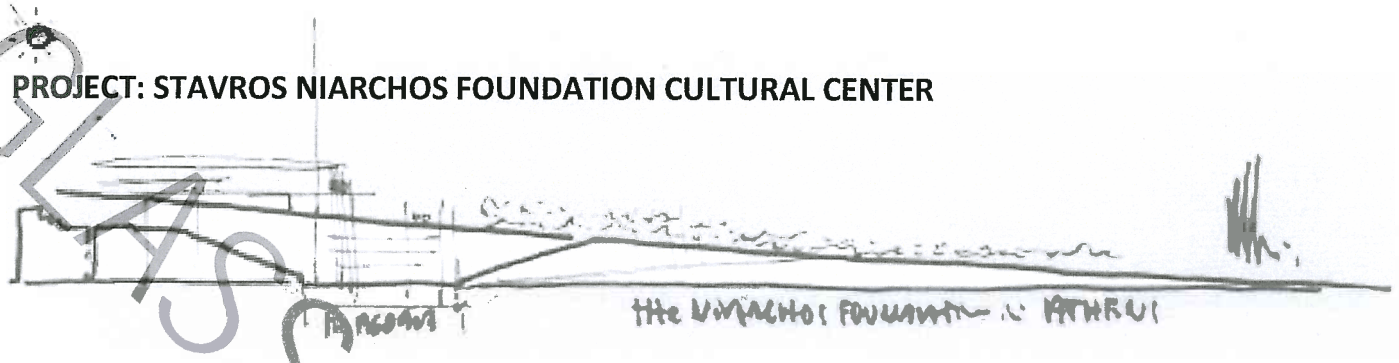
PROJECT: STAVROS NIARCHOS FOUNDATION CULTURAL CENTER



THERMAL ANALYSIS

"FT 03 – CUSTOM MADE FAÇADE SYSTEM"

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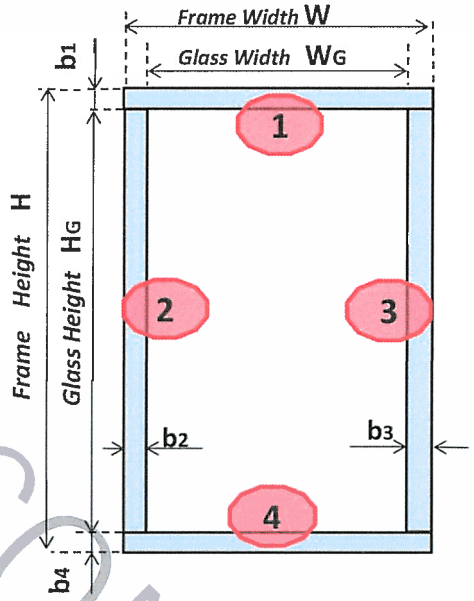
Thermal Transmittance SNFCC U_W



Frame	Total Width	W	610	mm
Frame	Total Height	H	1.810	mm

Width of Up Profiles	b_1	68,0	mm
Width of Left Vertical Profiles	b_2	68,0	mm
Width of Right Vertical Profiles	b_3	68,0	mm
Width of Bottom Profiles	b_4	68,0	mm

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SNFCC

1	Area 1	A_{f1}	=	0,041	m²
	Thermal Transmittance	U_{f1}	=	4,10	W/(m²·K)
2	Area 2	A_{f2}	=	0,114	m²
	Thermal Transmittance	U_{f2}	=	4,10	W/(m²·K)
3	Area 3	A_{f3}	=	0,114	m²
	Thermal Transmittance	U_{f3}	=	4,10	W/(m²·K)
4	Area 4	A_{f4}	=	0,041	m²
	Thermal Transmittance	U_{f4}	=	4,10	W/(m²·K)

Calculation of Average Thermal Transmittance of Frames U_{mf}

$$U_{mf} = \frac{U_{f1} \cdot A_{f1} + U_{f2} \cdot A_{f2} + U_{f3} \cdot A_{f3} + U_{f4} \cdot A_{f4}}{A_f}$$

Frame	Total Frame Area		=	0,3106	m²
	Average Thermal Transmittance	U_{mf}	=	4,10	W/(m² · K)

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SNFCC

Glazing U_g

Trade Mark of Glazing	Type of Glazing	Type of Gas	U_g (W/(m² · K))
XXXXXXX	XXXXXX	XXXXXX	1

Glazing 1

Glazing Area A_{g1}	=	0,79	m²
Termal Transmittance of the Glazing U_{g1}	=	1,00	W/(m² · K)
Total Visible Perimeter of the Glazing. Length l_{g1}	=	4,30	m
Linear Thermal Transmittance of the Glazing Ψ_{g1}	=	0,08	W/(m · K)

Frame % = 28,1%

Light % = 71,9%

Calculation of Thermal Transmittance of Window U_w

$$U_w = \frac{U_{mf} \cdot A_f + U_{g1} \cdot A_{g1} + l_{g1} \cdot \psi_{g1}}{A_w}$$

RESULTS

Total Window's Area	A_w	= 1,10	m²
Window's Thermal Transmittance	U_w	= 2,18	W/(m²·K)

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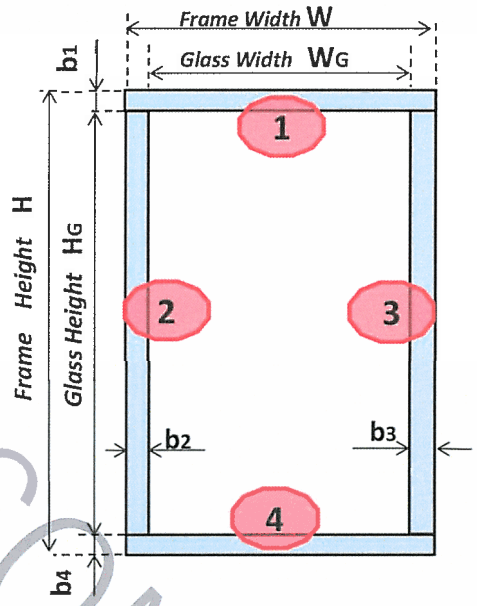
Thermal Transmittance SNFCC U_W



Frame	Total Width	W	1.170	mm
Frame	Total Height	H	1.170	mm

Width of Up Profiles	b_1	68,0	mm
Width of Left Vertical Profiles	b_2	68,0	mm
Width of Right Vertical Profiles	b_3	68,0	mm
Width of Bottom Profiles	b_4	68,0	mm

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SNFCC

1	Area 1	A_{f1}	=	0,080	m²
	Thermal Transmittance	U_{f1}	=	4,10	W/(m²·K)
2	Area 2	A_{f2}	=	0,070	m²
	Thermal Transmittance	U_{f2}	=	4,10	W/(m²·K)
3	Area 3	A_{f3}	=	0,070	m²
	Thermal Transmittance	U_{f3}	=	4,10	W/(m²·K)
4	Area 4	A_{f4}	=	0,080	m²
	Thermal Transmittance	U_{f4}	=	4,10	W/(m²·K)

Calculation of Average Thermal Transmittance of Frames U_{mf}

$$U_{mf} = \frac{U_{f1}\cdot A_{f1} + U_{f2}\cdot A_{f2} + U_{f3}\cdot A_{f3} + U_{f4}\cdot A_{f4}}{A_f}$$

Frame	Total Frame Area		=	0,2997	m²
	Average Thermal Transmittance	U_{mf}	=	4,10	W/(m² · K)

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SNFCC

Glazing U_g

Trade Mark of Glazing	Type of Glazing	Type of Gas	U_g (W/(m² · K))
xxxxxxx	xxxxxx	xxxxxx	1,3

Glazing 1

Glazing Area A_{g1}	=	1,07	m²
Termal Transmittance of the Glazing U_{g1}	=	1,30	W/(m² · K)
Total Visible Perimeter of the Glazing. Length l_{g1}	=	4,14	m
Linear Thermal Transmittance of the Glazing Ψ_{g1}	=	0,08	W/(m · K)

Frame % = 21,9%

Light % = 78,1%

Calculation of Thermal Transmittance of Window U_w

$$U_w = \frac{U_{mf} \cdot A_f + U_{g1} \cdot A_{g1} + l_{g1} \cdot \psi_{g1}}{A_w}$$

RESULTS

Total Window's Area	A_w	= 1,37	m²
Window's Thermal Transmittance	U_w	= 2,15	W/(m²·K)

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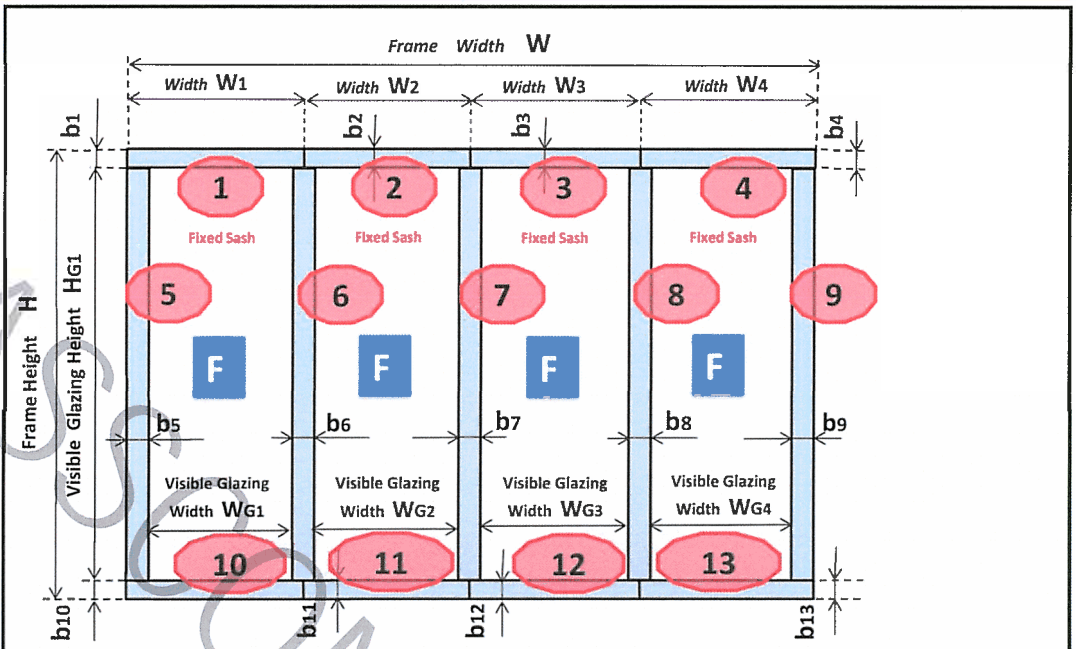
Thermal Transmittance SNFCC U_W



Frame	Total Width	W	4.920	mm
	Width 1	W_1	1.230	mm
	Width 2	W_2	1.230	mm
	Width 3	W_3	1.230	mm
	Width 4	W_4	1.230	mm
Frame	Total Height	H	2.920	mm

Width of Up Profiles	Left	b_1	68,0	mm
Width of Up Profiles	Middle Left	b_2	68,0	mm
Width of Up Profiles	Middle	b_3	68,0	mm
Width of Up Profiles	Middle Right	b_4	68,0	mm
Width of Left Vertical Profiles	Left	b_5	68,0	mm
Width of Middle Vertical Profiles	Middle Left	b_6	81,0	mm
Width of Middle Vertical Profiles	Middle	b_7	81,0	mm
Width of Middle Vertical Profiles	Middle	b_8	81,0	mm
Width of Right Vertical Profiles	Right	b_9	68,0	mm
Width of Bottom Profiles	Left	b_{10}	68,0	mm
Width of Bottom Profiles	Middle Left	b_{11}	68,0	mm
Width of Bottom Profiles	Middle	b_{12}	68,0	mm
Width of Bottom Profiles	Middle Right	b_{13}	68,0	mm

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SNFCC

1	Area 1	A_{f1}	=	0,084	m²
	Thermal Transmittance	U_{f1}	=	4,10	W/(m²·K)
2	Area 2	A_{f2}	=	0,084	m²
	Thermal Transmittance	U_{f2}	=	4,10	W/(m²·K)
3	Area 3	A_{f3}	=	0,084	m²
	Thermal Transmittance	U_{f3}	=	4,10	W/(m²·K)
4	Area 4	A_{f4}	=	0,084	m²
	Thermal Transmittance	U_{f4}	=	4,10	W/(m²·K)
5	Area 5	A_{f5}	=	0,189	m²
	Thermal Transmittance	U_{f5}	=	4,10	W/(m²·K)
6	Area 6	A_{f6}	=	0,226	m²
	Thermal Transmittance	U_{f6}	=	4,10	W/(m²·K)
7	Area 7	A_{f7}	=	0,226	m²
	Thermal Transmittance	U_{f7}	=	4,10	W/(m²·K)
8	Area 8	A_{f8}	=	0,226	m²
	Thermal Transmittance	U_{f8}	=	4,10	W/(m²·K)
9	Area 9	A_{f9}	=	0,189	m²
	Thermal Transmittance	U_{f9}	=	4,10	W/(m²·K)
10	Area 10	A_{f10}	=	0,084	m²
	Thermal Transmittance	U_{f10}	=	4,10	W/(m²·K)
11	Area 11	A_{f11}	=	0,084	m²
	Thermal Transmittance	U_{f11}	=	4,10	W/(m²·K)
12	Area 12	A_{f12}	=	0,084	m²
	Thermal Transmittance	U_{f12}	=	4,10	W/(m²·K)
13	Area 13	A_{f13}	=	0,084	m²
	Thermal Transmittance	U_{f13}	=	4,10	W/(m²·K)

Calculation of Average Thermal Transmittance of Frames U_{mf}

$$U_{mf} = \frac{U_{f1}\cdot A_{f1}+U_{f2}\cdot A_{f2}+U_{f3}\cdot A_{f3}+U_{f4}\cdot A_{f4}+U_{f5}\cdot A_{f5}+U_{f6}\cdot A_{f6}+\ldots\ldots+U_{f10}\cdot A_{f10}+U_{f11}\cdot A_{f11}+U_{f12}\cdot A_{f12}+U_{f13}\cdot A_{f13}}{A_f}$$

Frame				
	Total Frame Area	=	1,7243	m²
	Average Thermal Transmittance U_{mf}	=	4,10	W/(m² · K)

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SNFCC

Glazing U_g

Trade Mark of Glazing	Type of Glazing	Type of Gas	U_g (W/(m² · K))
xxxxx	xxxxx	xxxx	1,7

Glazing 1	Glazing Area A_{g1}	=	3,12	m²
	Termal Transmittance of the Glazing U_{g1}	=	1,70	W/(m² · K)
	Total Visible Perimeter of the Glazing. Length l_{g1}	=	7,81	m
	Linear Thermal Transmittance of the Glazing Ψ_{g1}	=	0,08	W/(m · K)
Glazing 2	Glazing Area A_{g2}	=	3,20	m²
	Termal Transmittance of the Glazing U_{g2}	=	1,70	W/(m² · K)
	Total Visible Perimeter of the Glazing. Length l_{g2}	=	7,87	m
	Linear Thermal Transmittance of the Glazing Ψ_{g2}	=	0,08	W/(m · K)
Glazing 3	Glazing Area A_{g3}	=	3,20	m²
	Termal Transmittance of the Glazing U_{g3}	=	1,70	W/(m² · K)
	Total Visible Perimeter of the Glazing. Length l_{g3}	=	7,87	m
	Linear Thermal Transmittance of the Glazing Ψ_{g3}	=	0,08	W/(m · K)
Glazing 4	Glazing Area A_{g4}	=	3,12	m²
	Termal Transmittance of the Glazing U_{g4}	=	1,70	W/(m² · K)
	Total Visible Perimeter of the Glazing. Length l_{g4}	=	7,81	m
	Linear Thermal Transmittance of the Glazing Ψ_{g4}	=	0,08	W/(m · K)

Frame = 12,0%

Light % = 88,0%

Calculation of Thermal Transmittance of Window U_w

$$U_w = \frac{U_{mf} \cdot A_f + U_{g1} \cdot A_{g1} + U_{g2} \cdot A_{g2} + \ldots\ldots + U_{g4} \cdot A_{g4} + l_{g1} \cdot \psi_{g1} + l_{g2} \cdot \psi_{g2} + \ldots\ldots + l_{g4} \cdot \psi_{g4}}{A_w}$$

RESULTS

Total Window's Area	A_w	=	14,37	m²
Window's Thermal Transmittance	U_w	=	2,16	W/(m²·K)

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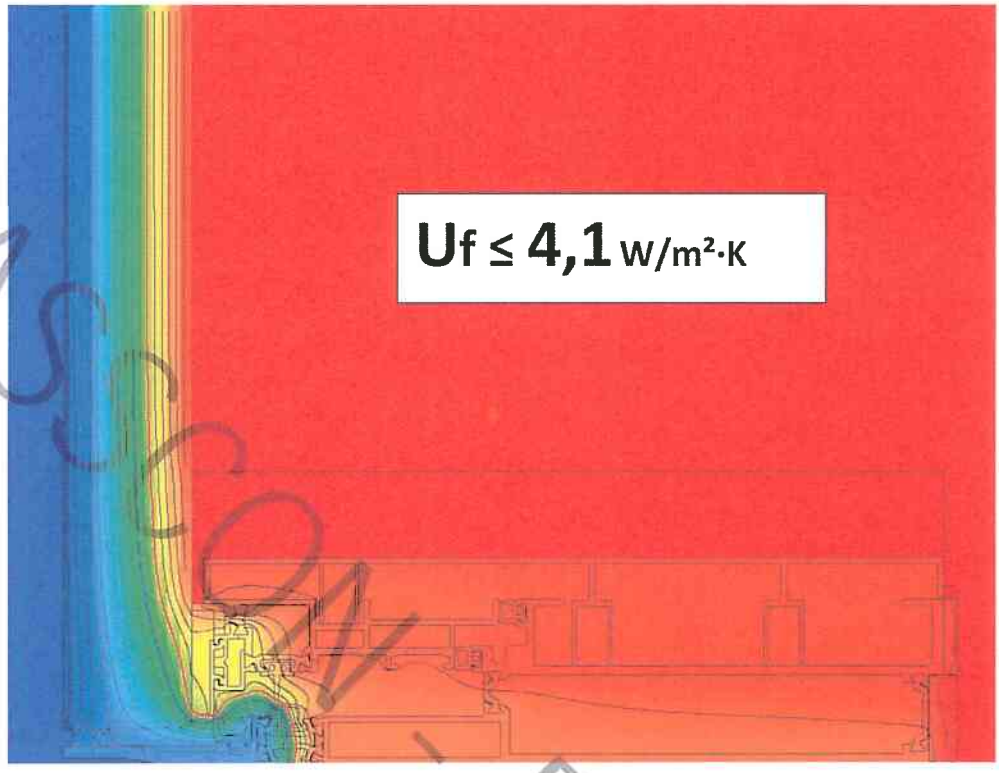
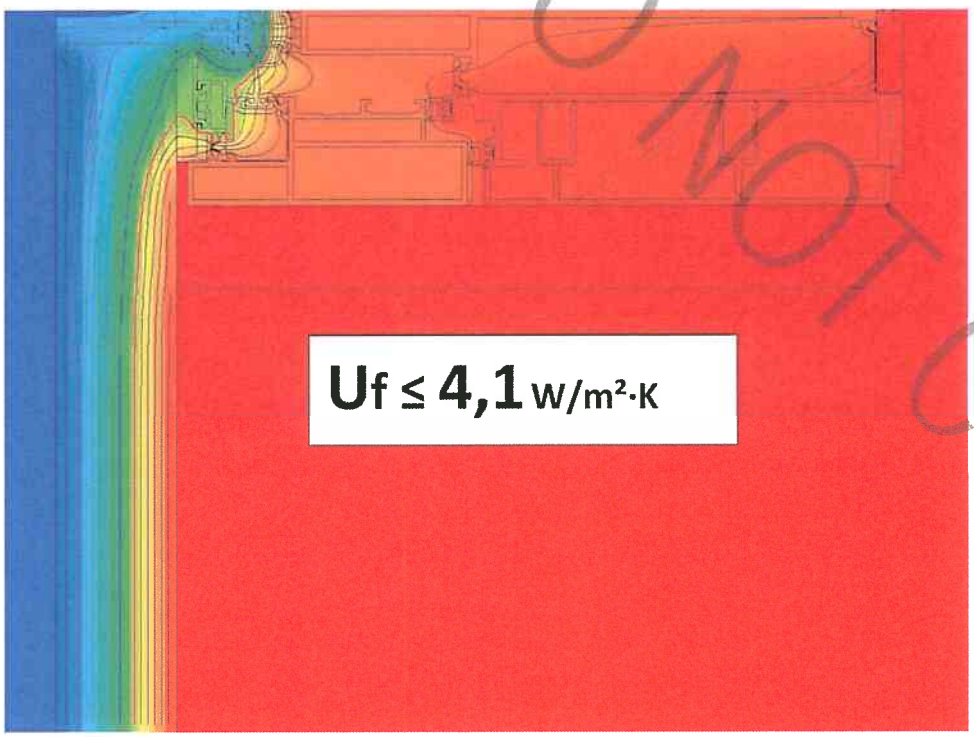
Fixed Window



Openable Window



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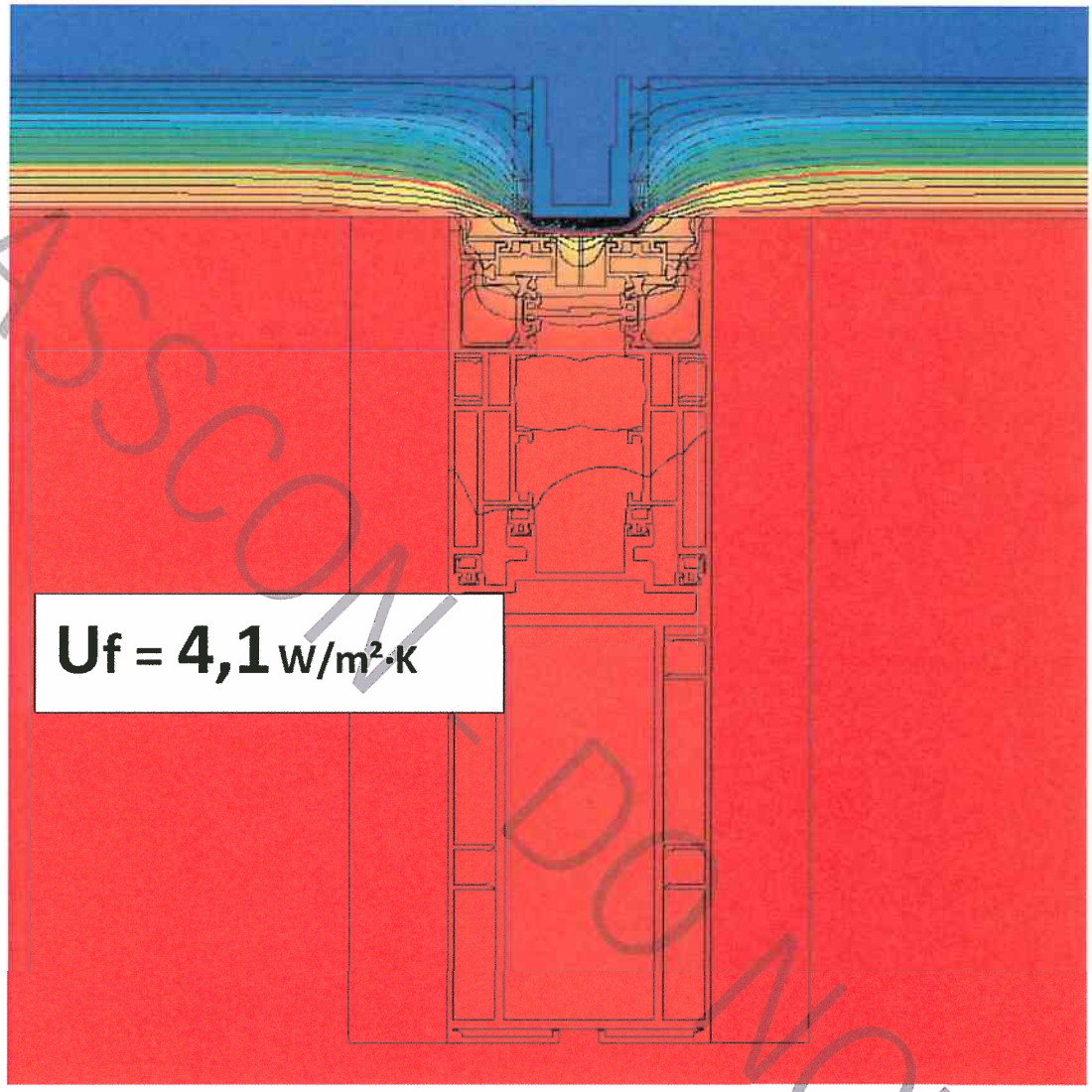
Mullion



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