fi / BLE: FPC antenna
Antenna Gain:	3.1dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Portable Power Station which support Low Energy Bluetooth(1M&2M) and Wi-Fi operated at 2.4GHz.



NOTE 1: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

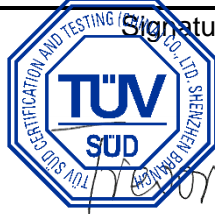
4 Test Specifications

Test Standards	
ANSI Std C95.1-1992	Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991)
KDB 447498 D01	General RF Exposure Guidance v06

5 General Information

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Prepared By Project Engineer	2023-11-16 Date	Nick Huang Name	 Signature
Approved by EMC Project Manager	2023-11-16 Date	Trevor You Name	 Signature



6 RF Exposure Requirements

An estimation of MPE in this application for product is used to ensure if it complies with the rules of the standard in the regulation list above.

Maximum permissible exposure (MPE) refers to the RF energy that is acceptable for human exposure. It is broken down into two categories, Occupational/controlled and General population/uncontrolled.

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna

EIRP = P * G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

7 FCC MPE Limits

We analysis if it comply with the limits for General population/uncontrolled exposure. The FCC MPE limits for field strength and power density are given in 47CFR 1.1310(Table below). These limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP), and also partly based on guidelines recommended by the American National Standards Institute (ANSI) in Section 4.1 of ANSI/IEEE C95.1.

(A) Limits for Occupational/controlled Exposure				
Frequency Range(MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density (S)(mW/cm ²)	Averaging Time (minute) E ² , H ² or S
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/uncontrolled Exposure				
Frequency Range(MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density (S)(mW/cm ²)	Averaging Time (minute) E ² , H ² or S
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
f=frequency in MHz			*Plane-wave equivalent power density	

8 RF Exposure Evaluation (FCC)

8.1.1 Calculation of Power Density for Single Chain Transmitters

Mode	EIRP (dBm)	EIRP (mW)	R (m)	S (mW/cm ²)	Limit (mW/cm ²)
BLE-1M	4.99	3.16	0.2	0.00063	1.0
BLE-2M	4.89	3.08	0.2	0.00061	1.0
2.4GWiFi	23.21	201.17	0.2	0.0406	1.0

Remark: The product also has multiple transmitters, the simultaneous transmit function is not supported.

8.1.2 Conclusion

According to the table above, we can conclude that the limit percentage of above supporting frequency bands calculation results are less than 1, therefore, the product meets the requirements.

---THE END OF REPORT---