Fenestration Testing Laboratory, Inc.

Quality Accuracy Assurance

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877
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Computer Simulation Report

Manufacture: C.T. Window, Inc.

Address: 9195 Boggy Creek Road
                   Orlando, Florida 32824

Specifications: *NFRC 100-2010:* Procedure for Determining Fenestration Product U-Factor.
                   NFRC 200-2010: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and
                                   Visible Transmittance at Normal Incidence.
                   NFRC 500-2010: Procedure for Determining Fenestration Product Condensation Resistance Values.

Software: Therm 6.3.1.9.0, Window 6.3.9.0, Simulation Manual
Spectral Data Library: 39.0

Baseline Product Validation

A baseline product must be tested in accordance with NFRC 102 "Test Procedure for Measuring the Steady-State
Thermal Transmittance of Fenestration Systems" to validate the U Values indicated. NFRC 100-2010 states " The
baseline product is the individual product selected for validation testing". The individual product selected as the
baseline product shall be the lowest simulated individual product.

Product Description	Product Number	Pane Thickness #1	Pane Thickness #2	Gap #1	Gap Fill #1	Emissivity Surface # 2	Spacer	U Factor
6mm SB70XL/6mm clear	03	0.223	0.223	0.625	ARG90	0.018	TS-D	0.26

Baseline product size: 2000 mm by 2000 mm high

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Model Designation:	Series; Hybrid Glazed Wall
Operator Code:	GWCW
Simulated Model Size:	2000 mm (78 3/4") by 2000 mm (78 3/4") high

Frame:	(WA) Aluminum/Wood Combination
Frame Finish:	Painted aluminum on the exterior and wood **spruce GLU Lam Beam on the interior

**as per manufacture

Edge of Glass Construction	
Interior Condition:	EPDM gasket
Exterior Condition:	PVC pressure plate

Spacer Type	Sealant Primary	Sealant Secondary	Desiccant
Stainless Steel Spacer Cardinal XL	Butyl	Silicone	Grace Phonosorb
Technoform TGI-Spacer	PIB	Silicone	Silica Gel Loose Fill

Gas Type	Filling Technique	Gas Fill Percentage
Argon	Single Probe	90%

Weather Stripping		
Quantity	**Description**	**Location**
none	none	none

Hardware		
Quantity	**Description**	**Location**
none	none	none

Reinforcement	
Material	**Location**
none	none

Dividers/Grids		
Grid Size	**Material**	**Grid Pattern**
none	none	none

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Specialty Product Table: The specialty products method allows the manufacture to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using Window 6.3.9.0. The method gives the overall SHGC and VT indexed on center of glass properties.

SHGC	No Dividers	Dividers < 1"	Dividers ≥ 1"
0.00	0.0025421	0.0060333	0.0093106
1.00	0.9260809	0.8229902	0.7262171
VT	**No Dividers**	**Dividers < 1"**	**Dividers ≥ 1"**
0.00	0.0000000	0.0000000	0.0000000
1.00	0.9236441	0.8170621	0.7170117

$SHGC = SHGC_o + SHGC\ cog\ (\ SHGC_1 - SHGC_o)$

$VT = VT_o + VT\ cog\ (\ VT_1 - VT_o)$

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Product Description	6mm SB70XL/6mm clear	6mm clear/6mm clear	6mm SB70XL/6mm clear	6mm clear/6mm clear	6mm LoE 340/6mm clear	Validation Option
Product ID Number	01	02	03	04	05	00
Pane Thickness #1	0.223	0.223	0.223	0.223	0.236	0.223
Pane Thickness #2	0.223	0.223	0.223	0.223	0.236	0.223
Pane Thickness #3						
Gap #1	0.625	0.625	0.625	0.625	0.625	0.625
Gap #2						
Gap Fill #1	ARG90		ARG90		ARG90	ARG90
Gap Fill #2						
Spacer	SS-D	SS-D	TS-D	TS-D	SS-D	TS-D
Emissivity Surface #2	0.018		0.018		0.028	0.018
Tint	CL	CL	CL	CL	CL	CL
Total Product U-Factor	0.28	0.47	0.26	0.46	0.45	0.26
Total Product SHGC	0.25	0.65	0.25	0.65	0.17	0.25
Total Product VT	0.59	0.73	0.59	0.73	0.35	0.59
Condensation Resistance	49	39	52	43	49	51

Low E Coatings Used
0.018 PPG Solarban 70XL

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Remarks
"Rating values included in this report are for submittals to an NFRC licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited inspection agency (IA) are to be used for labeling purposes."
"The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening."
Simulations were conducted in full compliance with NFRC requirements. Simulation relates only to the simulated Fenestration product.
Rounding is per requirements of NFRC 601, NFRC Unit and Measurement Policy.
U factors, Solar Heat Gain Coefficients, Visible Transmittance and Condensation Resistance values are calculated with a default frame absorption of 0.30 for all products other than glazed walls and slope glazing which have a frame absorption of 0.50.
Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Simulation results obtained represent the actual value of the simulated specimen and does not constitute opinion, endorsement or certification by this laboratory.
This test report is considered the exclusive property of the client named herein and is applicable to the specimen simulated. This report may not be reproduced without the approval of Fenestration Testing Laboratory, Inc and if so must be in full.

Revision History Table			
Revision	Description	Author	Effective Date
0	Initial Release	Jose Sanchez	May 3, 2011
1	Revised manufacture's name	Jose Sanchez	May 5, 2011
2	Included product ID #2 triple glazed unit	Jose Sanchez	June 15, 2011
3	Corrected rounding requirements per NFRC 601 and reported validation unit results	Jose Sanchez	September 7, 2011
4	Include clear glass options and TGI Spacer. Removed the triple glazed options. Requested by Sunil Tarneja, C.T. Windows	Jose Sanchez	January 25, 2012
5	Updated SPT table	Jose Sanchez	March 16, 2012
6	Included option 05 and revised expiration date. Requested by Sunil Tarneja, C.T. Windows	Jose Sanchez	March 24,2015

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Simulation Conducted by

Jose
Sanchez

Jose Sanchez
NFRC Certified Simulator
Simulator- in- Responsible- Charge

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APPENDIX A

Fenestration Product Drawings and Bill of Material