

FRAMELESS HARDWARE COMPANY LLC THERMAL PERFORMANCE TEST REPORT

SCOPE OF WORK

FHC ASPIRE INSULATED GLASS ENTRANCE DOOR

REPORT NUMBER

N2121.01-301-46 R0

TEST DATE

08/10/22

ISSUE DATE

12/27/22

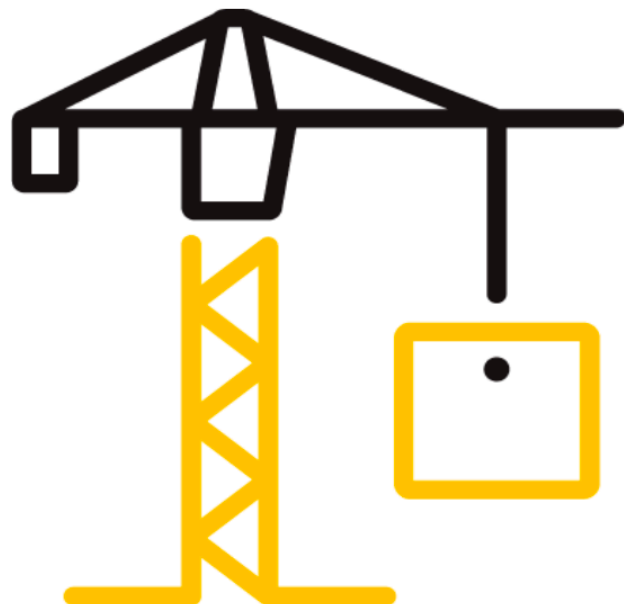
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DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-2822(a) (08/16/21)

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TEST REPORT FOR FRAMELESS HARDWARE COMPANY LLC

Report No.: N2121.01-301-46 R0
Date: 12/27/22

REPORT ISSUED TO

FRAMELESS HARDWARE COMPANY LLC
4361 Firestone Blvd
South Gate, California 90280

SECTION 1


SCOPE

SERIES/MODEL: FHC Aspire Insulated Glass Entrance Door
TYPE: Swinging Door with Frame

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Frameless Hardware Company LLC to evaluate the thermal performance per NFRC 102-2020. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek B&C test facility in Fresno, California.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends five years after the test date. Test records, such as detailed drawings, datasheets, or other pertinent project documentation, will be retained for the entire test record retention period. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of two and a half years from the submittal date to the Inspection Agency and no more than five years from the test date.

For INTERTEK B&C:

COMPLETED BY	William Simon Smeds
TITLE	Technician
SIGNATURE	 <small>Digitally signed by William Simon Smeds</small>
DATE	12/27/22

REVIEWED BY	Kenny C. White
TITLE	Business Process Manager, IIRC
SIGNATURE	 <small>Digitally signed by Kenny C. White</small>
DATE	12/27/22

WSS:ss

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SECTION 2

SUMMARY OF TEST RESULTS

Standardized U-factor (Ust): 0.45 Btu/hr·ft²·F (CTS Method)

SECTION 3

TEST SPECIMEN SUMMARY

SERIES/MODEL	FHC Aspire Insulated Glass Entrance Door
TYPE	Swinging Door with Frame
OVERALL SIZE	37-3/4" x 82-1/4" (959 mm x 2089 mm) (Model Size)
NFRC STANDARD SIZE	37.8" x 82.3" (960 mm wide x 2090 mm high)
TEST SAMPLE SUBMITTED BY	Client
TEST SAMPLE SUBMITTED FOR	Validation for Initial Certification (Production Line Unit) & Plant Qualification

SECTION 4

TEST METHOD

The specimens were evaluated in accordance with the following:

NFRC 102-2020, Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems

SECTION 5

MATERIAL SOURCE/INSTALLATION

The test specimen was provided by the client.

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side.

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
William Simon Smeds	Intertek B&C

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SECTION 7

TEST SAMPLE DESCRIPTION

Frame

MATERIAL	AP: Aluminum with Thermal Breaks		
SIZE	37-3/4" x 82-1/4" (Model Size)		
DAYLIGHT OPENING	N/A	GLAZING METHOD	N/A
EXTERIOR COLOR	Mill Finish	EXTERIOR FINISH	Mill Finish
INTERIOR COLOR	Mill Finish	INTERIOR FINISH	Mill Finish
CORNER JOINERY	Square Cut / No Fasteners / Unsealed		

Panel

MATERIAL	AU (0.18"): Aluminum with Thermal Improvement - All Members		
SIZE	35-1/8" x 81"		
DAYLIGHT OPENING	32-7/8" x 72-7/8"	GLAZING METHOD	Channel
EXTERIOR COLOR	Mill Finish	EXTERIOR FINISH	Mill Finish
INTERIOR COLOR	Mill Finish	INTERIOR FINISH	Mill Finish
CORNER JOINERY	Square Cut / Screws / Sealed		

Glazing Information

LAYER 1	1/4"	Vitro SB60 (e=0.035*, #2)	
GAP	0.52"	A1-D: Aluminum Spacer	100% Air*
LAYER 2	1/4"	Clear	
GAS FILL METHOD	N/A*		

**Stated per the client/manufacture and can affect the validity of results*

N/A Non-Applicable

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SECTION 7 (CONTINUED)

TEST SAMPLE DESCRIPTION (CONTINUED)

Weatherstripping

DESCRIPTION	QUANTITY	LOCATION
Polypile with center fin	1 Row	Stiles.
Polypile with center fin	2 Rows	Rails.

Hardware

DESCRIPTION	QUANTITY	LOCATION
Hinge	2	Head and sill.
Handle	1	Stile.
Deadbolt	1	Sill.

Drainage

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
No visible weeps			

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SECTION 8

THERMAL TRANSMITTANCE (U-FACTOR): MEASURED TEST DATA

Heat Flows

1. Total Measured Input into Metering Box (Qtotal)	888.93 Btu/hr
2. Surround Panel Heat Flow (Qsp)	102.85 Btu/hr
3. Surround Panel Thickness	4.00 inches
4. Surround Panel Conductance	0.0483 Btu/hr·ft ² ·F
5. Metering Box Wall Heat Flow (Qmb)	-7.60 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0140*EMF + 0.000
7. Flanking Loss Heat Flow (Qfl)	38.92 Btu/hr
8. Net Specimen Heat Loss (Qs)	754.76 Btu/hr

Areas

1. Test Specimen Projected Area (As)	21.56 ft ²
2. Test Specimen Projected Frame Area (Af)	4.92 ft ²
3. Test Specimen Projected Glazing Area (Ag)	16.64 ft ²
4. Metering Box Opening Area (Amb)	53.48 ft ²
5. Metering Box Baffle Area (Ab1)	52.23 ft ²
6. Surround Panel Interior Exposed Area (Asp)	31.92 ft ²

Test Conditions

1. Average Metering Room Air Temperature (th)	69.80 F
2. Average Cold Side Air Temperature (tc)	-0.44 F
3. Average Guard/Environmental Air Temperature	73.00 F
4. Metering Room Average Relative Humidity	13.91 %
5. Metering Room Maximum Relative Humidity	14.62 %
6. Metering Room Minimum Relative Humidity	13.27 %
7. Measured Cold Side Wind Velocity (Perpendicular Flow)	11.22 mph
8. Measured Warm Side Wind Velocity (Parallel Flow)	0.04 mph
9. Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04" H ₂ O

Average Surface Temperatures

1. Metering Room Surround Panel	66.55 F
2. Cold Side Surround Panel	-0.13 F

Results

1. Thermal Transmittance of Test Specimen (Us)	0.50 Btu/hr·ft ² ·F
2. Standardized Thermal Transmittance of Test Specimen (Ust)	0.45 Btu/hr·ft ² ·F

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SECTION 9

THERMAL TRANSMITTANCE (U-FACTOR): CALCULATED TEST DATA

CTS Method Results

1. Warm Side Surface Emittance of CTS (e1)	0.84
2. Warm Side Area-Weighted Surface Emittance of Specimen Frame (ef1)	0.05
3. Warm Side Area-Weighted Surface Emittance of Specimen Glazing (eg1)	0.84
4. Warm Side Surface Emittance of Surround Panel (esp1)	0.90
5. Warm Side Area-Weighted Surface Emittance in View of the Baffle (es1)	0.80
6. Warm Side Baffle Emittance (eb1)	0.92
7. Cold Side Baffle Emittance (eb2)	N/A
8. Equivalent Warm Side Surface Temperature (t1)	46.33 F
9. Equivalent Cold Side Surface Temperature (t2)	5.82 F
10. Warm Side Baffle Surface Temperature	69.11 F
11. Cold Side Baffle Surface Temperature	N/A F
12. Measured Warm Side Surface Conductance (hh)	1.49 Btu/hr·ft ² ·F
13. Measured Cold Side Surface Conductance (hc)	5.60 Btu/hr·ft ² ·F
14. Test Specimen Thermal Conductance (Cs)	0.86 Btu/hr·ft ² ·F
15. Convection Coefficient (Kc)	0.36 Btu/(hr·ft ² ·F ^{1.25})
16. Radiative Test Specimen Heat Flow (Qr1)	349.89 Btu/hr
17. Conductive Test Specimen Heat Flow (Qc1)	404.87 Btu/hr
18. Radiative Heat Flux of Test Specimen (qr1)	16.23 Btu/hr·ft ² ·F
19. Convective Heat Flux of Test Specimen (qc1)	18.78 Btu/hr·ft ² ·F
20. Standardized Warm Side Surface Conductance (hsth)	1.17 Btu/hr·ft ² ·F
21. Standardized Cold Side Surface Conductance (hstc)	5.28 Btu/hr·ft ² ·F
22. Standardized Thermal Transmittance (Ust)	0.45 Btu/hr·ft ² ·F

SECTION 10

TEST DURATION

1. The environmental systems were started at 10:51 hours, 08/09/22.
2. The test parameters were considered stable for two consecutive four hour test periods from 21:23 hours, 08/09/22 to 05:23 hours, 08/10/22.
3. The thermal performance test results were derived from 01:23 hours, 08/10/22 to 05:23 hours, 08/10/22.

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SECTION 11

GLAZING DEFLECTION

	PANEL
EDGE GAP WIDTH	0.52"
ESTIMATED CENTER GAP WIDTH upon receipt of specimen in laboratory (after stabilization)	0.58"
CENTER GAP WIDTH at laboratory ambient conditions on day of testing	0.58"
CENTER GAP WIDTH at test conditions	0.48"

Glass collapse determined using a digital glass and air space meter

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

“This test method does not include procedures to determine the heat flow due to either air movement through the specimen or solar radiation effects. As a consequence, the thermal transmittance results obtained do not reflect performances which are expected from field installations due to not accounting for solar radiation, air leakage effects, and the thermal bridge effects that have the potential to occur due to the specific design and construction of the fenestration system opening. The latter can only be determined by in-situ measurements. Therefore, it is important to recognize that the thermal transmittance results obtained from this test method are for ideal laboratory conditions and should only be used for fenestration product comparisons and as input to thermal performance analyses which also include solar, air leakage and thermal bridge effects.”

Required annual calibrations for the Intertek B&C, 'thermal test chamber' (ICN 004287) in Fresno, California were last conducted in October 2022 in accordance with Intertek B&C calibration procedure. A CTS Calibration verification was performed July 2022. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed April 2022.

The reported Standardized Thermal Transmittance (Ust) was determined using CTS Method, per Section 9.2(A) of NFRC 102.

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SECTION 12

CTS CALIBRATION DATA

1. CTS Test Date	02/19/22
2. CTS Size	38.75 ft ²
3. CTS Glass/Core Conductance	0.40 Btu/hr·ft ² ·F
4. Warm Side Air Temperature	69.80 F
5. Cold Side Air Temperature	-0.43 F
6. Warm Side Average Surface Temperature	55.08 F
7. Cold Side Average Surface Temperature	3.27 F
8. Convection Coefficient (Kc)	0.36 Btu/(hr·ft ² ·F ^{1.25})
9. Measured Cold Side Surface Conductance (hc)	5.60 Btu/hr·ft ² ·F
10. Measured Thermal Transmittance	0.31 Btu/hr·ft ² ·F

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 2.17%.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk Approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

"Ratings included in this report are for submittal to an NFRC licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those options identified on a valid Certificate of Authorization (CA) are to be used for labeling purposes."

The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen. The ratings were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy. The data acquisition frequency is 5 minutes.

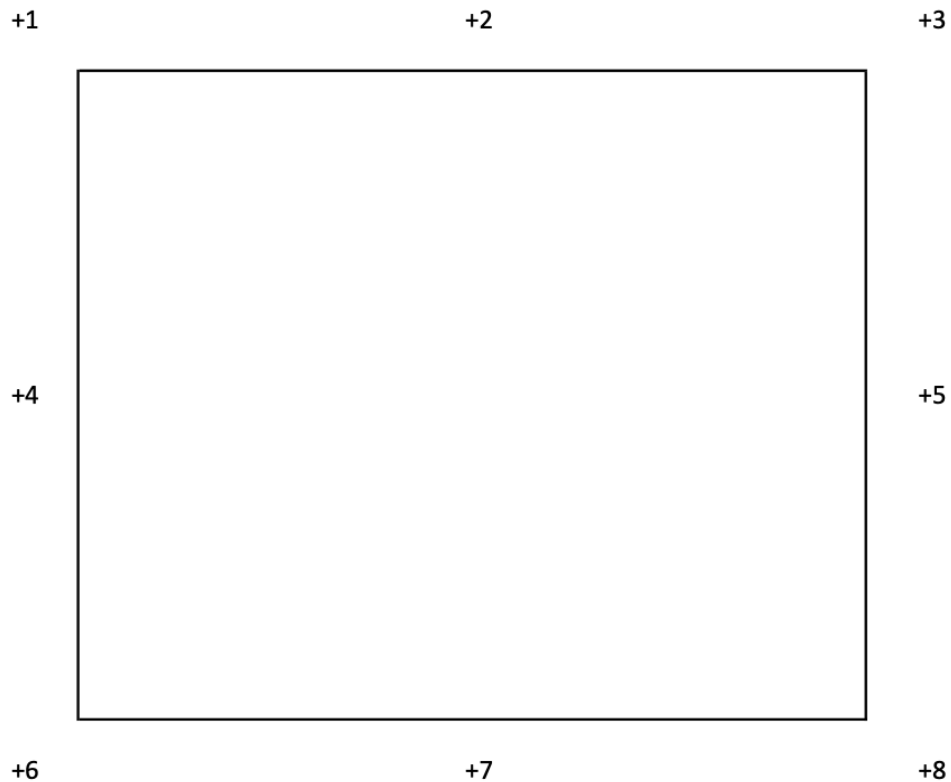
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SECTION 13

SURROUND PANEL WIRING DIAGRAM



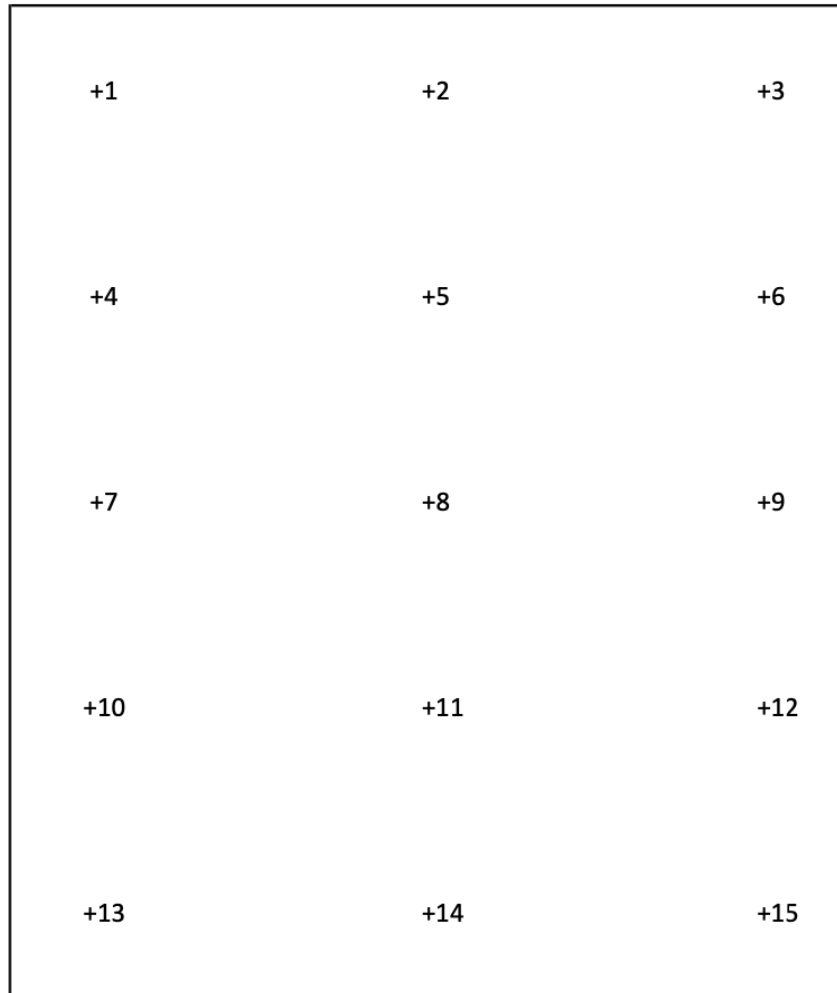
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SECTION 14

BAFFLE WIRING DIAGRAM



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SECTION 15

SUBMITTAL FORM AND DRAWINGS

The test specimen drawings which follow have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

NFRC PRODUCT CERTIFICATION PROGRAM

Submittal Form for Test Samples



For use by Manufacturers, Lineal Suppliers and Fabricators

1. Information on Production of the Test Sample (complete **ALL** fields):

Manufacturer: FHC Frameless Hardware Company Date of sample manufacture: 5-5-2022
 Plant Address where manufactured: 2323 Firestone Blvd
 City: South Gate State: CA Zip Code: 90280
 Name of IA: _____ Phone: 888-295-4531 Fax: 323-336-8307

2. Product Information (complete **APPLICABLE** fields):

Existing Product Line ID (CPD) No.: _____ Product/Operator Type (Table 4-3 of NFRC 100): _____
 Series/Model: FHC ASPIRE Insulated Glass Entrance Door

3. Test sample is being submitted for (select **ONE**):

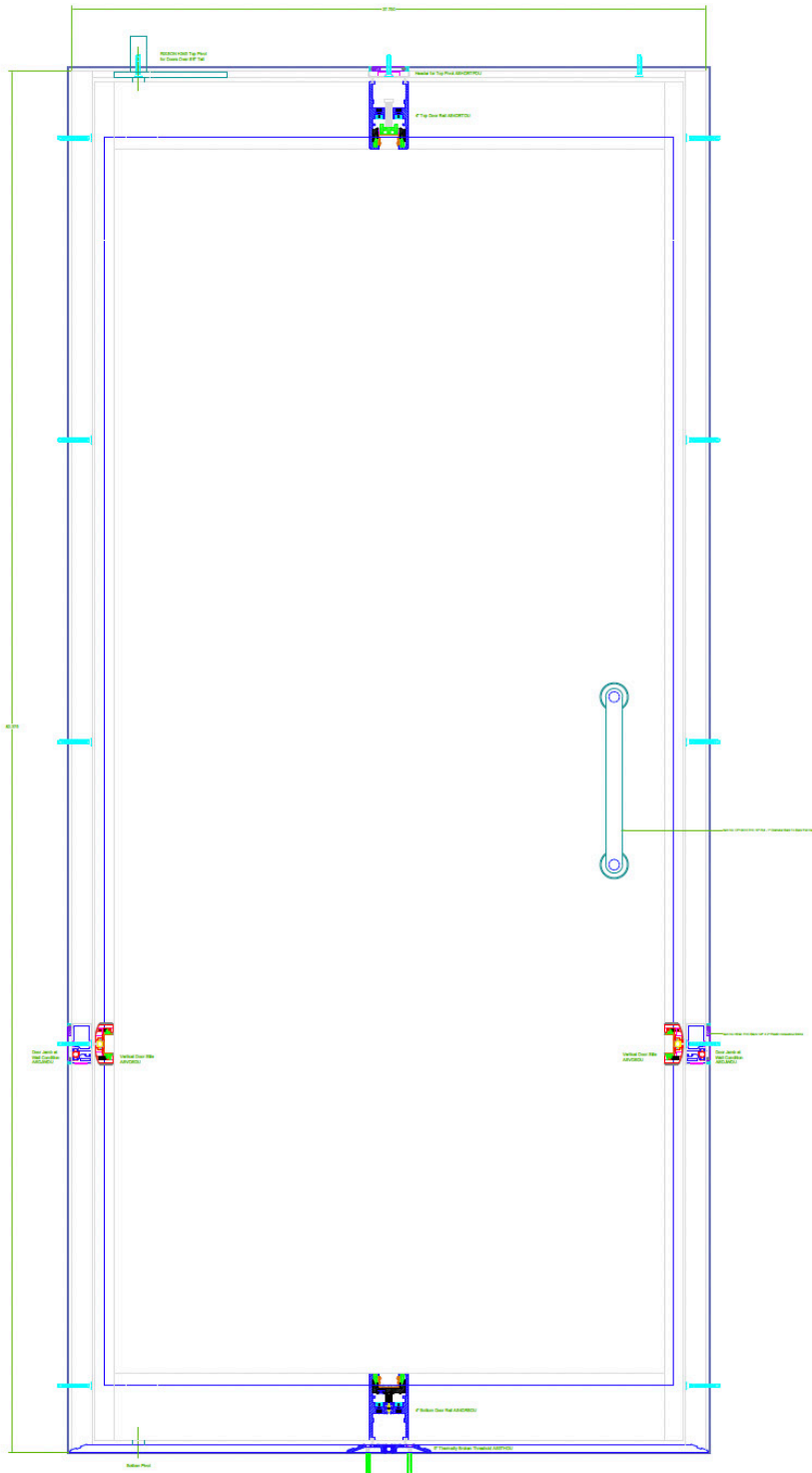
- a. Validation for Initial Certification (prototype only) no plant qualification
- b. Validation for Initial Certification or Recertification (production line unit) & plant qualification
- c. Plant Qualification Only (production line unit)
- d. Test Only Alternative (production line unit) & plant qualification

I, Chris Hanstad, as the designated agent for FHC do hereby attest that the foregoing information is true to the best of my information, knowledge, and belief. Further, if the unit is identified in Section 3 as a production line unit, I hereby authorize the NFRC-accredited testing laboratory to send a copy of the test report to the IA identified above for plant qualification purposes pursuant to the NFRC Product Certification Program.

Signature: Chris Hanstad Signature of the designated agent for the manufacturer or lineal supplier. The designated agent must be a U.S. citizen and a resident of the United States. The designated agent must be at least 18 years old and must be able to sign on behalf of the manufacturer or lineal supplier. Date: 8-10-2022

For Laboratory Use Only

1. Laboratory: Intertek
 2. Date Sample Received: 07/20/2022 Test Report #: N2121.01-301-46
 3. Date Sample Tested: 08/10/2022 By: Simon Smeds
 4. Modifications made: None



FHC ASPIRE NFRC Testing Door
 4" Bottom Door Rail
 NFRC Sample Size 37-3/4x82-3/8

	Report #: N2121-301-46
	Date: 12/27/22
	Verified by: <i>[Signature]</i>