TAS 100(A)-95 TEST REPORT

Rendered to:

SUNMODO CORPORATION

SERIES/MODEL: EZ3 Roof Mount
TYPE: Solar Panel Roof Attachment

This report contains in its entirety:

Cover Page: 1 Page
Report Body: 5 Pages
Photographs: 2 Pages
Drawings: 4 Pages

Report No: I6899.02-109-18
Test Date: 7/25/18
And: 7/26/18
Report Date: 8/17/18
Revision 1: 8/22/18
Expiration Date: 7/26/28
Miami-Dade County Notification No.: ATI 18031
TAS 100(A)-95 TEST REPORT

Rendered to:

SunModo Corporation
14800 NE 65th Street
Vancouver, Washington 98682

Report No: I6899.02-109-18
Test Date: 7/25/18
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Series/Model: EZ3 Roof Mount

Project Summary: Intertek B&C was contracted by SunModo Corporation to conduct wind driven rain testing per Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) – Testing Application Standard TAS 100(A)-95 on EZ3 Roof Mount solar panel roof attachment. All test data, photos, and results are included herein. The sample was provided by the client.

Test Specification: All tests were performed in accordance with the referenced specification, unless stated otherwise.

TAS 100(A)-95, Test Procedure for Wind and Wind Driven Rain Resistance and/or Increased Windspeed Resistance of Soffit Ventilation Strip and Continuous or Intermittent Ventilation System Installed at the Ridge Area.

Test Specimen Description:

**Roof Deck Description:** An 8' 0" wide by 6' 0" long roof deck with 2:12 slope was utilized. The roof deck consisted of #2 Spruce-Pine-Fir nominal 2x6 rafters sheathed with 15/32" plywood. The rafters were spaced 24" on center. The plywood was secured to the rafters with 1-5/8" drywall screws spaced 6" on center around the perimeter and 12" on center at the intermediate supports. The plywood sheathing was covered with self-stick ice and water shield underlayment only.

**EZ3 Roof Mount Installation:** The test specimens consisted of a 9-1/2" wide by 12" long by 0.040" thick aluminum flashing with a 5/8" diameter hole and an aluminum bushing. The flashing utilized a 1-3/16" diameter by 3/32" thick EDPM washer centered over the hole and adhered to the bottom of the flashing. A 1-9/16" diameter by 3/4" high aluminum bushing was placed through the hole in the flashing from the underside and installed with a bead of sealant between the bottom side of the bushing and the roof deck. A solar panel L-foot bracket was set on top of the flashing over the protruding bushing and secured with a 5/16" x 4-1/2" lag screw, 5/8" diameter by 3/32" thick EDPM roof shoe gasket and 1-1/8" diameter by 3/8" thick spherical washer. The assembly was installed per the manufacturer's installation instructions. Two replicates were installed to the roof deck.
Test Results: The following results have been recorded:

Protocol TAS 100(A)-95 Wind Driven Rain

Test Procedure: The wind speed intervals were conducted as follows:

<table>
<thead>
<tr>
<th>Interval No.</th>
<th>Wind Speed (mph)</th>
<th>Time (min)</th>
<th>Water Spray</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35</td>
<td>15</td>
<td>On</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>5</td>
<td>Off</td>
</tr>
<tr>
<td>3</td>
<td>70</td>
<td>15</td>
<td>On</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>5</td>
<td>Off</td>
</tr>
<tr>
<td>5</td>
<td>90</td>
<td>15</td>
<td>On</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>5</td>
<td>Off</td>
</tr>
<tr>
<td>7</td>
<td>110</td>
<td>5</td>
<td>On</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>5</td>
<td>Off</td>
</tr>
</tbody>
</table>

Wind Speed Results

<table>
<thead>
<tr>
<th>Wind Speed</th>
<th>Results</th>
<th>Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 mph</td>
<td>No leakage</td>
<td>.</td>
</tr>
<tr>
<td>70 mph</td>
<td>No leakage</td>
<td>.</td>
</tr>
<tr>
<td>90 mph</td>
<td>No leakage</td>
<td>.</td>
</tr>
<tr>
<td>110 mph</td>
<td>No leakage</td>
<td>14.30 fl-oz</td>
</tr>
</tbody>
</table>

Results: Pass

Official Observers: The following representatives witnessed all or part of the testing.

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric M. Brennan</td>
<td>Intertek B&amp;C</td>
</tr>
<tr>
<td>Tyler J. Holland</td>
<td>Intertek B&amp;C</td>
</tr>
<tr>
<td>Joseph A. Reed, P.E.</td>
<td>Intertek B&amp;C</td>
</tr>
<tr>
<td>Kyle W. Ruth</td>
<td>Intertek B&amp;C</td>
</tr>
</tbody>
</table>
Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Intertek B&C for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek B&C.

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Digitally Signed by: Kyle Ruth
Kyle W. Ruth
Technician – Product Testing

Digitally Signed by: Joseph A. Reed
Joseph A. Reed, P.E.
Senior Director

KWR:wnI

Attachments (pages): This report is complete only when all attachments listed are included.
- Appendix A: Photographs (2)
- Appendix B: Drawings (4)
## Revision Log

<table>
<thead>
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<th>Rev. #</th>
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<td>0</td>
<td>8/17/18</td>
<td>N/A</td>
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<td>1</td>
<td>8/22/18</td>
<td>Drawings</td>
<td>Added installation instructions</td>
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This report produced from controlled document ATI 00173, revised 03/06/07.
Appendix A

Photographs

Photo No. 1
Test Specimens

Photo No. 2
Underneath of Test Deck Before Testing
Photo No. 3
EZ3 Roof Mount Installation

Photo No. 4
Underneath of Test Deck After Testing
Appendix B

Drawings
SUNMODO CORP.

REPORT #: 6899.02
Date: 08/17/18
Verified by:

GENERAL SPECIFICATIONS

MATERIAL

DRAWING NUMBER

TOLERANCES

X.XXX ± 0.01 [0.25mm]
X.XX ± 0.02 [0.50mm]
X.X ± 0.039 [1.0mm]

UNLESS OTHERWISE SPECIFIED

ALL DIMENSIONS IN INCHES [MILLIMETERS]

CHECKED BY

APPROVALS

SCALE:

NONE

SHEET 1 OF 1

3 K50223-BK1 L FOOT KIT
2 K50222-BK1 LAG SCREW KIT
1 K50221-BK1 FLASHING KIT

QTY

DESCRIPTION

L FOOT KIT
LAG SCREW KIT
FLASHING KIT

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14800 NE 65TH STREET, VANCOUVER WA 98682

PHQ

14/15/2018

FINAL APPROVALS

REV

DESCRIPTION

A

INITIAL RELEASE

PHQ

01/03/18

DRAWING NUMBER

REV

A

DATE

01/03/18

CHECKED BY

APPROVALS

SCALE:

NONE

SHEET 1 OF 1

This drawing is confidential property of SunModo and its contents may not be disclosed without the prior written consent of SunModo Corp.
Tolerances
X.XXX ± 0.01 [0.25mm]
X.XX ± 0.02 [0.50mm]
X.X ± 0.039 [1.0mm]

Unless otherwise spec'd

All Dimensions in inches [millimeters]

CHECKED BY

APPROVALS

GENERAL SPECIFICATIONS

MATERIAL

DRAWN BY

DRAWING NUMBER

REV

DESCRIPTION

PHQ

DATE

A

INITIAL RELEASE

3

B10029-BK1

FLANGE NUT, SERRATED, M10X1.5, 304SS, BLACK

1

B

B50031-BK1

T-BOLT M10X20

1

K

K50023-BK1

L FOOT, E23

1

ITEM

PART NUMBER

1

QTY

DESCRIPTION

3

6

0

4

2

1

1

1

1

1

SunModo Corp.

14800 NE 65TH STREET, VANCOUVER WA 98682

L FOOT KIT

Report #: I6899.02

Date: 08/17/18

Verified by: 

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**EZ3 Roof Mount System:**
Installation Instructions for attaching the EZ3 Roof Mount Kit to composite shingle roofs. The SunModo EZ3 Roof Mount Kit comes complete with Flashing, Lag Screw with Spherical Washer, L-Foot and 3/8 Hardware.

Locate roof rafters and mark locations on roof. Drill 7/32” pilot holes and backfill with sealant. Slide flashing between 1st and 2nd course of shingles, ensuring flashing does not overhang the downhill shingle.

Secure the L-Foot to the Flashing by lining up the supplied Lag Bolt with Spherical Washer with the pilot hole. Fully seat the Lag Bolt with Spherical Washer.

Using the 3/8” hardware supplied attached the Rail to the L-Foot.

**Tools Required:**
7/32” long-style bit, drill, torque wrench, sockets set, structural sealant such as Chem-link M1, or Uniflex KST058XXX for wood and composite roofs, caulking gun, tape measure, string line or laser line.