

ETEM S.A. COMMERCIAL AND INDUSTRIAL COMPUTER SIMULATION REPORT

SCOPE OF WORK

E86 Window Wall- NFRC 100/200/500 simulations to determine U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance ratings.

REPORT NUMBER

J4503.03-116-45

TEST DATE

05/13/19

ISSUE DATE

05/31/19

REVISION DATE

08/15/19

RECORD RETENTION END DATE

05/13/24

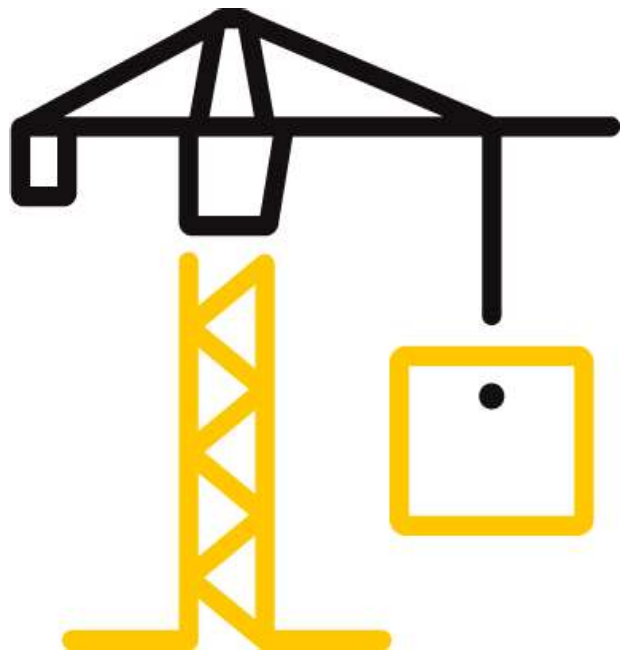
PAGES

16

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-4044 (01/16/19)

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TEST REPORT FOR ETEM S.A. COMMERCIAL AND INDUSTRIAL

Report No: J4503.03-116-45

Date: 08/15/19

REPORT ISSUED TO

ETEM S.A. COMMERCIAL AND INDUSTRIAL

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Magoula, Magoula 19018, Greece

SECTION 1

SUMMARY

SERIES/MODEL: E86 Window Wall

Intertek Building & Construction (Intertek B&C) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance simulations in accordance with the National Fenestration Rating Council (NFRC).

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. 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, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

FOR INTERTEK B&C:

COMPLETED BY: Jonathan P. Spencer

TITLE: Project Engineer

SIGNATURE:

Digitally Signed by: Jonathan Spencer

DATE: 08/15/19

JPS:jps

REVIEWED BY: Eric S. Leitner

TITLE: Manager - Thermal Testing & Simulations

SIGNATURE:

Digitally Signed by: Eric S. Leitner

DATE: 08/15/19

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**SECTION 6
SIMULATION RESULTS**

TOTAL PRODUCT CALCULATIONS (E86 Window Wall)												
Option Number	Pane Thickness 1 (in)	Gap Width 1 (in)	Pane Thickness 2 (in)	Gap Width 2 (in)	Pane Thickness 3 (in)	Gap Width 3 (in)	Pane Thickness 4 (in)	Gap Fill	Low-e (Surface #)	Tint	Spacer	Grid Type
	U-Factor (Btu/Hr-Ft ² -F)		Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance (CR)			
1	COG=0.4600											
	0.370	0.787	0.323					ARG37		CL	TS-D	N
	U-Factor 0.48		SHGC (N) 0.54				VT (N) 0.64		CR 48			
2	COG=0.4400											
	0.370	0.787	0.323					KRY84		CL	TS-D	N
	U-Factor 0.47		SHGC (N) 0.32				VT (N) 0.30		CR 49			
3	COG=0.4200											
	0.371	0.787	0.323					ARG50	0.606(#2)	RC	TS-D	N
	U-Factor 0.45		SHGC (N) 0.25				VT (N) 0.27		CR 51			
4	COG=0.4000											
	0.371	0.787	0.323					KRY83	0.606(#2)	CL	TS-D	N
	U-Factor 0.44		SHGC (N) 0.25				VT (N) 0.27		CR 52			
5	COG=0.3800											
	0.371	0.787	0.323					ARG82	0.453(#2)	RC	TS-D	N
	U-Factor 0.42		SHGC (N) 0.21				VT (N) 0.16		CR 54			
6	COG=0.3600											
	0.371	0.787	0.323					KRY95	0.453(#2)	SR	TS-D	N
	U-Factor 0.40		SHGC (N) 0.20				VT (N) 0.16		CR 54			
7	COG=0.3400											
	0.378	0.787	0.323					KRY83	0.339(#2)	CL	TS-D	N
	U-Factor 0.39		SHGC (N) 0.14				VT (N) 0.11		CR 56			
8	COG=0.3200											
	0.378	0.787	0.323					XEN92	0.339(#2)	CL	TS-D	N
	U-Factor 0.37		SHGC (N) 0.14				VT (N) 0.11		CR 57			
9	COG=0.3000											
	0.391	0.787	0.323					ARG95	0.166(#2)	CL	TS-D	N
	U-Factor 0.35		SHGC (N) 0.35				VT (N) 0.45		CR 59			
10	COG=0.2800											
	0.391	0.787	0.323					KRY93	0.166(#2)	CL	TS-D	N
	U-Factor 0.34		SHGC (N) 0.35				VT (N) 0.45		CR 59			

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SECTION 6 (Continued)

SIMULATION RESULTS

TOTAL PRODUCT CALCULATIONS (E86 Window Wall)												
Option Number	Pane Thickness 1 (in)	Gap Width 1 (in)	Pane Thickness 2 (in)	Gap Width 2 (in)	Pane Thickness 3 (in)	Gap Width 3 (in)	Pane Thickness 4 (in)	Gap Fill	Low-e (Surface #)	Tint	Spacer	Grid Type
	U-Factor (Btu/Hr-Ft ² -F)		Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance (CR)			
11	COG=0.2600											
	0.370	0.787	0.323					ARG87	0.035(#2)	CL	TS-D	N
	U-Factor 0.32		SHGC (N) 0.32				VT (N) 0.57		CR 60			
12	COG=0.2400											
	0.370	0.787	0.323					KRY78	0.035(#2) / 0.035(#3)	CL	TS-D	N
	U-Factor 0.30		SHGC (N) 0.30				VT (N) 0.51		CR 60			
13	COG=0.2200											
	0.370	0.787	0.323					XEN80	0.018(#2) / 0.018(#3)	CL	TS-D	N
	U-Factor 0.29		SHGC (N) 0.22				VT (N) 0.41		CR 60			
14	COG=0.2000											
	0.370	0.787	0.323					XEN93	0.018(#2) / 0.018(#3)	CL	TS-D	N
	U-Factor 0.27		SHGC (N) 0.22				VT (N) 0.41		CR 60			
15	COG=0.1800											
	0.370	0.394	0.003	0.394	0.323			AIR/ARG50	0.036(#2) / 0.76(#3) / 0.11(#4)	CL	TS-D	N
	U-Factor 0.26		SHGC (N) 0.17				VT (N) 0.30		CR 61			
16	COG=0.1600											
	0.370	0.394	0.003	0.394	0.323			ARG66/AIR	0.018(#2) / 0.76(#3) / 0.11(#4) / 0.018(#5)	CL	TS-D	N
	U-Factor 0.24		SHGC (N) 0.20				VT (N) 0.37		CR 61			
17	COG=0.1400											
	0.370	0.394	0.003	0.394	0.323			ARG79	0.018(#2) / 0.76(#3) / 0.11(#4) / 0.018(#5)	CL	TS-D	N
	U-Factor 0.22		SHGC (N) 0.20				VT (N) 0.37		CR 61			
18	COG=0.1200											
	0.370	0.394	0.003	0.394	0.323			KRY58	0.018(#2) / 0.76(#3) / 0.11(#4) / 0.018(#5)	CL	TS-D	N
	U-Factor 0.21		SHGC (N) 0.20				VT (N) 0.37		CR 62			
19	COG=0.1000											
	0.370	0.394	0.003	0.394	0.323			XEN83	0.018(#2) / 0.76(#3) / 0.11(#4) / 0.018(#5)	CL	TS-D	N
	U-Factor 0.19		SHGC (N) 0.19				VT (N) 0.37		CR 62			
20	Lami/ARG90/Planitherm 4S EVO-Lami (10mm 015PVB 10mm/4mm 015PVB 4mm) 1-17/32"											
	0.802	0.406	0.330					ARG90	0.022(#3)	CL	TS-D	N
	U-Factor 0.31		SHGC (N) 0.33				VT (N) 0.48		CR 57			