
*NFRC Accredited Computer Modeling & Simulation Laboratory***NFRC THERMAL SIMULATION REPORT****U-Factor (ANSI/NFRC 100-2017), CR (NFRC 500-2017)
SHGC and VT (ANSI/NFRC 200-2017)**

Fenestration Product: **PVC Picture Window**

Report#: **SIM18F-003**

Series#: Platinum S-2050A

Submitted To: Rey Nea

Manufacturer: **GREEN WORLD WINDOWS**

Address: 4195 Chino Hills Parkway, Ste. 508, Chino Hills, CA 91709

Phone#: (909) 923-8618

Baseline Product: [1200 mm (±13mm)] [47"(±1/2")] X [1500 mm (±13mm)] [59"(±1/2")]

Product # 025: SB90/ARG90%/CLEAR_3mm _ A8-D spacer: [U = 0.26 Btu/hr*ft²*F]

Per ANSI/NFRC 100-2017: Sec. 4.2.6: The individual product selected as the baseline product shall have a simulated U-factor within 0.6 W/m²-K (0.10 Btu/h.ft².deg F) or 20% of the lowest simulated U-factor, whichever is greater.

Baseline Simulation Date: 01/03/2018

Expiration Date: Five years from the date of the oldest physical test conducted for the latest certification ratings

Revision Date: n/a

Product Type: PVC Picture

Simulator: Anis Jan

Simulator-in-Charge: Anis Jan

Simulation Method: Approved NFRC software THERM7 and WINDOW7 and NFRC WINDOW/THERM simulation manual

Model/Type:	FIXD
Size:	{1200 mm x 1500 mm} / [47" x 59"]
Frame Type and Finish:	Vinyl
Sash Type and Finish:	Vinyl (glazing bead)
IG Glass Parameters:	Glass from PPG. 2mm & 3mm glass with 1/2" gap. Glass was grouped with 2mm being the glass group leader. Low-e coating glass from PPG: SB90/e=0.023, SB70/e=0.018 applied on srf# 2.
Glazing Method:	Glass is drop glazed from exterior onto double side foam tape with PVC glazing bead applied full perimeter from exterior.
Gas Fill Method:	Argon 90% & Air 10% gas fill using Evacuated chamber fill technique.
Spacers:	A8-D = supersure seal spacer II, dual sealed with hot melt butyl (with rigid pvc strip, both flat and corrugated strips) stated per client, and A8-D = supersure seal spacer regular, dual sealed with hot melt butyl (with rigid pvc strip for flat strip and corrugated aluminum-mill finish for bottom strip) stated per client
Dividers:	Aluminum painted exterior, unpainted interior Rectangular grid: 0.188" x 0.625" x 0.02" (<1", 0.75" grid size), and Contour grid: 0.313" x 0.984" x 0.02" (<1", 0.75" grid size). Grid pattern: NFRC Standard 4 horizontal x 3 vertical strips
Grouping:	
Center-of-Glazing:	Yes, per ANSI/NFRC 100-2017, glazing grouping
Frame:	No
Spacer:	No
Divider:	No
Miscellaneous:	
SHGC and VT:	Default Frame Absorptivity 0.3, per ANSI/NFRC 200-2017 Sec. 4.5.D.

Glazing Matrix

Glz ID	Name	Group	UCOG	Thick. (inch)	ID1	Gap fill %	ID2
1	CLEAR / AIR / CLEAR_(SS-SS)	L1	0.482	0.697	5008	AIR	5008
2	CLEAR / AIR / CLEAR_(DS-DS)	1	0.481	0.736	5009	AIR	5009
3	SB90 / AIR / CLEAR_(SS-SS)	L2	0.291	0.697	5443	AIR	5008
4	SB90 / AIR / CLEAR_(DS-DS)	2	0.29	0.736	5444	AIR	5009
5	SB70 / AIR / CLEAR_(SS-SS)	L3	0.289	0.697	5431	AIR	5008
6	SB70 / AIR / CLEAR_(DS-DS)	3	0.288	0.736	5432	AIR	5009
7	CLEAR / ARG90% / CLEAR_(SS-SS)	L4	0.456	0.697	5008	ARG(90)	5008
8	CLEAR / ARG90% / CLEAR_(DS-DS)	4	0.455	0.736	5009	ARG(90)	5009
9	SB90 / ARG90% / CLEAR_(SS-SS)	L5	0.243	0.697	5443	ARG(90)	5008
10	SB90 / ARG90% / CLEAR_(DS-DS)	5	0.243	0.736	5444	ARG(90)	5009
11	SB70 / ARG90% / CLEAR_(SS-SS)	L6	0.241	0.697	5431	ARG(90)	5008
12	SB70 / ARG90% / CLEAR_(DS-DS)	6	0.24	0.736	5432	ARG(90)	5009
100	SB70 / ARG90% / CLEAR_(DS-DS)	L100	0.24	0.736	5432	ARG(90)	5009

Note: L denotes the group leader per ANSI/NFRC 100-2017.

SHGC 0 and 1 & VT 0 and 1

	No-divider	Divider < 25.4 mm	Divider >= 25.4 mm
SHGC0	0.001783	0.004761	0.007579
SHGC1	0.890711	0.803328	0.720625
VT0	0	0	0
VT1	0.888928	0.798567	0.713045

$$SHGC = SHGC0 + SHGCc * (SHGC1 - SHGC0)$$

$$VT = VT0 + VTc * (VT1 - VT0)$$

SHGCc = center of glass SHGC value only
 VTc = center of glass VT value only

Series#: Platinum S-2050A
 Product: PVC Picture

Total Window U-Factor, SHGC & VT Values

Report: SIM18F-003
 Report Date: 01/03/2018

										Sim Lab Code:		SFSE		
Operator Type:				FIXD	2014 Model Size:			1200 mm x 1500 mm			Sim Report#:		SIM18F-003	
Mfr Name:		Green World Windows			Frame Type:		VY	Residential Size:			Sim Rpt date:		1/3/2018	
Series/Model#:		Platinum S-2050A			Sash Type:		N	Non Res Size:			Sim Rpt revision date:			
Thermal Break Type:				N							Frame Absorptance:		0.3	
										Rating Procedure:		2014		

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
CLEAR / AIR / CLEAR (SS-SS) - supersure seal spacer II	001	0.098	0.098		0.500								A8-D	N		0.48	0.781838	0.823024	0.46	0.70	0.73	46
CLEAR / AIR / CLEAR (SS-SS) - supersure seal spacer II-rectangular grid	001-0001	0.098	0.098		0.500								A8-D	G	0.75	0.48	0.781838	0.823024		0.63	0.66	
CLEAR / AIR / CLEAR (DS-DS) - supersure seal spacer II	001-0002	0.118	0.118		0.500								A8-D	N		0.48	0.756099	0.813306		0.67	0.72	
CLEAR / AIR / CLEAR (DS-DS) - supersure seal spacer II-rectangular grid	001-0003	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.61	0.65	
CLEAR / AIR / CLEAR (SS-SS) - supersure seal spacer II-contour grid	002	0.098	0.098		0.500								A8-D	G	0.75	0.48	0.781838	0.823024	0.47	0.63	0.66	46
CLEAR / AIR / CLEAR (DS-DS) - supersure seal spacer II-contour grid	002-0001	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.61	0.65	
SB90 / AIR / CLEAR (SS-SS) - supersure seal spacer II	003	0.098	0.098		0.500			0.023					A8-D	N		0.29	0.230377	0.531174	0.29	0.21	0.47	60
SB90 / AIR / CLEAR (SS-SS) - supersure seal spacer II-rectangular grid	003-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174		0.19	0.42	
SB90 / AIR / CLEAR (DS-DS) - supersure seal spacer II	003-0002	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806		0.21	0.47	
SB90 / AIR / CLEAR (DS-DS) - supersure seal spacer II-rectangular grid	003-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.19	0.42	
SB90 / AIR / CLEAR (SS-SS) - supersure seal spacer II-contour grid	004	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174	0.31	0.19	0.42	60
SB90 / AIR / CLEAR (DS-DS) - supersure seal spacer II-contour grid	004-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.19	0.42	
SB70 / AIR / CLEAR (SS-SS) - supersure seal spacer II	005	0.098	0.098		0.500			0.018					A8-D	N		0.29	0.276510	0.648159	0.29	0.25	0.58	60
SB70 / AIR / CLEAR (SS-SS) - supersure seal spacer II-rectangular grid	005-0001	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.29	0.276510	0.648159		0.23	0.52	
SB70 / AIR / CLEAR (DS-DS) - supersure seal spacer II	005-0002	0.118	0.118		0.500			0.018					A8-D	N		0.29	0.277053	0.641005		0.25	0.57	
SB70 / AIR / CLEAR (DS-DS) - supersure seal spacer II-rectangular grid	005-0003	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005		0.23	0.51	
SB70 / AIR / CLEAR (SS-SS) - supersure seal spacer II-contour grid	006	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.29	0.276510	0.648159	0.31	0.23	0.52	60
SB70 / AIR / CLEAR (DS-DS) - supersure seal spacer II-contour grid	006-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005		0.23	0.51	
CLEAR / ARG90% / CLEAR (SS-SS) - supersure seal spacer II	007	0.098	0.098		0.500								A8-D	N		0.46	0.782273	0.823024	0.44	0.70	0.73	48
CLEAR / ARG90% / CLEAR (SS-SS) - supersure seal spacer II-rectangular grid	007-0001	0.098	0.098		0.500								A8-D	G	0.75	0.46	0.782273	0.823024		0.63	0.66	
CLEAR / ARG90% / CLEAR (DS-DS) - supersure seal spacer II	007-0002	0.118	0.118		0.500								A8-D	N		0.46	0.756646	0.813306		0.67	0.72	
CLEAR / ARG90% / CLEAR (DS-DS) - supersure seal spacer II-rectangular grid	007-0003	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.61	0.65	
CLEAR / ARG90% / CLEAR (SS-SS) - supersure seal spacer II-contour grid	008	0.098	0.098		0.500								A8-D	G	0.75	0.46	0.782273	0.823024	0.44	0.63	0.66	48
CLEAR / ARG90% / CLEAR (DS-DS) - supersure seal spacer II-contour grid	008-0001	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.61	0.65	
SB90 / ARG90% / CLEAR (SS-SS) - supersure seal spacer II	009	0.098	0.098		0.500			0.023					A8-D	N		0.24	0.225516	0.531174	0.25	0.20	0.47	64

Series#: Platinum S-2050A
 Product: PVC Picture

Total Window U-Factor, SHGC & VT Values

Report: SIM18F-003
 Report Date: 01/03/2018

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
SB90 / ARG90% / CLEAR_(SS-SS) - supersure seal spacer II-rectangular grid	009-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174		0.18	0.42	
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II	009-0002	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806		0.20	0.47	
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II-rectangular grid	009-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.19	0.42	
SB90 / ARG90% / CLEAR_(SS-SS) - supersure seal spacer II-contour grid	010	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174	0.27	0.18	0.42	64
SB90 / ARG90% / CLEAR_(DS-DS) - supersure seal spacer II-contour grid	010-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.19	0.42	

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
SB70 / ARG90% / CLEAR (SS-SS) - supersure seal spacer II	011	0.098	0.098		0.500			0.018					A8-D	N		0.24	0.272171	0.648159	0.25	0.24	0.58	64
SB70 / ARG90% / CLEAR (SS-SS) - supersure seal spacer II-rectangular grid	011-0001	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.24	0.272171	0.648159		0.22	0.52	
SB70 / ARG90% / CLEAR (DS-DS) - supersure seal spacer II	011-0002	0.118	0.118		0.500			0.018					A8-D	N		0.24	0.272124	0.641005		0.24	0.57	
SB70 / ARG90% / CLEAR (DS-DS) - supersure seal spacer II-rectangular grid	011-0003	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005		0.22	0.51	
SB70 / ARG90% / CLEAR (SS-SS) - supersure seal spacer II-contour grid	012	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.24	0.272171	0.648159	0.27	0.22	0.52	64
SB70 / ARG90% / CLEAR (DS-DS) - supersure seal spacer II-contour grid	012-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005		0.22	0.51	
CLEAR / AIR / CLEAR (SS-SS)-supersure seal spacer_regular	013	0.098	0.098		0.500								A8-D	N		0.48	0.781838	0.823024	0.47	0.70	0.73	44
CLEAR / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-rectangular grid	013-0001	0.098	0.098		0.500								A8-D	G	0.75	0.48	0.781838	0.823024		0.63	0.66	
CLEAR / AIR / CLEAR (DS-DS)-supersure seal spacer_regular	013-0002	0.118	0.118		0.500								A8-D	N		0.48	0.756099	0.813306		0.67	0.72	
CLEAR / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-rectangular grid	013-0003	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.61	0.65	
CLEAR / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-contour grid	014	0.098	0.098		0.500								A8-D	G	0.75	0.48	0.781838	0.823024	0.48	0.63	0.66	44
CLEAR / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-contour grid	014-0001	0.118	0.118		0.500								A8-D	G	0.75	0.48	0.756099	0.813306		0.61	0.65	
SB90 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular	015	0.098	0.098		0.500			0.023					A8-D	N		0.29	0.230377	0.531174	0.30	0.21	0.47	57
SB90 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-rectangular grid	015-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174		0.19	0.42	
SB90 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular	015-0002	0.118	0.118		0.500			0.023					A8-D	N		0.29	0.231486	0.524806		0.21	0.47	
SB90 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-rectangular grid	015-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.19	0.42	
SB90 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-contour grid	016	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.29	0.230377	0.531174	0.32	0.19	0.42	57
SB90 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-contour grid	016-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.29	0.231486	0.524806		0.19	0.42	
SB70 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular	017	0.098	0.098		0.500			0.018					A8-D	N		0.29	0.276510	0.648159	0.30	0.25	0.58	57
SB70 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-rectangular grid	017-0001	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.29	0.276510	0.648159		0.23	0.52	
SB70 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular	017-0002	0.118	0.118		0.500			0.018					A8-D	N		0.29	0.277053	0.641005		0.25	0.57	
SB70 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-rectangular grid	017-0003	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005		0.23	0.51	
SB70 / AIR / CLEAR (SS-SS)-supersure seal spacer_regular-contour grid	018	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.29	0.276510	0.648159	0.32	0.23	0.52	57
SB70 / AIR / CLEAR (DS-DS)-supersure seal spacer_regular-contour grid	018-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.29	0.277053	0.641005		0.23	0.51	
CLEAR / ARG90% / CLEAR (SS-SS)-supersure seal spacer_regular	019	0.098	0.098		0.500								A8-D	N		0.46	0.782273	0.823024	0.45	0.70	0.73	46

Series#: Platinum S-2050A
 Product: PVC Picture

Total Window U-Factor, SHGC & VT Values

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CLEAR / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-rectangular grid	019-0001	0.098	0.098		0.500								A8-D	G	0.75	0.46	0.782273	0.823024		0.63	0.66	
CLEAR / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular	019-0002	0.118	0.118		0.500								A8-D	N		0.46	0.756646	0.813306		0.67	0.72	
CLEAR / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-rectangular grid	019-0003	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.61	0.65	
CLEAR / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-contour grid	020	0.098	0.098		0.500								A8-D	G	0.75	0.46	0.782273	0.823024	0.45	0.63	0.66	46
CLEAR / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-contour grid	020-0001	0.118	0.118		0.500								A8-D	G	0.75	0.46	0.756646	0.813306		0.61	0.65	
SB90 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular	021	0.098	0.098		0.500			0.023					A8-D	N		0.24	0.225516	0.531174	0.26	0.20	0.47	60
SB90 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-rectangular grid	021-0001	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174		0.18	0.42	
SB90 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular	021-0002	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806		0.20	0.47	
SB90 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-rectangular grid	021-0003	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.19	0.42	

Total Window U-Factor, SHGC & VT Values

Mfr Prod. Code	Product Num	Pane Thick. 1	Pane Thick. 2	Pane Thick. 3	Gap 1	Gap 2	Emiss 1	Emiss 2	Emiss 3	Emiss 4	Emiss 5	Emiss 6	Spacer Type	Grid	Grid Size	U factor cog	SHGC cog	VT cog	Total U-factor	Total SHGC	Total VT	Total CR
SB90 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-contour grid	022	0.098	0.098		0.500			0.023					A8-D	G	0.75	0.24	0.225516	0.531174	0.28	0.18	0.42	60
SB90 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-contour grid	022-0001	0.118	0.118		0.500			0.023					A8-D	G	0.75	0.24	0.226010	0.524806		0.19	0.42	
SB70 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-rectangular grid	023	0.098	0.098		0.500			0.018					A8-D	N		0.24	0.272171	0.648159	0.26	0.24	0.58	60
SB70 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-rectangular grid	023-0001	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.24	0.272171	0.648159		0.22	0.52	
SB70 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-rectangular grid	023-0002	0.118	0.118		0.500			0.018					A8-D	N		0.24	0.272124	0.641005		0.24	0.57	
SB70 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-rectangular grid	023-0003	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005		0.22	0.51	
SB70 / ARG90% / CLEAR_(SS-SS)-supersure seal spacer_regular-contour grid	024	0.098	0.098		0.500			0.018					A8-D	G	0.75	0.24	0.272171	0.648159	0.28	0.22	0.52	60
SB70 / ARG90% / CLEAR_(DS-DS)-supersure seal spacer_regular-contour grid	024-0001	0.118	0.118		0.500			0.018					A8-D	G	0.75	0.24	0.272124	0.641005		0.22	0.51	
SB90 / ARG90% / CLR_(DS-DS)-supersure seal spacer_regular_Test product	025	0.118	0.118		0.500			0.023					A8-D	N		0.24	0.226010	0.524806	0.26	0.20	0.47	59

A8-D = exposed corrugated aluminum spacer with butyl- dual sealed
 Product# 001 to 012 with supersure seal spacer II (see page 2 for more detail)
 Product# 013 to 025 with supersure seal spacer regular (see page 2 for more detail)

SUMMARY AND ASSUMPTIONS:

1. For glass info., refer to Glazing Matrix detail this report.
2. This PVC picture window consists of 4 similar frame cross-sections.
Frame weather-strip: none, foam tape facing interior full perimeter.
Sash weather-strip: none, pvc glazing bead facing exterior full perimeter.
3. 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 opening
4. As per ANSI/NFRC 200:2017: For SHGC & VT, actual glazing infill pane thicknesses in Table 4-1 for the range of glazing infill pane thicknesses were used.
5. For SHGC ratings, the values are calculated for the best glazing option model with the highest frame and edge U-factor frame per ANSI/NFRC 200-2017. The values calculated from that one case are then used to calculate the SHGC & VT for any other glazing options using Equations 4-1 and 4-2 in ANSI/NFRC 200-2017.
6. Drawings will be sent as a separate package and that the product simulated confirms to drawings supplied by manufacturer.

WINDOW SIMULATION REPORT:

The fenestration products documented in this report were simulated in accordance with the ANSI/NFRC 100-2017: Procedure for Determining Fenestration Product Thermal Performance & NFRC 500-2017. The fenestration products were simulated using computer programs Therm 7.4.4, Window 7.4.14 & Spectral Data # 58.0 as specified in ANSI/NFRC 100-2017 and ANSI/NFRC 200-2017 (SHGC/VT). The WINDOW program models the one-dimensional heat flow through the center-of-glass portion of the window. The Therm program models the two-dimensional heat flow through the frame, edge-of-glass, divider, and divider-edge portions of the fenestration product. The input data for both programs is based on manufacturer's specifications. Defaults for material thermal and optical properties are given in the computer programs. When values other than defaults were used, they are documented.

DISCLAIMER:

This fenestration product simulation report was generated by Fenestration Simulation Engineering, Westminster, California. No part of the report may be reproduced except in full, without the express written consent of Fenestration Simulation Engineering. The report relates only to the items specified. Fenestration Simulation Engineering and its employees neither endorse nor warrant the suitability of the product simulated. Every effort was taken to accurately model the performance of the products documented in this report. Because of the large amount of input data and analysis, neither Fenestration Simulation Engineering nor any of its employees shall be responsible for any loss or damage resulting directly or indirectly from any default, error, or omission.

It is the policy for this laboratory to verify as much information about the product being tested and simulated. However, not all information provided to the laboratory can be verified, such as physical properties of low-e coating, heat mirror, gas fills spacer, and others. Therefore, all information provided to the laboratory is the manufacturer's responsibility as to its accuracy.

It is the policy of this laboratory to prepare a report and submit it to the manufacturer for his approval. Upon notification in writing from the manufacturer that he approves of the report, (in approving report, manufacturer takes responsibility of all information provided to this laboratory) the report is sent to the certification agency. The data shall be kept for a period of five years after which they may be destroyed.

Fenestration Simulation Engineering will not be responsible for inaccuracies in the information it has been provided.

- A. Simulations were conducted in full compliance with NFRC requirements.
- B. This report shall not be reproduced, except in full, without the approval of this laboratory.
- C. This report relates only to the fenestration products simulated.
- D. Rounding is per NFRC 601, NFRC Unit and Measurement Policy.
- E. Ratings 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.**
- F. Name and signature of the individual performing the simulations and accepting the responsibility for the technical accuracy of this simulation report.

Anis Jan

Anis Jan

Simulator-in-responsible-charge