EXTRACT FROM REPORT NO. SUEE250300007051
REFERENCE STANDARD
VDE-AR-N 4105:2018-11 + CORRECTION 1: 2020-10: GENERATORS CONNECTED TO THE LOW-VOLTAGE DISTRIBUTION NETWORK – TECHNICAL REQUIREMENTS FOR THE CONNECTION TO AND PARALLEL OPERATION WITH LOW-VOLTAGE DISTRIBUTION NETWORKS

Test Report Number ..... :	**SUEE250300007051 Attachment Report**
Type ..... :	**EcoFlow STREAM Ultra / EcoFlow STREAM Pro / EcoFlow STREAM AC Pro**
Trademark ..... :	ECOFLOW or ECOFLOW
Tested Model ..... :	**EF-EA-HD-U2K-800**
Variant Models ..... :	EF-EA-HD-U2K-600, EF-EA-HD-P2K-800, EF-EA-HD-P2K-600, EF-EA-AC-P2K-800, EF-EA-AC-P2K-600

APPLICANT

Name ..... :	**EcoFlow Inc.**
Address ..... :	RM 401, Plant #1, Runheng Industrial Zone, Fuyuanyi Road, Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

TESTING LABORATORY

Name..... :	**SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch**
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Conducted (tested) by..... :	Jojo Shao (Project Engineer)
Reviewed & Approved by..... :	Michael Tong (Technical Reviewer)
Date of issue ..... :	2025/04/09
Number of pages ..... :	9

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Data Provided By The Client:

The following data has been provided by the applicant:

1. Any information regarding technical characteristics of the equipment (ratings, operation modes, software and hardware versions, dimensions and weight).
2. Equipment operation & construction information (manuals, electrical diagrams, information about components, operation procedures).
3. Documental information (brand and models' names, address or other information about applicant, company or manufacturer).
4. Other information remarked within this report.

Test Report Historical Revision:

Test Report Version	Date	Resume
SUEE250300007051 Attachment Report	2025/04/09	First issuance

Index

1- Scope

SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch has been contracted by EcoFlow Inc. in order to perform the testing according to:

- VDE-AR-N 4105:2018-11: “Generators connected to the low-voltage distribution network – Technical requirements for the connection to and parallel operation with low-voltage distribution networks” and including “Correction 1:2020-10”.

This document is an extract from the test report SUEE250300007051compliant to the Annex E of VDE-AR-N 4105:2018-11: “Power generation systems connected to the low-voltage distribution network” and including “Correction 1:2020-10”.

- VDE V 0124-100:2020-06: Grid integration of generator plants Low-voltage – Test requirements for generation units, intended for connection and parallel operation on the low-voltage grid.

2- Equipment Under Testing

Apparatus type	:	EcoFlow STREAM Ultra / EcoFlow STREAM Pro / EcoFlow STREAM AC Pro
Installation	:	Fixed installation
Manufacturer	:	**EcoFlow Inc.**
Trade mark	:	ECOFLOW **or** ECOFLOW
Model / Type reference	:	EF-EA-HD-U2K-800
Serial Number	:	BK11ZEBB2H350030 (for all clauses expect section 4.1.2) BK12ZEBB2H3D0099 (for section 4.1.2)
Software Version	:	1.0.0.117
Rated Characteristics	:	Refer to main report.

E.4 Unit Certificate

Unit certificate		No. SUEE250300007051
Manufacture		EcoFlow Inc.
Power generation unit type		EcoFlow STREAM
☒ Inverter	☒ Asynchronous generator	☐ Synchronous generator
☐ Stirling generator	☐ Fuel cell	Other _____
Assessment values	max. active power PEmax	800 W
	max. apparent power SEmax	800 VA
	Rated voltage	230 V
Rated values	Rated current (AC) Ir	3.48 A
Rated values	Initial short-circuit AC current	20.0 A
Network connection rule	**VDE-AR-N 4105 "Generators connected to the low-voltage distribution network"** Technical minimum requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Test requirement	**DIN VDE V 0124-100 (VDE V 0124-100) "Network integration of power generation systems – Low voltage"** Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network	

E.5 Requirements for the test report for power generation units

Extract from test report for unit certificate "Determination of electrical properties"				No. SUEE250300007051
System Manufacturer		EcoFlow Inc.		
Manufacturer indications:		**Type of system:**	EcoFlow Inc.	
		Max. active power P_{Emax}	EF-EA-HD-U2K-800	
			800 W	
		Rated voltage:	230 V	
Flicker	Network impedance angle ψ_k	32°		
	Initial flicker factor C_ψ	33%Pn	66% Pn	100% Pn
		2.76	2.74	2.70

P (%P_n)	0	10	20	30	40	50	60	70	80	90	100	Limit
Nr. / Order	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)	I (A)
2	0.006	0.005	0.005	0.029	0.040	0.041	0.045	0.042	0.039	0.039	0.046	1.080
3	0.051	0.051	0.059	0.065	0.056	0.062	0.071	0.071	0.067	0.063	0.063	2.300
4	0.005	0.004	0.009	0.024	0.020	0.014	0.018	0.014	0.012	0.010	0.016	0.430
5	0.036	0.035	0.037	0.026	0.010	0.009	0.016	0.026	0.032	0.034	0.033	1.140
6	0.004	0.004	0.005	0.007	0.006	0.008	0.004	0.007	0.008	0.007	0.004	0.300
7	0.049	0.046	0.046	0.062	0.064	0.041	0.031	0.025	0.041	0.062	0.075	0.770
8	0.003	0.003	0.003	0.003	0.007	0.003	0.007	0.003	0.005	0.008	0.011	0.230
9	0.032	0.030	0.027	0.020	0.034	0.043	0.032	0.033	0.029	0.025	0.037	0.400
10	0.002	0.002	0.003	0.002	0.002	0.006	0.004	0.003	0.005	0.005	0.004	0.184
11	0.016	0.015	0.017	0.018	0.010	0.022	0.029	0.025	0.027	0.028	0.025	0.330
12	0.004	0.004	0.004	0.004	0.003	0.002	0.006	0.003	0.006	0.002	0.004	0.153
13	0.007	0.007	0.009	0.010	0.013	0.008	0.016	0.021	0.024	0.026	0.028	0.210
14	0.002	0.002	0.002	0.002	0.005	0.002	0.004	0.004	0.004	0.007	0.004	0.131
15	0.003	0.005	0.006	0.007	0.010	0.010	0.008	0.016	0.015	0.023	0.021	0.150
16	0.002	0.002	0.002	0.003	0.002	0.002	0.004	0.005	0.007	0.003	0.005	0.115
17	0.003	0.003	0.004	0.005	0.007	0.009	0.012	0.006	0.013	0.013	0.017	0.132
18	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.004	0.005	0.002	0.006	0.102
19	0.003	0.003	0.004	0.004	0.005	0.003	0.006	0.006	0.006	0.011	0.007	0.118
20	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.003	0.003	0.005	0.092
21	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.006	0.004	0.006	0.009	0.107
22	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.004	0.002	0.004	0.003	0.084
23	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.006	0.003	0.005	0.098
24	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.077
25	0.004	0.003	0.003	0.003	0.004	0.005	0.004	0.004	0.007	0.003	0.009	0.090
26	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.004	0.003	0.004	0.004	0.071
27	0.002	0.002	0.002	0.003	0.003	0.004	0.007	0.007	0.009	0.006	0.007	0.083
28	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.003	0.004	0.003	0.004	0.066
29	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.005	0.078
30	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004	0.061
31	0.003	0.003	0.004	0.004	0.003	0.004	0.005	0.006	0.006	0.007	0.007	0.073
32	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.058
33	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.005	0.006	0.003	0.010	0.068
34	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.004	0.003	0.054
35	0.004	0.003	0.003	0.003	0.003	0.004	0.003	0.003	0.003	0.004	0.003	0.064
36	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.051
37	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.006	0.003	0.061
38	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.004	0.048
39	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.006	0.005	0.006	0.058
40	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003	0.046
THC (%)	2.572	2.510	2.658	3.083	3.065	2.963	3.097	3.071	3.176	3.433	3.821	--
PWHC (%)	3.118	3.115	3.156	3.260	3.502	3.679	3.927	4.313	4.753	5.154	5.620	--

E.7 Requirements for the test report for the NS protection

Extract from test report for NS protection "Determination of electrical properties"			No. SUEE250300007051
Test report NS protection			
Type of NS protection: Integrated NS protection		**Further manufacturer indications**	
Protective function	**Set value**	**Tripping value**	**Tripping time NS protection (1)**
Rise-in voltage protection U>>	1.250 Un	1.254 Un	64 ms
(2)Rise-in voltage protection U>	1.100 Un	--	498.900 s
Voltage drop protection U<	0.800 Un	0.796 Un	3.075 s
Voltage drop protection U<	0.450 Un	0.448 Un	311 ms
Frequency decrease protection f<	47.50 Hz	47.49 Hz	95 ms
Frequency increase protection f>	51.50 Hz	51.49 Hz	58 ms

(1) The tripping time includes the period from the limit violation *U/f* until the tripping signal to the interface switch.

When planning the power generation system, the response time of the interface switch shall be added to the maximum time value obtained as indicated above.

The disconnection time (sum of tripping time of the NS protection plus response time of the interface switch) shall not exceed 200 ms.

(2) Longest disconnection of the voltage increase protection as a sliding 10 min mean value, according to clause 5.5.7 of VDE 0124-100 standard.

☒ **For integrated NS protection**

Assigned to power generation unit of type	**HF140FF-G**
Type integrated interface switch	**Main Relay**
Response time of interface switch for integrated NS protection	**≤20 ms**

Verification of the entire functional chain “integrated NS protection – interface switch” has resulted in successful disconnection ☒

-----END OF THE REPORT-----