Test Verification of Conformity

Verification Number: 104663986CRT-001VOC

On the basis of the tests undertaken, the samples of the below product have been found to comply with the requirements of the referenced standards at the time the tests were carried out. This verification is part of the full test report and should be read in conjunction with it.

Applicant Name & Address:	SolarEdge Technologies Ltd. 1 HaMada Street, 4673335 Herzeliya, Israel
Product Description:	Grid support Utility Interactive Inverter - Non Isolated Photovoltaic Inverter with MPPT function and Rapid shut down Function.
Ratings & Principle Characteristics:	See Appendix 2
Models/Type References:	SE followed by 10, 14.4, 16.7, 17.3, 24, 30, 33.3 or 40; followed by KUS
Brand Names:	SolarEdge
Relevant Standard(s) / Specification(s):	See Appendix 1
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045 USA
Date of Tests:	9/13/2021 to 12/11/2024
Test Report Number(s):	104663986CRT-001, 104663986CRT-00RRF, 104663986CRT-001TRS

Additional information in Appendix.

Signature

Name: Mukund Rana
Position: Staff Engineer
Date: 05th February 2022

Appendix 1: Relevant Standard(s)/Specification(s)

Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3]

Grid Support Utility Interactive Equipment - Supplement SA to UL 1741:2021 Ed.3 - Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3 (Supplement SA)]

Grid Support Utility Interactive Inverters and Converters Based Upon IEEE 1547:2018 & IEEE 1547.1:2020 - Supplement SB to UL 1741:2021 Ed.3 - Inverters, Converters, Controllers and Interconnection System Equipment for use with Distributed Energy Resources [UL 1741:2021 Ed.3 (Supplement SB)]

Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4]

Photovoltaic (PV) DC Arc-Fault Circuit Protection [UL 1699B:2018 Ed.1]

DC Arc Fault Protection For Photovoltaic Applications [CSA C22.2#292:2018 Ed.1]

Interconnection of Distributed Energy Resources and Electricity Supply Systems [CSA C22.3#9:2020 Ed.2]

IEEE 1547:2018 - IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE 1547a:2020 - IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
Amendment 1: To Provide More Flexibility for Adoption of Abnormal Operating Performance Category III

IEEE 1547.1:2020 - IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces

Source requirements document UL 1741 (SRD) v2.0 – HECO

Electric Rule No.21-2020 Generating Facility Interconnections

Default New England Bulk System Area Settings Requirement

Appendix 2: Ratings & Principle Characteristics:

➢ Ratings:

Models	Rated AC Output Power (W)	AC Output Voltage (V_{L-L})	AC Output Frequency (Hz)	Max. Cont. Output Current (A)	Input Voltage Range (V_{DC})	Max. DC Input Current (A_{DC})
SE10KUS	10000VA	208V	60Hz	27.8A	370*/600 Vdc	27.8A
SE14.4KUS	14400VA	208V	60Hz	40A	370*/600 Vdc	40A
SE16.7KUS	16700VA	208V	60Hz	46.5A	370*/600 Vdc	46.5A
SE17.3KUS	17300VA	208V	60Hz	48.25A	370*/600 Vdc	48.25A
SE24KUS	24000VA	480V	60Hz	29A	840/ 1000 Vdc	29A
SE30KUS	30000VA	480V	60Hz	36.5A	840/1000 Vdc	39A
SE40KUS	40000VA	480V	60Hz	48.25A	840/1000 Vdc	48.25A
SE33.3KUS	33300VA	480V	60Hz	40A	840/1000 Vdc	40A
Note: * SE10KUS, SE14.4KUS, SE16.7KUS, SE17.3KUS operates at 370Vdc only when AC grid voltage is 208Vac (L-N), 60Hz.						

➢ Communication Protocol:

SunSpec Modbus over TCP/IP protocol

➢ Inverter Firmware Version:

Version	Checksum
2.20.710	0x 046d7c82

➢ Grid Support Function Parameters:

SolarEdge used the parameters in the Result reporting form “104663986CRT-001RRF” during the testing of the grid support functions according to UL1741 SB. The parameters that have “blank” as their value are not applicable.

Appendix 3: List of Tested Grid protection / Support Function:

Grid protection / Support Function Tested	Test Standards Sections and Source Requirement Documents					
	IEEE 1547-2018	IEEE 1547.1-2020	UL 1741SB - 2021	CSA C22.3#9-2020	CA Rule 21:2020	UL 1741 SRD V2.0 (HECO):2020
OPERATIONAL TEMPERATURE	--	5.3.3.1	SB4.3.5.3	8.3.2	--	Same as 1547-2018
PROTECTION FROM ELECTROMAGNETIC INTERFERENCE (EMI) TEST	4.11.1	5.8.1	SB4.3.5.8.1	7.4.14	--	Same as 1547-2018
SURGE WITHSTAND PERFORMANCE TEST	4.11.2	5.8.2	SB4.3.5.8.2	7.4.15 / 8.3.6	--	Same as 1547-2018
PARALLELING DEVICE	4.11.3	5.8.3	--	7.4.2	--	Same as 1547-2018
OVERVOLTAGE TRIP	6.4.1	5.4.2	SB4.3.5.4.2	7.4.6.4 / 8.3.4.2	Electric Rule No. 21 Table Hh.1	Same as 1547-2018
UNDERVOLTAGE TRIP	6.4.1	5.4.3	SB4.3.5.4.3	7.4.6.4 / 8.3.4.2	Electric Rule No. 21 Table Hh.1	Same as 1547-2018
OVERFREQUENCY TRIP	6.5.1	5.5.1 & 5.5.2	SB4.3.5.5.1 & SB4.3.5.5.2	7.4.6.3 / 8.3.3.2	Electric Rule No. 21 Table Hh.2	Same as 1547-2018
UNDERFREQUENCY TRIP	6.5.1	5.5.1 & 5.5.2	SB4.3.5.5.1 & SB4.3.5.5.2	7.4.6.3 / 8.3.3.2	Electric Rule No. 21 Table Hh.2	Same as 1547-2018
LOW VOLTAGE RIDE-THROUGH	6.4.2.3 & 6.4.2.5	5.4.4	SB4.3.5.4.4	7.4.6.5 / 8.3.4.3	Electric Rule No. 21 Table Hh.1	Same as 1547-2018
HIGH VOLTAGE RIDE-THROUGH	6.4.2.4	5.4.7	SB4.3.5.4.7	7.4.6.5 / 8.3.4.3	Electric Rule No. 21 Table Hh.1	Same as 1547-2018
LOW FREQUENCY RIDE-THROUGH	6.5.2.3	5.5.3	SB4.3.5.5.3	7.4.6.5 / 8.3.3.3	Electric Rule No. 21 Table Hh.2	SRD-UL-1741-SA-V2.0 (HECO) Part II B
HIGH FREQUENCY RIDE-THROUGH	6.5.2.4	5.5.4	SB4.3.5.5.4	7.4.6.5 / 8.3.3.3	Electric Rule No. 21 Table Hh.2	SRD-UL-1741-SA-V2.0 (HECO) Part II B
RATE OF CHANGE OF FREQUENCY	6.5.2.5	5.5.5	--	--	--	Same as 1547-2018
ANTI-ISLANDING PROTECTION - WITH GRID SUPPORT FUNCTIONS ENABLED	8.1	5.10.2	SB4.3.5.10.2	8.3.7.2	Electric Rule No. 21 Hh.1a	According to UL 1741 SA-V2.0 (HECO)
TEST FOR VOLTAGE DISTURBANCES WITHIN CONTINUOUS OPERATING REGION	6.4.2.2	5.4.5	--	7.2.4	--	Same as 1547-2018
TEST FOR VOLTAGE PHASE-ANGLE CHANGE RIDE-THOUGH (VARIATION 1)	6.5.2.6	5.5.6.1	SB4.3.5.5.6	--	--	Same as 1547-2018
ENTER SERVICE	4.10	5.6	--	8.3.9 / 8.3.4.5	--	Same as 1547-2018
SYNCHRONIZATION CONTROL FUNCTION TEST FOR EQUIPMENT WITH NO SYNCHRONIZING DISABLE CAPABILITY (VARIATION 3)	6.3	5.7.4	--	8.3.5	--	Same as 1547-2018
LIMITATION OF DC INJECTION FOR INVERTERS	7.1	5.9	--	7.2.6 / 8.3.10	Electric Rule No. 21 Hh.2h	Same as 1547-2018

OPEN PHASE	6.2.2	5.11	--	7.4.5 / 8.3.8	--	Same as 1547-2018
CURRENT DISTORTION	7.3	5.12	--	7.2.1 / 8.3.11	Electric Rule No. 21 Hh.2g	Same as 1547-2018
LIMIT ACTIVE POWER	4.6.2	5.13	--	--	Electric Rule No. 21 Hh.8	Same as 1547-2018
CONSTANT POWER FACTOR	5.3.2	5.14.3	SB4.3.5.14.3	7.2.3.3.2 / 8.3.12.2.1	Electric Rule No. 21 Hh.2i	Same as 1547-2018
VOLTAGE-REACTIVE POWER (VOLT-VAR) MODE FIXED VREF	5.3.3	5.14.4	SB4.3.5.14.4	8.3.12.1.1	Electric Rule No. 21 Hh.2J	Same as 1547-2018
VOLTAGE-REACTIVE POWER (VOLT-VAR) MODE (VREF TEST)	5.3.3	5.14.5	SB4.3.5.14.5	--	--	Same as 1547-2018
VOLTAGE—REACTIVE POWER (VOLT-VAR) MODE WITH AN IMBALANCED	5.3.3	5.14.6	SB4.3.5.14.6	--	--	Same as 1547-2018
ACTIVE POWER-REACTIVE POWER MODE (WATT-VAR)	5.3.4	5.14.7	SB4.3.5.14.7	7.2.3.3.5 / 8.3.12.2.4	--	Same as 1547-2018
CONSTANT REACTIVE POWER (VAR) MODE	5.3.5	5.14.8	SB4.3.5.14.8	7.2.3.3.3 / 8.3.12.2.2	--	Same as 1547-2018
VOLTAGE-ACTIVE POWER (VOLT-WATT) MODE	5.4	5.14.9	SB4.3.5.14.9	7.2.3.4.3 / 8.3.12.1.2	Electric Rule No. 21 Hh.2.m	Same as 1547-2018
VOLTAGE-ACTIVE POWER (VOLT-WATT) MODE WITH AN IMBALANCED GRID	5.4	5.14.10	--	--	--	Same as 1547-2018
TEST FOR FREQUENCY-DROOP (FREQUENCY-POWER OR FREQUENCY-WATT) CAPABILITY—ABOVE NOMINAL FREQUENCY	6.5.2.7	5.15.2	SB4.3.5.15.2	7.2.3.4.4 / 8.3.12.2.5	Electric Rule No. 21 Hh.2.l	SRD-UL-1741-SA-V2.0 (HECO) Part II C
TEST FOR FREQUENCY-DROOP (FREQUENCY-POWER OR FREQUENCY-WATT) CAPABILITY—BELOW NOMINAL FREQUENCY	6.5.2.7	5.15.3	SB4.3.5.15.3	7.2.3.4.4 / 8.3.12.2.5	Electric Rule No. 21 Hh.2.l	SRD-UL-1741-SA-V2.0 (HECO) Part II C
PRIORITIZATION OF DER RESPONSES	4.7	5.16	SB4.3.5.16	--	--	Same as 1547-2018
LOAD REJECTION OVERVOLTAGE (LROV)	7.4	5.17.2	SB4.3.5.17.2	--	--	Same as 1547-2018
FAULT CURRENT TESTS FOR INVERTERS	6.2.1	5.18.1	--	8.3.15	--	Same as 1547-2018
PERSISTENCE OF DER PARAMETER SETTINGS	--	5.19	--	--	--	Same as 1547-2018
NORMAL RAMP RATE	--	--	--	7.2.3.4.2 / 8.3.12.2.3	Electric Rule No. 21 Hh.2k	--
FLICKER	--	--	--	7.2.2 / 8.3.13	--	--
LOSS OF CONTROL CIRCUIT POWER	--	--	--	8.3.14	--	--
CURRENT UNBALANCE TEST	--	--	--	8.3.16	--	--
NAMEPLATE DATA TEST	10.3	6.4	--	--	--	Same as 1547-2018
MONITORING INFORMATION TEST	10.5	6.6	SB4.3.6.6	--	--	Same as 1547-2018
MANAGEMENT INFORMATION TEST	10.6	6.7	SB4.3.6.7	--	--	Same as 1547-2018
GROUND FAULT OVERVOLTAGE TEST	7.4	5.17.1	SB4.3.5.17.1			

Appendix 4: Revision Summary

Date / Project	Engineer / Reviewer	Comments
05-FEB-2025/ G106076368	MILI SEHGAL  MUKUND RANA 	Updated Date of Tests from “9/13/2021 to 2/22/2022” to “9/13/2021 to 12/11/2024“
		Appendix 3: Added Ground Fault Overvoltage Test
		Updated Signatures and Date from “Dipesh Patel” and “14th September 2022” to “Mukund Rana” and “5th February 2025” respectively.