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**Summary
NFRC U-Factor Simulation Report**

Architectural Testing, Inc., 130 Derry Court, York PA 17402 - Fascimile 717-764-4129 Telephone 717-764-7700

Manufacture	All Seasons Window, Inc.	Series/Model:	V 500 PW	Report #:	01-33287.07
Street:	28 Edgeboro Road	Product Type:	Fixed	Report Date:	01/17/01
City, State, Zip:	East Brunswick, New Jersey 08816	Frame Type:	Vinyl (VY)	Recertification:	No
		Sash Type:	Vinyl (VY)		
		Residential Size:	48” wide by 48” high		
		Non-Residential Size:	48” wide by 72” high	Lab Code:	SATI

Product Number	Grouping ID Number	Grid	Glazing Layers	Primary Glaze	Secondary Glaze	Mfr Product Code	Spacer	Sealant	Glass Thickness	Gap Fill 1	Gap Fill 2	Gap 1	Gap 2	Gap 3	Emissivity 1	Coating Surface 1	Emissivity 2	Coating Surface 2	Emmissivity 3	Coating Surface 3	IFemiss	IFsurf	Ifemiss2	Ifsurf 2	U-Factor Res	U-Factor Non-Res
*A1	L	B	2	DG			S4	D	0.089	ARG		0.688			0.043	3									0.30	0.29
	1	B	2	DG			S4	D	0.129	ARG		0.625			0.043	3										
B1	L	B	2	DG			A1	D	0.087	AIR		0.688			0.324	3									0.40	0.40
	1	B	2	DG			A1	D	0.129	AIR		0.625			0.324	3										
B2	L	B	2	DG			S4	D	0.087	ARG		0.688			0.043	3									0.30	0.29
	1	B	2	DG			S4	D	0.129	ARG		0.625			0.043	3										

For certification, any product with a U-Factor of 0.39 or better may be tested. The tested product will become baseline for future considerations. If size tested is more than 1/2” larger or smaller than standard sizes, consult simulator.

* “A” labeled options are Chelsea Building Products 8875/8275 series. “B” labeled options are series 8775/8175.

Summary

NFRC Solar Heat Gain Coefficient/Visible Light Transmittance Report

Architectural Testing, Inc., 130 Derry Court, York PA 17402 - Facsimile 717-764-4129 Telephone 717-764-7700

Manufacturer: All Seasons Window, Inc. Street: 28 Edgeboro Road City, State, Zip: East Brunswick, New Jersey 08816	Series/Model: V 500 PW Product Type: Fixed Frame Type: Vinyl (VY) Sash Type: Vinyl (VY) Residential Size: 48" wide by 48" high Non-Residential Size: 48" wide by 72" high	Report #: 01-33287.07 Report Date: 01/17/01 Recertification: No Lab Code: SATI
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Product Number	SHGC ID #	Tint (Color)	Frame (Color)	Dividers (Inches)	SHGC Res.	SHGC Non-Res.	VT Res.	VT Non-Res.	SHGCc Res.	SHGCc Non-Res.	VTc Res.	VTc Non-Res.	Option Description	Reference Notes
A1	1	Clear	Default	N	0.37	0.37	0.54	0.55	0.47	0.45	0.71	0.69	CLR / e=0.043	1
	2	Clear	Default	0.75	0.34	0.34	0.48	0.49	0.47	0.45	0.71	0.69	CLR / e=0.043	1,3
B1	1	Clear	Default	N	0.55	0.53	0.58	0.59	0.71	0.65	0.76	0.74	CLR / e=0.324	1
	2	Clear	Default	0.75	0.50	0.48	0.52	0.53	0.71	0.65	0.76	0.74	CLR / e=0.324	1,3
B2	1	Clear	Default	N	0.37	0.37	0.54	0.55	0.47	0.45	0.71	0.69	CLR / e=0.043	1
	2	Clear	Default	0.75	0.34	0.34	0.48	0.49	0.47	0.45	0.71	0.69	CLR / e=0.043	1,3

- Notes:
1. Simulation completed with Low e on surface #3.
 2. Simulation completed with Low e on Surface #2.
 3. Divider pattern determined per TI-200-96005.

**THERMAL PERFORMANCE
COMPUTER SIMULATION REPORT**

Rendered to:

ALL SEASONS WINDOW, INC.
28 Edgeboro Road
East Brunswick, New Jersey 08816

Report No.: 01-33287.07
Simulation Date: 10/26/98
Report Date: 01/17/01
Expiration Date: 10/26/02

Project Summary: Architectural Testing, Inc. (ATI) was contracted to perform U-Factor and Solar Heat Gain Coefficient computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in accordance with NFRC 100-97, *Procedure for Determining Fenestration Product U-Factors*, and NFRC 200, *Procedure for Determining Fenestration Product Solar Heat Gain Coefficient at Normal Incidence*, using the WINDOW 4.1 and FRAME 4.0 modeling programs with the currently approved NFRC Spectral Data Library. The components were analyzed at the York, Pennsylvania office using an IBM compatible 686/350MHz computer.

Simulation Specimen Description:

Series/Model:	V 500 PW
Type:	Fixed
Frame Material:	Vinyl (VY)
Residential Size:	48" wide by 48" high
Non-Residential Size:	48" wide by 72" high
Reinforcement:	None

Technical Interpretations:

U-factor:	None
SHGC:	TI-200-96003 Frame Grouping TI-200-96004 Divider Grouping and Divider Width TI-200-96005 Standard Divider Pattern TI-200-96007 Default Gap Width and Gas-fill

Modeling Assumptions:

U-factor:

1. No continuous hardware was modeled.
2. No unusual boundary conditions were used in the modeling.
3. Double glazed options simulated with Low e may be manufactured with Low e on surface 2 or 3 without changing the product U-factor.
4. Tints may be applied without changing the product U-factor.
5. Single strength and double strength glazings were grouped.

SHGC:

1. A default gap width was used. For all double glazed products, 0.500" was used. For all triple glazed products, 0.250" was used.
2. A default gas fill was used.
3. A default solar absorptance of 0.5 was used.

Specialty Products Table: The specialty product tables allow the manufacturer 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 4.1. The table gives overall product SHGC and VT indexed on center of glass properties.

Appendices:

The following appendices contain material required by NFRC 100-97 and NFRC 200.

- A. Specialty Products Tables
- B. Window 4.1 printouts
- C. Drawings and Bills of Material used in simulation

Option #: A1

Gas Fill: Air

Filling Technique: N/A

Option Description:

	Layer #1	Gap #1	Layer #2	Gap #2	Layer #3
TJ Ackness (in)	*0.089 0.013	0.688 0.625	0.089 0.129		
Low e Coating	N/A		E=0.043		
Coating Surface #	N/A		3		
Spacer		Tin-Plate intercept			

*Center-of-Glass Group Leader

Interior Center-of-Glass Surface Temperature: 56.4 °F

Desiccant: Yes

Muntins: May have internal grid

Primary Sealant: Butyl Rubber

Muntin Pattern:

Secondary Sealant:

Modeling Results:

Data File	Cross Section	Frame Height (in)	U-Edge	U-Frame
3287HD01	Head	2.95	0.35	0.42
3287JA01	Jambs	3.20	0.35	0.32
3287SI01	Sill	2.82	0.36	0.32

Area Weighting Results:

	Residential		Non-Residential	
	Area (Ft ²)	U-Factor (BTU/hr*ft ² *°F)	Area (Ft ²)	U-Factor (BTU/hr*ft ² *°F)
Center-Glass	9.42	0.26	15.52	0.26
Edge-Glass	2.73	0.35	3.56	0.35
Frame	3.85	0.35	4.92	0.35
TOTAL	16.00	0.30	24.00	0.29

Options #: B1

Gas Fill: Air

Filling Technique: N/A

Option Description:

	Layer #1	Gap #1	Layer #2	Gap #2	Layer #3
TJ Ackness (in)	*0.089 0.013	0.688 0.625	0.089 0.129		
Low e Coating	N/A		E= 0.324		
Coating Surface #	N/A		3		
Spacer		Aluminum Single Seal			

* Center-of-Glass Group Leader

Interior Center-of-Glass Surface Temperature: 50.0 °F

Desiccant: Yes

Muntins: May have internal gird

Primary Sealant: Butyl Rubber

Muntin Pattern:

Secondary Sealant: Butyl Rubber

Modeling Results:

Data File	Cross Section	Frame Height (in)	U-Edge	U-Frame
8775HD08	Head	3.11	0.49	0.39
8775JA08	Jambs	3.20	0.48	0.35
8775SI08	Sill	2.82	0.49	0.37

Area Weighting Results:

	Residential		Non- Residential	
	Area (Ft ²)	U-Factor (BTU/hr* ² *°F)	Area (Ft ²)	U-Factor (BTU/hr* ² *°F)
Center-Glass	9.42	0.39	15.52	0.39
Edge-Glass	2.73	0.48	3.56	0.48
Frame	3.85	0.37	4.92	0.36
TOTAL	16.00	0.40	24.00	0.40

Option #: B2

Gas Fill: 90% Argon

Filling Technique: Single Probe

Option Description:

	Layer #1	Gap #1	Layer #2	Gap #2	Layer #3
TJ Ackness (in)	*0.089 0.013	0.688 0.625	0.089 0.129		
Low e Coating	N/A		E =0.043		
Coating Surface #	N/A		3		
Spacer		Tin-Plate Intercept			

**Center-of-Glass Group Leader*

Interior Center-of-Glass Surface Temperature: 56.4 °F

Desiccant: Yes

Muntins: May have internal grid

Primary Sealant: Butyl Rubber

Muntin pattern:

Secondary Sealant:

Modeling Results:

Data File	Cross Section	Frame Height (in)	U-Edge	U-Frame
8775HD09	Head	3.11	0.35	0.36
8775JA09	Jambs	3.20	0.35	0.33
8775SI09	Sill	2.82	0.35	0.34

Area Weighting Results:

	Residential		Non- Residential	
	Area (Ft²)	U-Factor (BTU/hr*ft²*°F)	Area (Ft²)	U-Factor (BTU/hr*ft²*°F)
Center-Glass	9.42	0.26	15.52	0.26
Edge-Glass	2.73	0.35	3.56	0.35
Frame	3.85	0.34	4.92	0.34
TOTAL	16.00	0.40	24.00	0.29

Detailed drawings, simulation data disks, and a copy of this report will be retained by ATI for a period of four years. The above results are the exclusive property of the client so named herein and are applicable to the sample simulated. ATI is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results. This report does not constitute an opinion or endorsement by this laboratory. This report may not be reproduced except in full without the approval of ATI.

For ARCHITECTURAL TESTING, INC.

Description Table Abbreviations

CODE	Frame / Sash Types
AI	Aluminum w/ Vinyl Inserts (Caps)
AL	Aluminum
AP	Aluminum w/ Thermal Breaks - Partial
AS	Aluminum w/ Steel Reinforcement
AT	Aluminum w/ Thermal Breaks - All Members
AV	Aluminum / Vinyl Composite
AW	Aluminum-clad Wood
FG	Fiberglass
N	Not Applicable
OT	Other
PA	ABS Plastic w/ All Members Reinforced
PC	ABS Plastic-clad Aluminum
PF	ABS Plastic w/ Foam-filled Insulation
PH	ABS Plastic w/ Horizontal Members Reinforced
PI	ABS Plastic w/ Reinforcement - Interlock
PL	ABS Plastic
PP	ABS Plastic w/ Reinforcement - Partial
PV	ABS Plastic w/ Vertical Members Reinforced
PW	ABS Plastic-clad Wood
ST	Steel
VA	Vinyl w/ All Members Reinforced
VC	Vinyl-clad Aluminum
VF	Vinyl w/ Foam-filled Insulation
VH	Vinyl w/ Horizontal Members Reinforced
VI	Vinyl w/ Reinforcement - Interlock
VP	Vinyl w/ Reinforcement - Partial
VV	Vinyl w/ Vertical Members Reinforced
VW	Vinyl-clad Wood
VY	Vinyl
WA	Aluminum / Wood composite
WD	Wood
WV	Vinyl / Wood composite

CODE	Spacer Types
A1	Aluminum
A2	Aluminum (Thermally-broken)
A3	Aluminum-reinforced Polymer
A4	Aluminum / Wood
A5	Aluminum-reinforced Butyl
A6	Aluminum / Foam / Aluminum
A7	Aluminum U-shaped
ER	EPDM Reinforced Butyl
FG	Fiberglass
GL	Glass
N	Not Applicable
OF	Organic Foam
PU	Polyurethane Foam
S1	Steel
S2	Steel (Thermally-broken)
S3	Steel / Foam / Steel
S4	Steel U-shaped
S5	Steel-reinforced Butyl
S6	Steel U-channel w/ Thermal Cap
TP	Thermo-plastic
V1	Vinyl U-shaped
VD	Wood
ZF	Silicone Foam
ZS	Silicone / Steel

CODE	Interspace Gas Fill
AIR	Air
AR2	Argon / Krypton Mixture
AR3	Argon / Krypton / Air Mixture
ARG	Argon
CO2	Carbon Dioxide
KRY	Krypton
N	Not Applicable
OT	Other
SF6	Sulphur Hexafluoride
U	Unknown

CODE	Grid Description
B	Optional (With or Without)
N	No Muntins
S	Simulated Divided Lites
T	True Muntins
Y	Internal muntins

DOOR DETAILS	
CODE	Door Type
EM	Embossed
FL	Flush
LF	Fall Lite
LH	1/2 - Lite
LQ	1/4 - Lite
LT	3/4 - Lite
N	Not Applicable
RP	Raised Panel

CODE	Skin
AL	Aluminum
FG	Fiberglass
GS	Galvanized Steel
N	Not Applicable
ST	Steel
WD	Wood

CODE	Panel
FG	Fiberglass
N	Not Applicable
PL	Plastic
WP	Wood - Plywood
WS	Wood - Solid

CODE	Sub-Structure
GS	Galvanized Steel
N	Not Applicable
PL	Plastic
ST	Steel
WD	Wood

CODE	Core Fill
CH	Cellular - Honeycomb
EP	Expanded Polystyrene
N	Not Applicable
PI	Polyisocyanurate
PU	Polyurethane
WP	Wood - Plywood
WS	Wood - Solid
XP	Extruded Polystyrene

CODE	Sealant
D	Dual Seal Spacer System
N	Not Applicable
S	Single Seal Spacer System

CODE	Thermal Breaks
F	Foam
N	Not Applicable
O	Other
U	Urethane
V	Vinyl