



Test Report

for

Chilicon Power
1563 Calle Patricia
Pacific Palisades, CA 90272
USA

Project Number: G100834560

Prepared By:

Intertek
1500 Brigantine Drive
Coquitlam, B.C.
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REPORT: Enclosure
AT: Coquitlam Laboratory **DATE:** August 30, 2012
PROJECT: G100834560 **REPORT NO:** 100834560COQ-001
REPORT TO: Chilicon Power
1563 Calle Patricia
Pacific Palisades, CA 90272
USA **ATTENTION:** Chris Jones

SCOPE:

The following report describes the tests conducted on an electrical enclosure unit submitted by Chilicon Power to the requirements of UL 50 and UL 50E.

The tests pertain to sample as listed in the subject tested at Intertek's testing laboratory in Coquitlam B.C. from July 26 - 31, 2012.

SUBJECT:

Type of Test Object:	Electrical Enclosure
Manufacturer:	Chilicon Power
Model:	CP-220

PRODUCT PARTICULARS:

Environmental Conditions:	Outdoor
Operating Conditions:	Not specified
Accessories and Detachable Part included in the evaluation	None
Options included	None

DECLARATION:

Standards:	UL 50	Enclosures for Electrical Equipment, Non-Environmental Considerations , Issue:2007/09/04 Ed:12
	UL 50E	Enclosures for Electrical Equipment, Environmental Considerations, Issued:2007/09/04 Ed:1
Test Procedure:	Standard	
Procedure Deviation:	None	
Non-Standard Test Method:	None, unless otherwise stated.	

GENERAL REMARKS:

- The test results presented in this report relate only to the object tested.
- This report shall not be reproduced except in full without the written approval of the testing laboratory.
- This Report does not constitute Certification

EQUIPMENT LIST:

Equipment Name	Equipment No.	Calibration Due Date
TEMPERATURE AND HUMIDITY DATALOGGER	P60384	01/12/2013
ULTRASONIC FLOWMETER SENSOR	P60085	11/18/2012
	P60086	11/18/2012
STOP WATCH	P60037	06/26/2013
SLEET AND ICE NOZZLE	P60207	ICO
DIGITAL THERMOMETER	P60993	08/08/2012
ZEROLOC WALK-IN FREEZER IN CONDITIONING LAB	P52848	N/A
TEMPERATURE CONTROLLER	P60130	05/01/2013
DIGITAL CALIPER	34490	06/28/2013
ENCLOSURE PLATES	P60233	ICO
MISC. WEIGHTS	NA	NA
0-500LBF FORCE GAUGE	P60059	NA
LOAD CELL	P60060	11/30/2012

ICO – Initial Calibration Only

TEST SAMPLE:

The Equipment Under Test (EUT) was subjected to the tests as described in the declared IEC standard. See “Acceptance Conditions” section as a summary for the test conditions, results and observations.

Model: CP-220
 Box Material: Aluminum
 Enclosure Rating: Type 4X
 Intertek’s Sample Numbers: VAN1207200730-001
 VAN1207200730-002
 Product Serial Numbers: None (8.2 Deflection Test)
 None (8.10 Crushing Resistance Test)

UL 50

8.2 Deflection Test

Sub-Clause	Description	Comments
8.2.1	A door or cover constructed as permitted by 6.7.2.1 shall not deflect inward more than 6.4 mm (1/4 inch) when a vertical force of 445 N (100 pounds) is applied at any point on the door, or cover. The force shall be applied through a rod having a 12.7 mm (1/2 inch) square flat steel face. For the test, the enclosure shall rest on its back on a smooth, solid, horizontal surface with the door closed and the cover secured as intended. If more than one test is necessary, separate samples may be used for additional tests.	Procedure followed, the cover did not deflect inward more 6.4 mm

8.10 Crushing Resistance Test

Sub-Clause	Description	Comments
8.10.1	Three samples of equipment shall be supported on the mounting side by a fixed rigid supporting surface, in the position that is recommended by the manufacturer. Crushing force shall be applied to the exposed surfaces of the enclosure. The compression force shall be applied by flat surfaces each 102 by 254 mm (4 by 10 inches). Each force applicator shall exert 445 N (100 pounds) on the sample for 1 minute. As many applicators shall be applied as the sample can accommodate, up to a maximum of 8, based upon an arrangement of applicators as indicated in Figure 10.	Followed
8.10.2	The test shall be considered successful if at the conclusion none of the following occur: a) Spacings are reduced below the minimum acceptable values; b) Bare live parts or internal wiring are made accessible to contact; c) Breakage, cracking, rupture, and the like produce an adverse effect on the insulation; d) Any other condition that would increase the likelihood of electric shock or fire, or both, during use of the equipment.	At the conclusion of the tests, no damage to the enclosure was observed

Intertek's Sample Numbers: VAN1207200730-001
 VAN1207200730-002

Product Serial Numbers: None (8.5 External Icing Test)
 None (8.6 Hosedown Test)

UL 50E

8.5 External Icing Test

Sub-Clause	Description	Comments
8.5.1	<p>The enclosure shall be mounted in a room which can be cooled to minus 7°C (20°F). A metal test bar which is 25.4 mm in diameter by 600 mm long (1 inch in diameter and 2 feet long) shall be mounted in a horizontal position in a location where it will receive the same general water spray as the enclosure under test. Provision shall be made for spraying the entire enclosure from above with water at an angle of approximately 45 degrees from the vertical. The water shall be between 0°C (32°F) and 3°C (37°F). Spraying facilities which provide between 40 – 80 L/h/m² (1 – 2 gallons per hour per square foot) of area to be sprayed have been found effective. The room temperature shall be lowered to 2°C (35°F). The spray of water shall be started and continued for at least 1 hour, maintaining the room temperature between 1°C (33°F) and 3°C (37°F). At the end of this time, the room temperature shall be lowered to between minus 7°C (20°F) and minus 3°C (27°F) while continuing the water spray. (The rate of change in the room temperature is not critical and shall be whatever is obtainable with the cooling means employed.) The water spray shall be controlled so as to cause ice to build up on the bar at a rate of approximately 6.35 mm per hour (1/4 inch per hour) and shall be continued until 20 mm (3/4 inch) of ice has formed on the top surface of the bar. The spray shall then be discontinued but the room temperature shall be maintained between minus 7°C (20°F) and minus 3°C (27°F) for 3 hours to assure that all parts of the enclosure and ice coatings have been equalized to a constant temperature.</p>	<p>Procedure followed.</p>
8.5.3	<p>A Type 3, 3R, 4, 4X, 6, or 6P enclosure shall be considered to have met the requirements if at the conclusion of the test the enclosure is found to be undamaged after the ice has melted.</p>	<p>At the conclusion of the test the enclosure was found to be undamaged after the ice has melted.</p>

8.6 Hosedown Test

Sub-Clause	Description	Comments
8.6.1	The enclosure and its external mechanisms shall be subjected to a stream of water from a hose that has a 25 mm inside diameter (1 inch inside diameter) nozzle that delivers at least 240 L per minute (65 gallons per minute). The water shall be directed at all joints from a distance of 3.0 – 3.5 m (10 – 12 feet). The nozzle shall be moved along each joint one time at a uniform nominal rate of 6 mm/s (1/4 inch per second). A conduit may be installed to equalize internal and external pressures, but shall not serve as a drain.	Followed
8.6.2	The enclosure shall be considered to have met the requirements if at the conclusion of the test no water has entered the enclosure.	At the conclusion of the tests, no water was found to have entered the enclosure

MODEL: CP-220

PHOTOS 1 & 2



Notes:

- 1) Molded silicone rubber gasket, manufactured by Yantai Kangwei, material part number 300-0103-000,
- 2) 'Wieland' PST 40i1 connectors,
- 3) Extruded aluminum box and endplates (6030 alloy),
- 4) 'Positronic' 3 Pole AC Connector model KC316M2PE0
- 5) Zinc-Plated Steel Type F Thread-Cutting Screw, Hex Washer Head Slotted, 4-40 Thread, 3/8", 10 per endplate.

CONCLUSION

The submitted product was tested in accordance with the applicable clauses of the declared standards. The results indicate the submitted Electrical Enclosure model CP-220 met the requirements of UL 50 Enclosures for Electrical Equipment, Non-Environmental Considerations, 12th Edition dated Sept. 4, 2007 and UL 50E Enclosures for Electrical Equipment, Environmental Considerations, 1st Edition dated Sept. 4, 2007 for a Type 4X enclosure.

INTERTEK TESTING SERVICES NA LTD.

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