QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

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CLIENT: SunModo Corporation
14800 NE 65th Street
Vancouver, WA 98682

Project No: MED-1200c	**Report Date:** December 27, 2023

SAMPLE ID: Series: K50065-BK1 NanoBit Rafter Mount

SAMPLING DETAIL: The test sample manufactured by SunModo Corporation was submitted directly to QAI by the client. Samples were not independently selected for testing.

DATE OF RECEIPT: Samples were received at the QAI Miami Laboratory on October 18, 2023, and in good condition.

TESTING PERIOD: December 18, 2023

TESTING LOCATION: QAI Laboratories – Miami, Florida, USA

AUTHORIZATION: QAI proposal number 23MT09261 dated September 26, 2023, signed by Roland Jasmin, Director of Engineering of SunModo Corporation, dated October 2, 2023.

TEST PROCEDURE: Testing to the following requirements:

- TAS 100-23(A) 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 RESULTS: The four samples of series: K50065-BK1 NanoBit Rafter Mount achieved passing results found on page 3 of this test report when tested in accordance with the TAS 100-23(A).

CONTENTS: Test report pages 1 through 18.

Prepared By

Lusinda Delgado

Lusinda Delgado
Technical Report Writer

Signed for and on behalf of QAI Laboratory

Printed from an e-signed document

Digitally signed by Jose Sanchez
Date: 2024.01.18 12:59:59 -05'00'

Jose Sanchez
Operation Manager

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Ian McGinley

W/E: Professional Engineer:
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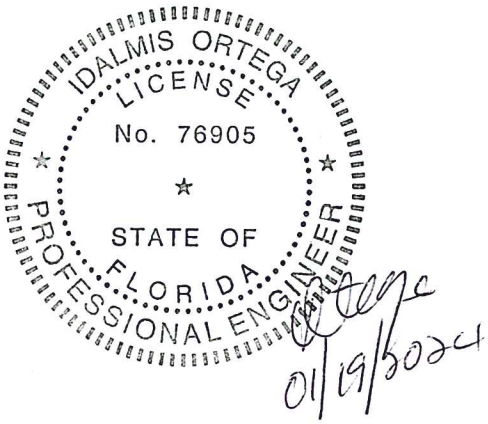
FL License No. 76905



DESCRIPTION OF SAMPLE	
Model Designation:	Series: K50065-BK1 NanoBit Rafter Mount
Sample A-1	
Test Deck: Test deck was constructed by QAI Laboratory. The deck consisted of APA 32/16 span rated sheathing of 15/32" thickness Grade C-D with 3 ply installed over 2" by 6" perimeter supports and 2" by 6" intermediate supports spaced 24" apart. The sheathing was attached using 8d common nails at 6" on centers at panel edges and 12" on centers at intermediate supports. The test deck had a test slope of 2/12.	
Underlayment: The underlayment used on test deck consisted of self-adhering polystick IR-X	
Metal Flashing: One 2 1/2" by 2 1/2" by 26"-gauge galvanized metal flashing was installed at the perimeter of the deck over the underlayment and fastened using a staggered row of a 1 1/4" long corrosion resistant ring shank nail.	
Roof Shingles: Asphalt shingles installed throughout the roof deck as per the Florida Building Code HVAZ.	
NanoBit Rafter (Part No. K50065-BK1) Installation: The NanoBit rafter mount was installed over rafters using one 5/16" lag screw with a sealing washer. Roof sealant was applied on the bottom of the NanoBit rafter prior to fastening.	
Method of Conditioning: The roof deck was conditioned for 3 days exposure to outside environment conditions. The roof deck temperature was verified each day with a thermocouple and was maintained above 120°F for six hours each day.	

Interval #	Wind Speed (mph)	Time (min)	Observations	Results
1	35	15	No leak	Passed
2	0	5	No leak	Passed
3	70	15	No leak	Passed
4	0	5	No leak	Passed
5	90	15	No leak	Passed
6	0	5	No leak	Passed
7	110	5	No leak	Passed
8	0	5	No leak	Passed

Immediately after commencement of interval 1 top side

Immediately after commencement of interval 1 bottom side

30 seconds prior to completion of interval 1 top side

30 seconds prior to completion of interval 1 bottom side

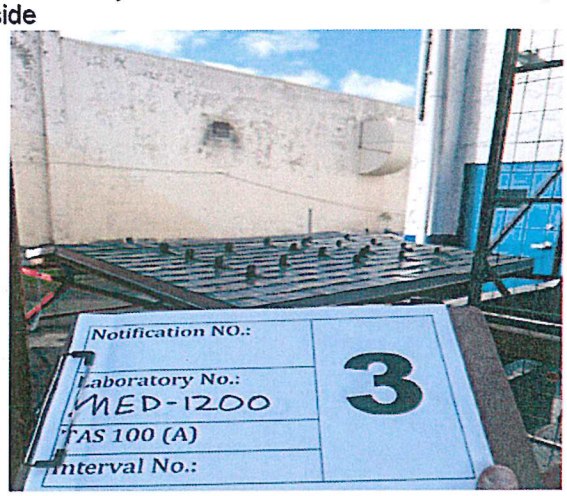
Immediately after commencement of interval 2 top side

Immediately after commencement of interval 2 bottom side

30 seconds prior to completion of interval 2 top side

30 seconds prior to completion of interval 2 bottom side

Immediately after commencement of interval 3 top side



Immediately after commencement of interval 3 bottom side

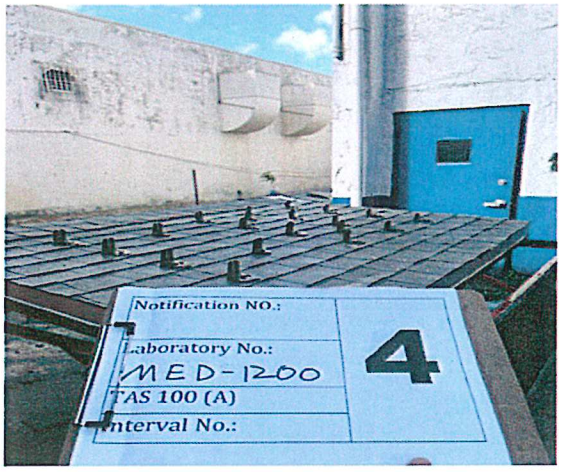
30 seconds prior to completion of interval 3 top side

30 seconds prior to completion of interval 3 bottom side

Immediately after commencement of interval 4 top side

Immediately after commencement of interval 4 bottom side

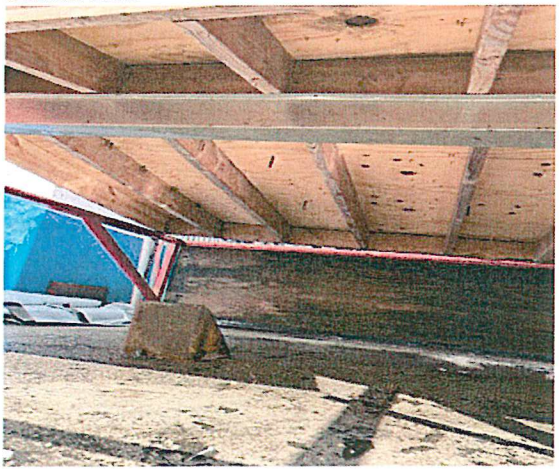
30 seconds prior to completion of interval 4 top side



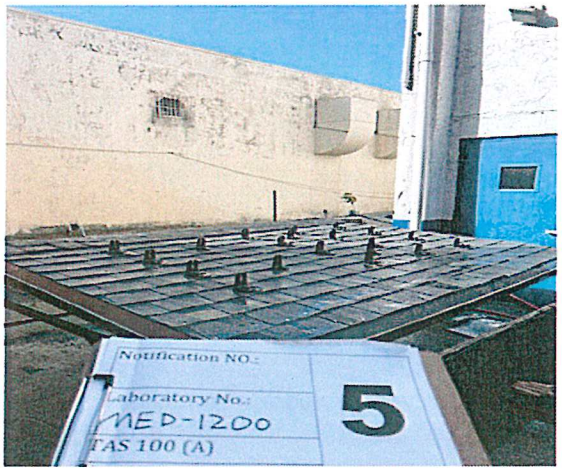
30 seconds prior to completion of interval 4 bottom side

Immediately after commencement of interval 5 top side

Immediately after commencement of interval 5 bottom side



30 seconds prior to completion of interval 5 top side



30 seconds prior to completion of interval 5 bottom side

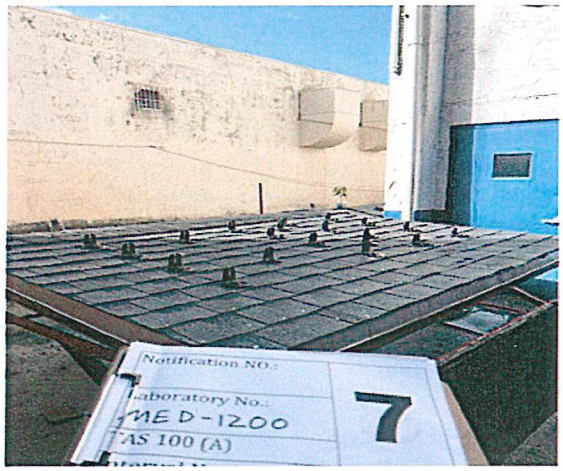
Immediately after commencement of interval 6 top side

Immediately after commencement of interval 6 bottom side

30 seconds prior to completion of interval 6 top side

30 seconds prior to completion of interval 6 bottom side

Immediately after commencement of interval 7 top side



Immediately after commencement of interval 7 bottom side

30 seconds prior to completion of interval 7 top side

30 seconds prior to completion of interval 7 bottom side

Immediately after commencement of interval 8 top side

Immediately after commencement of interval 8 bottom side

30 seconds prior to completion of interval 8 top side

30 seconds prior to completion of interval 8 bottom side

Conclusion: The sample tested has passed the Florida Building Code TAS 100(a)-95 with no deviation.

Appendix A: Calibration records
Appendix – B 0.05% Maximum Allowable Leakage Calculations

TAS 100 (A) Calibration Records

Appendix A

Technician: Jose Sanchez
Date: 9/19/2023

Temperature: 73.6° F
Barometer Reading: 30.06 inHg

Wind Stream Calibration

Engine RPM: 1200 **@ 35 MPH**

32.0 (mph)	34.0 (mph)	33.0 (mph)	34.0 (mph)
32.0 (mph)	33.0 (mph)	32.0 (mph)	33.0 (mph)

Engine RPM: 2300 **@ 70 MPH**

71.0 (mph)	69.0 (mph)	71.0 (mph)	69.0 (mph)
69.0 (mph)	71.0 (mph)	71.0 (mph)	72.0 (mph)

Engine RPM: 3200 **@ 90 MPH**

90.0 (mph)	88.0 (mph)	91.0 (mph)	92.0 (mph)
92.0 (mph)	90.0 (mph)	91.0 (mph)	89.0 (mph)

Engine RPM: 4100 **@ 110 MPH**

109.0 (mph)	108.0 (mph)	111.0 (mph)	110.0 (mph)
108.0 (mph)	112.0 (mph)	108.0 (mph)	111.0 (mph)

Engine RPM: 4300 **@ 115 MPH**

118.0 (mph)	115.0 (mph)	116.0 (mph)	116.0 (mph)
116.0 (mph)	114.0 (mph)	116.0 (mph)	114.0 (mph)

TAS 100 (A) Calibration Records

Wind Stream Calibration

Engine RPM: 4400 @ 120 MPH

119.0(mph)	119.0(mph)	121.0(mph)	121.0(mph)
121.0(mph)	120.0(mph)	122.0(mph)	120.0(mph)

Engine RPM: 4800 @ 125 MPH

125.0(mph)	125.0(mph)	121.0(mph)	125.0(mph)
122.0(mph)	126.0(mph)	126.0(mph)	124.0(mph)

Engine RPM: 4900 @ 130 MPH

130.0(mph)	131.0(mph)	132.0(mph)	131.0(mph)
133.0(mph)	134.0(mph)	132.0(mph)	132.0(mph)

Engine RPM: 5100 @ 135 MPH

135.0(mph)	133.0(mph)	135.0(mph)	133.0(mph)
135.0(mph)	134.0(mph)	133.0(mph)	134.0(mph)

Engine RPM: 5300 @ 140 MPH

141.0(mph)	139.0(mph)	141.0(mph)	143.0(mph)
140.0(mph)	142.0(mph)	139.0(mph)	138.0(mph)

Wind speed (mph) shall not exceed or decrease any more than ± 10% of the required wind speed as per TAS 100-95(A) section 7.1.2

TAS 100 (A) Calibration Records

Simulated Rainfall and Flow Meter Calibration

Reading #	Flow meter read out gallon/minute	inches/hour	Allowable Standard Tolerance ±5% of 8.8
1	4.3	8.62	8.36-9.24 in/hr
2	4.3	8.62	8.36-9.24 in/hr
3	4.3	8.62	8.36-9.24 in/hr

Section 7.2.3

Formula:

[(Gal/min) x (60 min/1 hr) x(231 in^3/1 gal)] / 6912 in^2 = inches/hour

Simulated Rainfall and Flow Meter Calibration

Status- 1 minute filling time

Test Number	Weight of Water Bucket	Weight of Bucket Tare	Weight of Water	Divide	Weight of One Gallon	Gallon/minute Collected	Inches/ hour	Allowable Standard Tolerance ±5% of 7.2.3
1	36 lbs	(-) 1.0 lbs	35 lbs	/	8.34 lbs	4.19	8.40	8.19-9.05 in/hr
2	36 lbs	(-) 1.0 lbs	35 lbs	/	8.34 lbs	4.19	8.40	8.38-9.26 in/hr
3	35 lbs	(-) 1.0 lbs	34 lbs	/	8.34 lbs	4.08	8.18	8.38-9.26 in/hr

Section: 7.2.5

Formula:

[($inches^3$/6912 $inches^2$)/1 minute]x(60 minutes/1 hour)= inches/hour

Note: 231 in^3 =1 gallon

Water Distribution Check

10) 24"x24" Absorptive Cloth Material

#1) 244g	#2) 241g	#3) 251g	#4) 247g	#5) 250g
#6) 242g	#7) 242g	#8) 246g	#9) 247g	#10) 251g

Total of all ten squares= 2461 g
Average of ten squares= 246 g

TAS 100 (A) Calibration Records

Water Distribution Check @ 35 (mph)

Reading #1 **Total Weight** 915g (-) tare 246g = 669g = 0.59 inches/hour	**Reading #2** **Total Weight** 936g (-) tare 246g = 690g = 0.61 inches/hour	**Reading #3** **Total Weight** 936g (-) tare 246g = 690g = 0.61 inches/hour	**Reading #4** **Total Weight** 935g (-) tare 246g = 689g = 0.61 inches/hour
Reading #5 **Total Weight** 924g (-) tare 246g = 678g = 0.60 inches/hour	**Reading #6** **Total Weight** 924g (-) tare 246g = 678g = 0.60 inches/hour	**Reading #7** **Total Weight** 912g (-) tare 246g = 666g = 0.59 inches/hour	**Reading #8** **Total Weight** 952g (-) tare 246g = 706g = 0.62 inches/hour
Reading #9 **Total Weight** 929g (-) tare 246g = 683g = 0.60 inches/hour	**Reading #10** **Total Weight** 941g (-) tare 246g = 695g = 0.61 inches/hour	**Reading #11** **Total Weight** 929g (-) tare 246g = 683g = 0.60 inches/hour	**Reading #12** **Total Weight** 1000g (-) tare 246g = 754g = 0.66 inches/hour

Formula: 7.3.5.1

1 gram =0.061 inches^3

[(in^3/576^2) / (hours) = x (inches/hour)

Run Time= 0.12 hour

No one particular square shall be greater than or less than ±15 % of any other square as per TAS 100(A)-95 Section 7.3.6

TAS 100 (A) Calibration Records

Water Distribution Check @ 70 (mph)

Reading #1 **Total Weight** 1029g (-) tare 246g = 783g = 0.69 inches/hour	**Reading #2** **Total Weight** 1020g (-) tare 246g = 774g = 0.68 inches/hour	**Reading #3** **Total Weight** 1048g (-) tare 246g = 804g = 0.71 inches/hour	**Reading #4** **Total Weight** 1028g (-) tare 246g = 782g = 0.69 inches/hour
Reading #5 **Total Weight** 1044g (-) tare 246g = 798g = 0.70 inches/hour	**Reading #6** **Total Weight** 1018g (-) tare 246g = 772g = 0.68 inches/hour	**Reading #7** **Total Weight** 1026g (-) tare 246g = 780g = 0.69 inches/hour	**Reading #8** **Total Weight** 1042g (-) tare 246g = 796g = 0.70 inches/hour
Reading #9 **Total Weight** 1026g (-) tare 246g = 780g = 0.69 inches/hour	**Reading #10** **Total Weight** 1044g (-) tare 246g = 798g = 0.70 inches/hour	**Reading #11** **Total Weight** 1049g (-) tare 246g = 808g = 0.71 inches/hour	**Reading #12** **Total Weight** 999g (-) tare 246g = 753g = 0.66 inches/hour

Formula: 7.3.5.1

1 gram =0.061 inches^3

[(in^3/576^2) / (hours) = x (inches/hour)

Run Time= 0.12 hour

No one particular square shall be greater than or less than ±10 % of any other square as per TAS 100(A)-95 Section 7.3.7.1

Appendix B

TAS 100(a)-95 0.05% Maximum Allowable Leakage Calculations

Test Frame Size:

8'-0" by 6'-0" or 6912 inches^2

8.8 inches/hour of rain in a 15 minute duration:

(8.8 inches/hour) x (15 minutes) x (1hour/60 minutes) = 2.2 inches

2.2 inches of water sprayed over the test frame:

(6912 inches^2) x (2.2 inches) = 15,206.4 inches^3 of water

1 inch^3 of water or 0.576 ounces of water

(15,206.4 inches^3) x (0.576 ounces of water) = 8,758.8 ounces of water

0.05% maximum allowable:

(8,758.8) x (0.05%) = 4.379 ounces of water

Notes
* Designates measurements by laboratory ** as per manufacturer QAI does not have, nor does it intend to acquire or will acquire, a financial interest in any company manufacturing or distributing products tested or labeled by QAI. QAI is not owned, operated, or controlled by any company manufacturing or distributing products it tests or labels. Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Test results obtained represent the actual value of the tested specimens and do not constitute opinion, endorsement, or certification by this laboratory.

REMARKS
This product was tested and is in compliance with the Florida Building Code (2023) TAS 100-23(A) with no deviations. See Appendix A for the calibration records as indicated in TAS 100-23(A). Total water sprayed was 8.8 inches per hour.

REVISION HISTORY:

12/27/2023: Initial report release
1/18/2024: Added part number per clients request.

*******END REPORT*******

	QAI LABORATORY
	LABORATORY NUMBER: MED-1200c
	DATE: 1/18/2024
	DRAWINGS VERIFIED BY: LD