

Verification of Conformity

On the basis of the evaluations undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address	: Chilicon Power, LLC; 1563 Calle Patricia Pacific Palisades, CA 90272
Product(s) Tested	: Grid Support Interactive Inverter
Ratings and principal characteristics	: See Page 2
Model(s)	: CP-720-60/72/96-208/240-MC4
Brand name	: Chilicon Power
Firmware version	: 3441
Relevant Standard(s)/Specification(s)	: UL 1741 Supplement SA – Grid Support Utility Interactive Inverters and Converters, Sept. 7, 2016 with the source requirements document (SRD) – Electric Rule No.21 Generating Facility Interconnections
Verification Issuing Office Name & Address	: Intertek, 3933 US Route 11, Cortland, NY 13045, USA
Date of Test(s)	: 07/05/2017 to 05/01/2018
Verification/Report Number(s)	: 102862126CRT-008a

NOTE: This verification is part of the full test report(s) and should be read in conjunction with it.

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



Signature

Name: Howard Liu
Position: Engineering Manager
Date: December 20, 2018

Ratings:



4008984



Intertek

Chilicon Power CP-720-60/72/96-208/240-MC4

Designed in California
Manufactured in California

Enclosure NEMA-6
Max. Ambient Op. Temp: 65C
FCC Part 15 Class B
Conforms to UL1741, IEEE1547
Certified to CSA Std C22.2 No. 107.1
& CSA T.I.L. I-35
UL1741SA Rule-21

Grid Support Interactive Inverter

Input Operating Voltage: 47 - 82V
Max DC Input Current: 13.5A
Rated Output Power: 720 VA
Max. Cont. Output Current: 3A (240V)
AC Output Voltage (min/nom/max): 211V 240V 264V
Max. Cont. Output Current: 3.43A (208V)
AC Output Voltage (min/nom/max): 183V 208V 229V
Operating Freq. Hz (min/non/max): 59.3 60 60.5
Output Power Factor: -0.6 to 0.6 (1.0 Default)
Max Units Per Branch: 7 (208V) or 8 (240V)

Manufacturer's Stated Accuracy

Chilicon states the following accuracies according to the requirements of UL1741 SA.

Manufacturer's Stated Accuracy

Description	Value
Manufacturer's stated AC voltage accuracy (%Vac)	2%
Manufacturer's stated DC voltage accuracy (%Vdc)	2%
Manufacturer's stated AC current accuracy (%Aac)	2%
Manufacturer's stated frequency measurement accuracy (Hz or %Hz)	0.05Hz
Manufacturer's stated output power accuracy (W or %W)	5W
Manufacturer's stated reactive power accuracy (% or Var)	50Var
Manufacturer's stated power factor accuracy	0.02
Manufacturer's stated time accuracy (sec)	0.4sec

Test Summary

Chilicon completed the following tests according to UL1741 SA.

Grid Support Function Tested	Source Requirement Document(s)	Test Standard(s) and Section(s)	Completion Date
LOW/HIGH VOLTAGE RIDE-THROUGH	Electric Rule No. 21 Table Hh.1	UL 1741 SA 9	4/9/18
LOW/HIGH FREQUENCY RIDE-THROUGH	Electric Rule No. 21 Table Hh.2	UL 1741 SA10	3/30/18
DYNAMIC VOLT/VAR OPERATIONS	Electric Rule No. 21 Hh.2j	UL 1741 SA 13	4/12/18
RAMP RATES	Electric Rule No. 21 Hh.2k	UL 1741 SA 11	4/9/18
RECONNECT BY "SOFT START"	Electric Rule No. 21 Hh.2k	UL 1741 SA 11	3/30/18
ANTI-ISLANDING PROTECTION - WITH GRID SUPPORT FUNCTIONS ENABLED	Electric Rule No. 21 Hh.1a	UL 1741 SA 8	5/1/18
SPECIFIED POWER FACTOR	Electric Rule No. 21 Hh.2i	UL 1741 SA 12	4/5/18

Grid Support Function Parameters

Chilicon used the following parameters during the testing of the grid support functions according to UL1741 SA.

SA9 Low/High Voltage Ride-Through

Operating Region	Voltage at Point of Interconnection (% of Nominal Voltage)	Operating Mode	Ride Through Until (s)	Default Maximum Trip Time (s)	Range of Adjustability Voltage Trip Magnitude (% of Nominal Voltage)	Range of Adjustability Clearing Time (s)
OV2	$V > 120$ [121]	Mandatory Operation	N/A	0.16	N/A	N/A
OV1	$120 \geq V > 110$ [117]	Momentary Cessation	12	13	110-120	1-13
CO	$110 \geq V > 100$ [107]	Continuous Operation	N/A	N/A	N/A	N/A
CO	$100 > V \geq 88$ [91]	Continuous Operation	N/A	N/A	N/A	N/A
UV1	$88 > V \geq 70$ [73]	Mandatory Operation	20	21	70-88	19-21
UV2	$70 > V \geq 50$ [53]	Mandatory Operation	10	11	50-88	10-11
UV3	$V < 50$	Momentary Cessation	1	2	N/A	0.5-2

SA10 Low High Frequency Ride-Through

Operating Region	Frequency at Point of Interconnection	Operating Mode	Ride Through Until (s)	Default Maximum Trip Time (s)	Range of Adjustability Frequency	Range of Adjustability Clearing Time (s)
OF2	$f > 62$ (F=64)	Permissive Operation	None	0.16	62-64	0.16
OF1	$f > 62$ (F=62.2)	Permissive Operation	None	0.16	62-64	0.16
High Frequency 1 (HF1)	$60.5 < f \leq 62$ [F=60.8]	Mandatory Operation	299	300	60.1-62	N/A
NOF	$F < 60.5$	Continuous Operation	Indefinite	N/A	N/A	N/A
NUF	$f \geq 58.5$	Continuous Operation	Indefinite	N/A	N/A	N/A
Low Frequency 1 (LF1)	$57 < f \leq 58.5$ [F=58]	Mandatory Operation	299	300	57-59.9	N/A
UF1	$F < 57$ (F=56)	Mandatory Operation	None	None	53-57	0.16
UF2	$F < 57$ (F=53)	Permissive Operation	None	None	53-57	0.16

SA11 Normal Ramp Parameters

Description	Value
Output current rating (Aac)	3/3.4
Minimum normal ramp-up rate (%I _{rated} / sec)	1
Maximum normal ramp-up rate (%I _{rated} / sec)	100
Output current range of function (%I _{rated})	0% to 100%
Ramp rate accuracy (%I _{rated} / sec)	NA

SA11 Soft-Start Ramp Parameters

Description	Value
Output current rating (Aac)	3/3.4
Minimum soft-start ramp-up rate (%I _{rated} / sec)	0.1
Maximum soft-start ramp-up rate (%I _{rated} / sec)	100
Output current range of function (%I _{rated})	0% to 100%
Ramp rate accuracy (%I _{rated} / sec)	NA

SA12 Specified Power Factor Parameters

Description	Value
Apparent power rating (VA)	720
Output power rating (W)	720
DC Input voltage range with SPF enabled (Vdc)	47 - 82V
Nominal AC voltage (Vac)	211V/ 240V/ 264V
AC voltage range with SPF enabled (Vac)	102-138
Manufacturer's stated AC voltage accuracy (%Vac)	2%
Manufacturer's stated DC voltage accuracy (%Vdc)	2%
Active power range of function (W)	50-740
Manufacturer's stated Power Factor accuracy	0.2
Power factor settling time (sec)	30
Minimum Inductive (under excited) Power Factor	-0.6
Minimum Capacitive (overexcited) Power Factor	0.6

SA13 Volt/VAR Parameters

Description	Value
Apparent power rating (VA)	720
Output power rating (W)	720
EUT Input voltage range with Q(V) function enabled (Vdc)	75-85
Nominal AC EPS voltage (V)	120 L-N & 120V L-L
AC EPS voltage range with function enabled (Vac)	102-138
Reactive Power Accuracy (Var)	50
Max rated reactive Power (capacitive, overexcited) (VAr)	-250
Max rated reactive Power (inductive, underexcited) (VAr)	250
Maximum slope (VAr/V)	62.5
Deadband Range (Vac)	207-209 L-L
Settling Time (sec)	30 secs

Reactive Power Priority (RPP)

Question #	Description	Direction for NRTL
1	Is the product capable of providing the required reactive power for the volt/var curve function at all active power levels without derating active power? (Y or N) (Active Power = 20 – 100%)	A "Yes" response meets the intent of the Resolution and Question #2 and #3 do not need to be answered
2	Was the volt/var curve tested with reactive power priority enabled? (Y or N)	A "Yes" response meets the requirements of the Resolution and Question #1 does not need to be answered
3	Was the volt/var curve tested with active power priority enabled? (Y, N, or N/A)	An "N/A" response indicates active power priority is not an option for the inverter. A "Yes" indicates that the inverter must be programmed with the correct profile in the final installation

Manufacturer	Inverter Model	Question #1 (Y/N)	Question #2 (Y/N)	Question #3 (Y/N)
Chilicon Power LLC	CP-720-60/72/96-208/240-MC4	Y	N	Y