



January 5, 2024

Limin Huang
Fortress Power LLC
2010 Cabot Blvd. W. Suite L
Langhorne, Pennsylvania 19047
United States

Subject: Evidence of inverter support for IEEE 2030.5/Rule 21 CSIP Phase 2 and Phase 3 Function 1 and 8 Functionality.

Dear Limin Huang

This letter confirms that (SunSpec ATL) witnessed the Appendix C testing listed in Resolution E-5000 from the California Public Utilities Commission Draft dated July 11, 2019 (as modified by Resolution E-5036) under the Fortress Power LLC and the report is referenced to project 80150494 to The Resolution requires the verification of five test cases for inverters that do not directly implement IEEE 2030.5 client functionality. During the tests, the inverter is to be connected to a SunSpec Certified IEEE 2030.5/CSIP gateway. The five tests are listed below and specified in the SunSpec IEEE 2030.5/CSIP test procedures:

- Inverter Status (BASIC-028)
- Inverter Meter Reading (BASIC-029)
- Basic Inverter Control – Volt/Var (BASIC-006)
- Basic Inverter Control – Fixed Power Factor (BASIC-008)
- Basic Inverter Control – Volt-Watt (BASIC-011)

The tests were performed on the Bi-directional Transformerless Grid Support Utility Interactive Power Conversion Equipment on January 12, 2023 with the IEEE2030.5 Client Aggregator model number Client Aggregator connected to Bi-directional Transformerless Grid Support Utility Interactive Power Conversion Equipment model number Avalon HV PC76 bearing the serial number 4032080229280049 which is used to represent the inverter models below:



Fortress Power LLC. Model Numbers:

Inverter Description	Model Number
Bi-directional Transformerless Grid Support Utility Interactive Power Conversion Equipment	Bi-directional Transformerless Grid Support Utility Interactive Power Conversion Equipment, Models Avalon HV PC38, Avalon HV PC50, Avalon HV PC60, Avalon HV PC76, Avalon HV PC80, Avalon HV PC100 and Avalon HV PC114

The inverter under test was subjected to testing conditions as follows:

- The inverter was operating during test harness verification procedure
- The IEEE2030.5 Client Aggregator was given stimuli in the form of IEEE 2030.5 commands (Inverter Status, Inverter Meter Reading, Volt/VAR, Fixed Power Factor, and Volt/Watt) sent from an IEEE 2030.5 server that were subsequently translated to signals understood by the inverter.
- The inverter parameters were verified: a) to change during the test cases for Volt-VAR, Fixed Power Factor, and Volt-Watt and b) report monitored data during the test cases for Inverter Status and Inverter Meter Reading. Based on this procedure, the requirements from Appendix C of the resolution were verified.

Very truly yours,

Peter Lim

Peter Lim
CSA Certifier – Power and Energy

Canadian Standards Association
138 – 13888 Wireless Way
Richmond BC
V6V 0A3