



Technical Report No. 68.401.21.0450.01
Rev. 00
Dated 2021-03-19

Applicant: EcoFlow Technology Limited Co., LTD.

Address: 20/F, Area B, Building 7, Vanke Cloud City Phase III, Nanshan District, Shenzhen, China

Sample Description: Portable Power Station Solar Generator

Model No.: EF4 Pro

Sample Received Date: 2021-02-26

Test Period: From 2021-02-26 to 2021-03-12

Location of Testing: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Purpose of examination: 2012/19/EU - on waste electrical and electronic equipment (WEEE)
- Article 4, 11, 15(2) & Annex V

Test Result: Refer to the following page(s)

Remark: The result relates only to the items tested.

PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

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Reviewed by:

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Vic Wei
Designated Reviewer

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1. TESTED SUBJECT DESCRIPTION

Item Name		Photo
Product Name:	Portable Power Station Solar Generator	
Model Number:	EF4 Pro	
Product total weight:	4095.0 gram (battery not included)	
Marking	Portable Power Station Solar Generator (EF4 Pro)	

2. REQUIREMENT OF WEEE DIRECTIVE

2.1 PRODUCT DESIGN

According to article 4 of WEEE directive 2012/19/EU:

- Design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery of the components and materials. The design features or manufacturing processes do not prevent the product from being reused.

2.2 PROPER TREATMENT

Proper treatment, other than preparing for re-use, and recovery or recycling operations shall, as a minimum, include the removal of all fluids and a selective treatment in accordance with Annex VII of WEEE directive 2012/19/EU:

- Polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (1),
- Mercury containing components, such as switches or backlighting lamps,
- Batteries,
- Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- Toner cartridges, liquid and paste, as well as colour toner,
- Plastic containing brominated flame retardants,
- Asbestos waste and components which contain asbestos,
- Cathode ray tubes,
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
- Gas discharge lamps,
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps,
- External electric cables,
- Components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (2),
- Components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (3),
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).

2.3 REQUIREMENT OF RECYCLING AND RECOVERY RATE

According to article 11 and Annex V part 3, below minimum target of Recycling and Recovery rate should be met from 15 August 2018.

Category	Product Type	Minimum Recycling Rate [%]	Minimum Recovery Rate [%]
1	Temperature exchange equipment	80	85
2	Screens, monitors, and equipment containing screens having a surface greater than 100 cm ²	70	80
3	Lamps	80	-
4	Large equipment	80	85
5	Small equipment	55	75
6	Small IT and telecommunication equipment (no external dimension more than 50 cm)	55	75

Recycling & Recovery Rate are calculated as following formulas:

$$\text{Recycling Rate} = \frac{\text{Recycling Weight}}{\text{Product Total Weight}} (\%)$$

$$\text{Recovery Rate} = \frac{\text{Recycling Weight} + \text{Energy Recovery Weight}}{\text{Product Total Weight}} (\%)$$

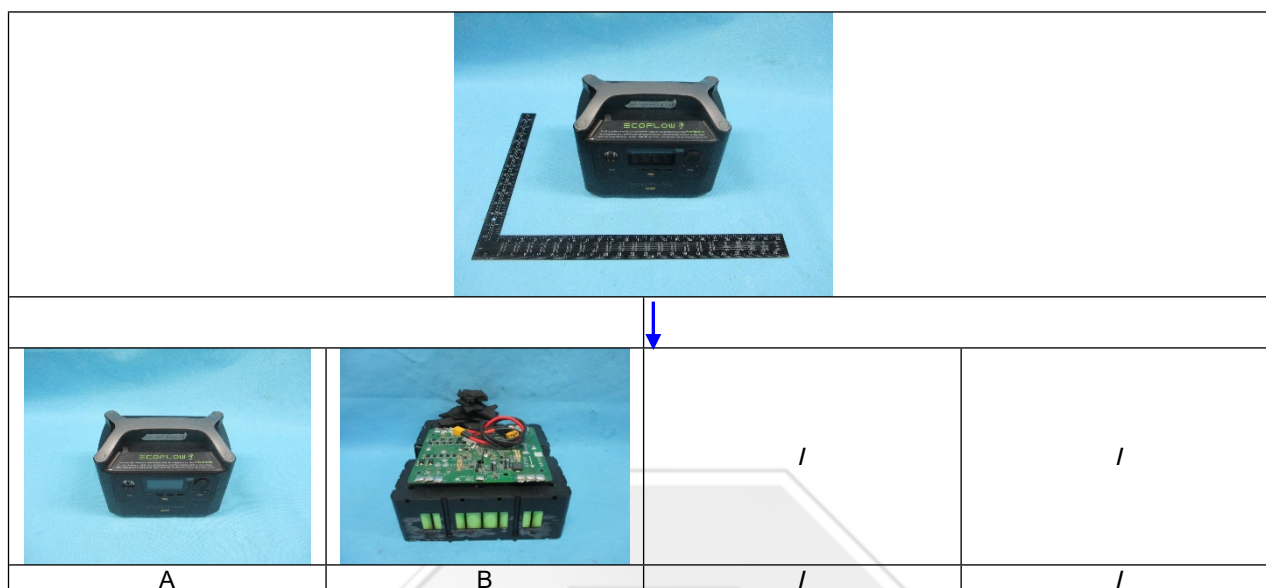
3. EVALUATION RESULTS


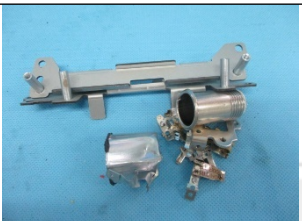
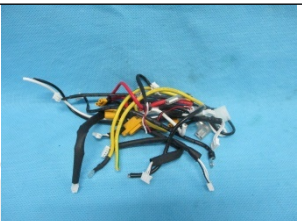








3.1. CONFORMITY OF WEEE MARKING(S)



Evaluate the sample according to Directive 2012/19/EU Article 15(2) & EN 50419: 2006

Item No.	Requirement	Evaluation Result	Conclusion
1	Unique Identification of producer provided e.g. by brand name, trade mark, company registration number etc.	Brand name, trade mark was found	Yes
2	Date of manufacturing or date of product release to the market (coded or un-coded text) or indicated by an additional solid bar under the crossed wheel bin	Solid bar was found	Yes
3	Proper dimensions of marking as prescribed in the standard EN50419:2006	Marking was found	Yes
4	The marking shall be accessible, durable, legible and indelible.	Marking is accessible, durable, legible and indelible	Yes
5	Location of marking shall be on : 1) the product or, 2) the packaging, the instructions for use and warranty of the electrical and electronic equipment.	Marking is located on the product	Yes

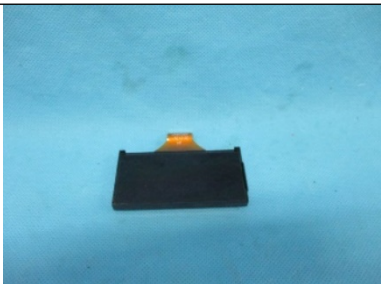
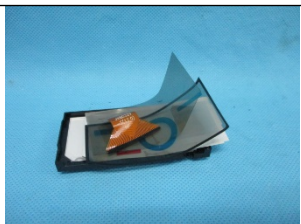
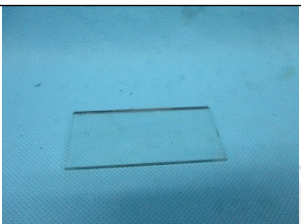
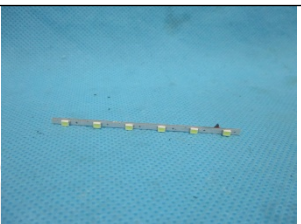
3.2. DISASSEMBLING FLOWCHART









			
A ↓			
			
A1	A2	A3	A4
			
A5	A6	A7	A8
			
A9	A10	A11	A12
	/	/	/
A13	/	/	/

			
A11 ↓			
			/
A11-1	A11-2	A11-3	/



			
A12↓			
			/
A12-1	A12-2	A12-3	/



			
B ↓			
			
B1	B2	B3	B4
		/	/
B5	B6	/	/

3.3. DISASSEMBLY INFORMATION

For this product, manual operation and disassembly tools have been applied to separate the components and materials as following:

Disassembly tool		
	Screw driver tool set	Scissors
		
	Nipper pliers	Electric drill screwdriver
Disassembly time	6 minutes 30 seconds	
Connection technology of the product	Screws: 77	
	Adhere: 8	
	Snap: 6	
	Spring: 1	

3.4. WEEE ARTICLE 4-PRODUCT DESIGN

Requirement	Observation	Conformance
Design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery of the components and materials. The design features or manufacturing processes do not prevent the product from being reused.	Different parts can be separated easily.	Yes

3.5. SELECTIVE TREATMENT FOR MATERIALS AND COMPONENTS

According to Article 8 (2) and Annex VII of WEEE directive 2012/19/EU, below materials and components should be selective treated,

No.	Item	Weight [g]	Size or Quantity
A5	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	1096.0	330.0 cm ²
A6	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	134.5	207.8 cm ²
A7	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	18.0	36.1 cm ²
A8	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	6.8	19.0 cm ²
A9	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	25.0	18.0 cm ²

No.	Item	Weight [g]	Size or Quantity
A13	Electrolyte capacitors containing substances of concern (height >25mm, diameter>25mm or proportionately similar volume)	52.8	Height: 46 mm Diameter: 30 mm
B1	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	105.8	211.1 cm ²
B4	Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimeters,	109.1	219.8 cm ²
B6	Battery	3552.0	80 piece

3.6. DISASSEMBLED SAMPLE RECYCLABILITY AND RECOVERABILITY

Based on the sample disassembly and the BOM table provided by the supplier/applicant, the main materials involved are listed below with relevant evaluation results.

No.	Component Name	Description	Weight [g]	Percent Weight [%]	Recycling rate [%]	Energy Recovery Rate [%]	Recovery Rate [%]
A1	Portable Power Station Solar Generator (EF4 Pro)	Black/gray plastic parts	1585.0	38.71	31.35	3.87	35.22
A2		Silvery/golden metal parts	168.0	4.10	3.90	0.00	3.90
A3		Multi-color plastic inner wires	83.0	2.03	1.71	0.15	1.86
A4		Silvery/black coated silvery metal screw	193.8	4.73	4.50	0.00	4.50
A5		Green PCB +EC	1096.0	26.76	24.09	0.00	24.09
A6		Green PCB +EC	134.5	3.28	2.96	0.00	2.96
A7		Green PCB +EC	18.0	0.44	0.40	0.00	0.40
A8		Green PCB +EC	6.8	0.17	0.15	0.00	0.15
A9		Green PCB +EC	25.0	0.61	0.55	0.00	0.55
A10		Green PCB +EC	2.3	0.06	0.05	0.00	0.05
A11-1		Black plastic parts	45.6	1.11	0.90	0.11	1.01
A11-2		Silvery/coppery metal parts	13.1	0.32	0.30	0.00	0.30
A11-3		Brown/blue PCB+EC	1.6	0.04	0.04	0.00	0.04
A12-1		Black/transparent/ brown plastic parts	16.0	0.39	0.32	0.04	0.36
A12-2		Transparent glass	17.0	0.42	0.27	0.00	0.27
A12-3		White PCB+EC	0.4	0.01	0.01	0.00	0.01
B1		Black plastic parts	515.0	12.58	10.05	0.84	10.89
		Silvery metal plate					
		Black magnet					
B2		Black foam	7.0	0.17	0.14	0.02	0.16
B3	Multi-color plastic inner wires	47.1	1.15	0.97	0.09	1.06	
B4	Green PCB +EC	109.1	2.66	2.40	0.00	2.40	
B5	Silvery metal screw	10.2	0.25	0.24	0.00	0.24	
Total			4094.5	99.99	85.30	5.12	90.42

Note:

- "g" denotes gram
- The listed Recycling and Recovery Rate were evaluated based on theoretical and efficient treatment of waste.
- "%" means percentage by weight

3.7. THEORETICAL RECOVERY RATE

The recycling and recovery rate by weight of the samples:

Item	Recycling Rate [%]	Recovery Rate [%]	Conformance
Portable Power Station Solar Generator (EF4 Pro)	85.30	90.42	Yes
Requirement of Category 4* (Large equipment)	80	85	---

Note:

- “*” According to Directive 2012/19/EU article 11 & Annex V part 3.
- “%” means percentage by weight



APPENDIX:

Photos of submitted products



-----End of Report-----