LAYTON CONSULTING LTD
GLAZING, CLADDING, & SPECIALTY STRUCTURAL ENGINEERING
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NFRC National Fenestration Rating Council® ACCREDITED

NFRC SIMULATION REPORT

Project Name: **Acro Aluminum (2024) Ltd - Thermal Analysis**

Project Number: 1579 – 18010

Simulation Date: 03 March 2025

Report Date: 03 March 2025

Revision #: R0

Name/Number	Type
Acro Door Medium Stile Small Sill	EDSL
Acro Door Medium Stile Large Sill	EDSL
Acro Door Narrow Stile Small Sill	EDSL
Acro Door Narrow Stile Large Sill	EDSL
Acro Double Door Medium Stile Small Sill	DDFR
Acro Double Door Medium Stile Large Sill	DDFR
Acro Double Door Narrow Stile Small Sill	DDFR
Acro Double Door Narrow Stile Large Sill	DDFR

Fenestration Product Supplier: **Acro Aluminum (2024) Ltd.**
5430 275 St, Langley Twp, BC V4W 3X7, Canada

Attn: Foad Raad

	Layton Consulting Employee Name	Signature
Simulation by:	Tyler Henderson, NFRC Certified Simulator	
Reviewed by:	Taylor Wight, P.Eng., LEAFF NFRC Certified Simulator	

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GENERAL NOTES

Disclaimers

- This report shall not be reproduced, neither in part nor in full, without the approval of Layton Consulting Ltd.
- Thermal simulations were conducted following NFRC Thermal Simulation procedures as well as CSA-A440.2-19 *Fenestration Energy Performance.*
- Simulation was completed using NFRC approved software – THERM 7.8 and WINDOW 7.8.
- This report relates only to the fenestration products simulated and are based on the CAD files and information provided by the client. Layton Consulting Ltd. does not verify that all the provided information is current and accurate to what is installed.
- Thermal simulation models may require some minor modifications made by the simulator, relative to the provided drawings, to account for software limitations.
- Rounding is per NFRC 601, NFRC Unit and Measurement Policy.
- Component values included in this report are not meant to be used directly for labelling purposes. Only those values approved and identified on a valid CMA Label Certificate are to be used for labelling purposes.

PRODUCT LINE DESCRIPTION AND MATERIAL PROPERTIES

Table 1: Frame Material Types & Properties Used for Components of the System

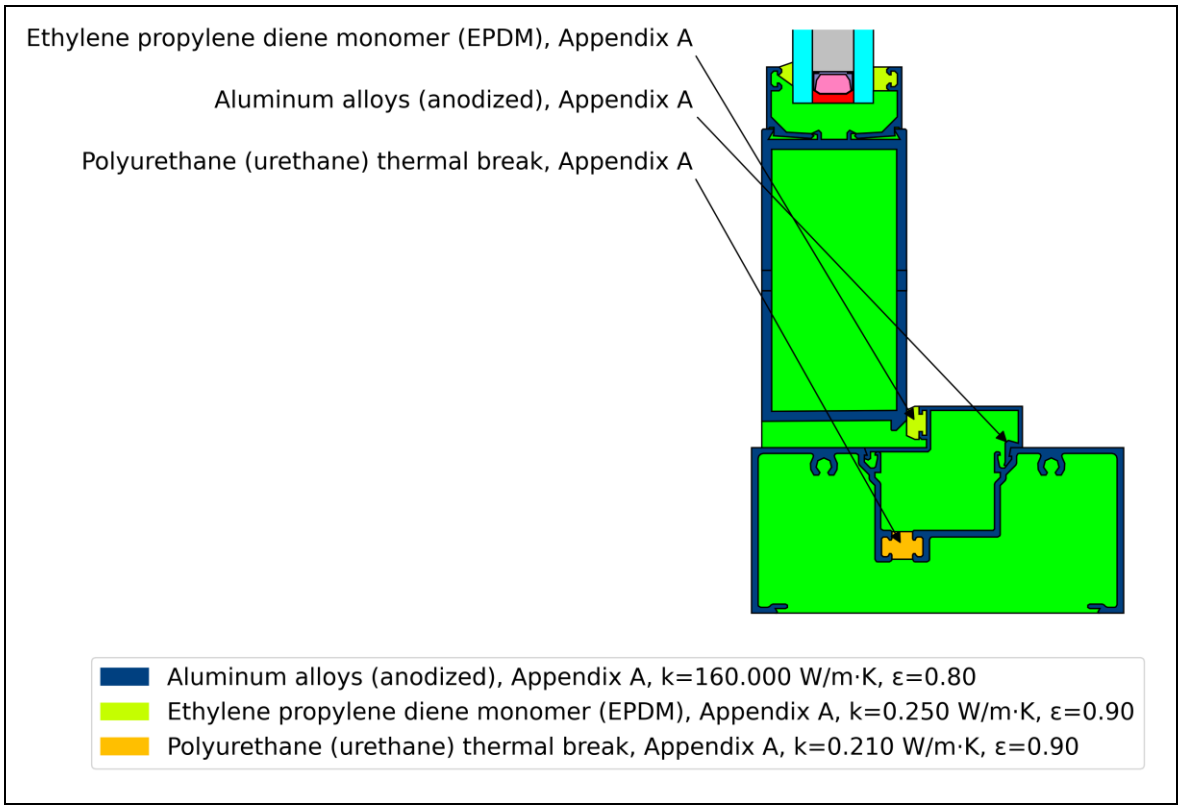

Figure 1: Model of the Acro Door Medium Stile Small Sill to Show the Materials of Components Modelled

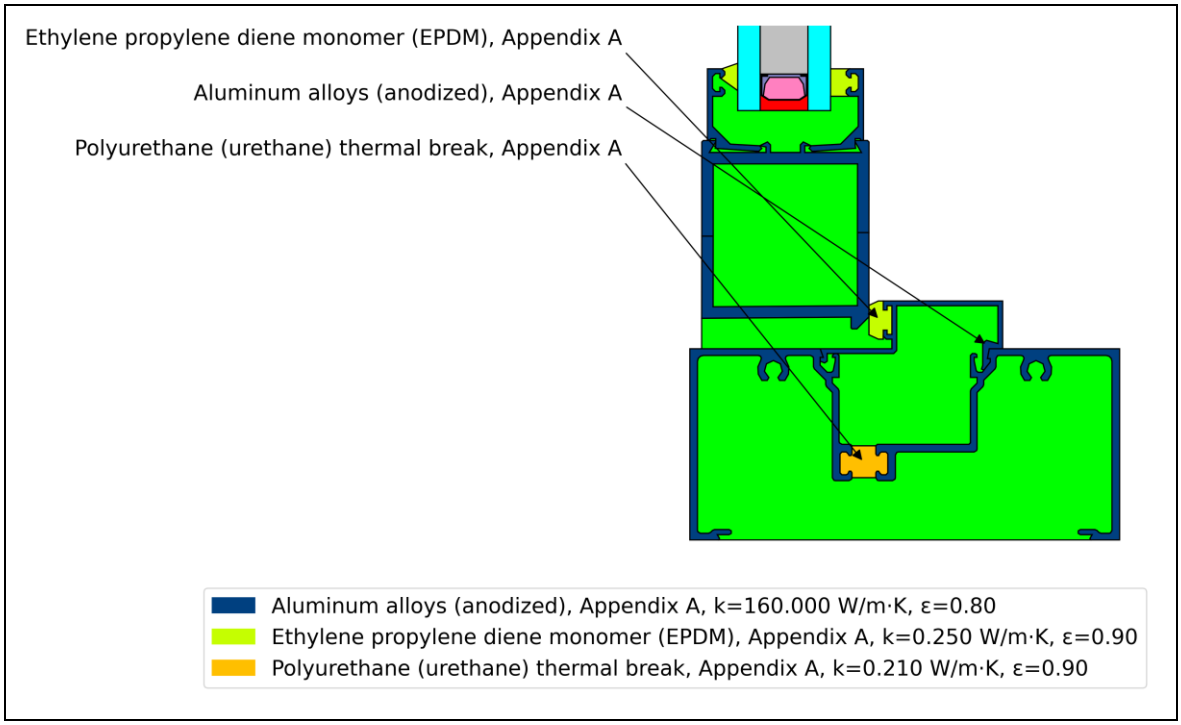

Figure 2: Model of the Acro Door Narrow Stile Small Sill to Show the Materials of Components Modelled

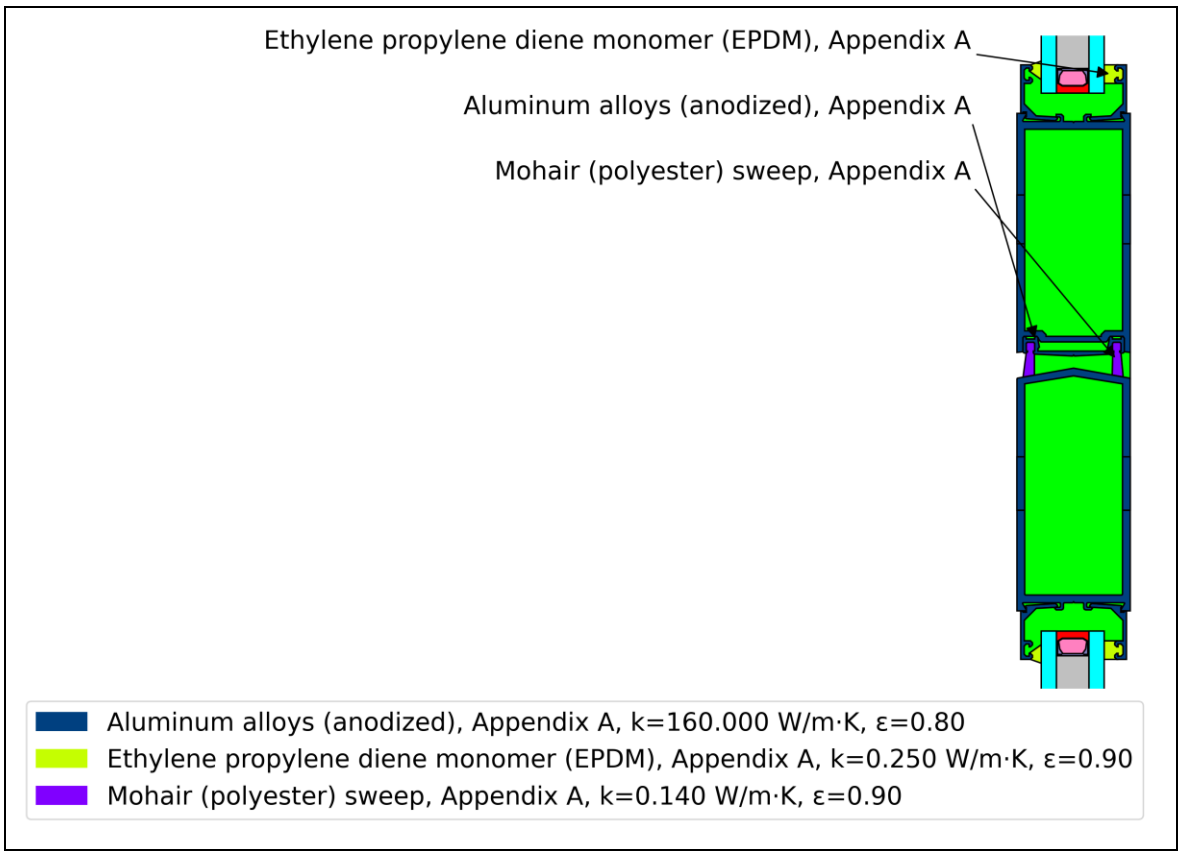

Figure 3: Model of the Acro Double Door Medium Stile Small Sill to Show the Materials of Components Modelled

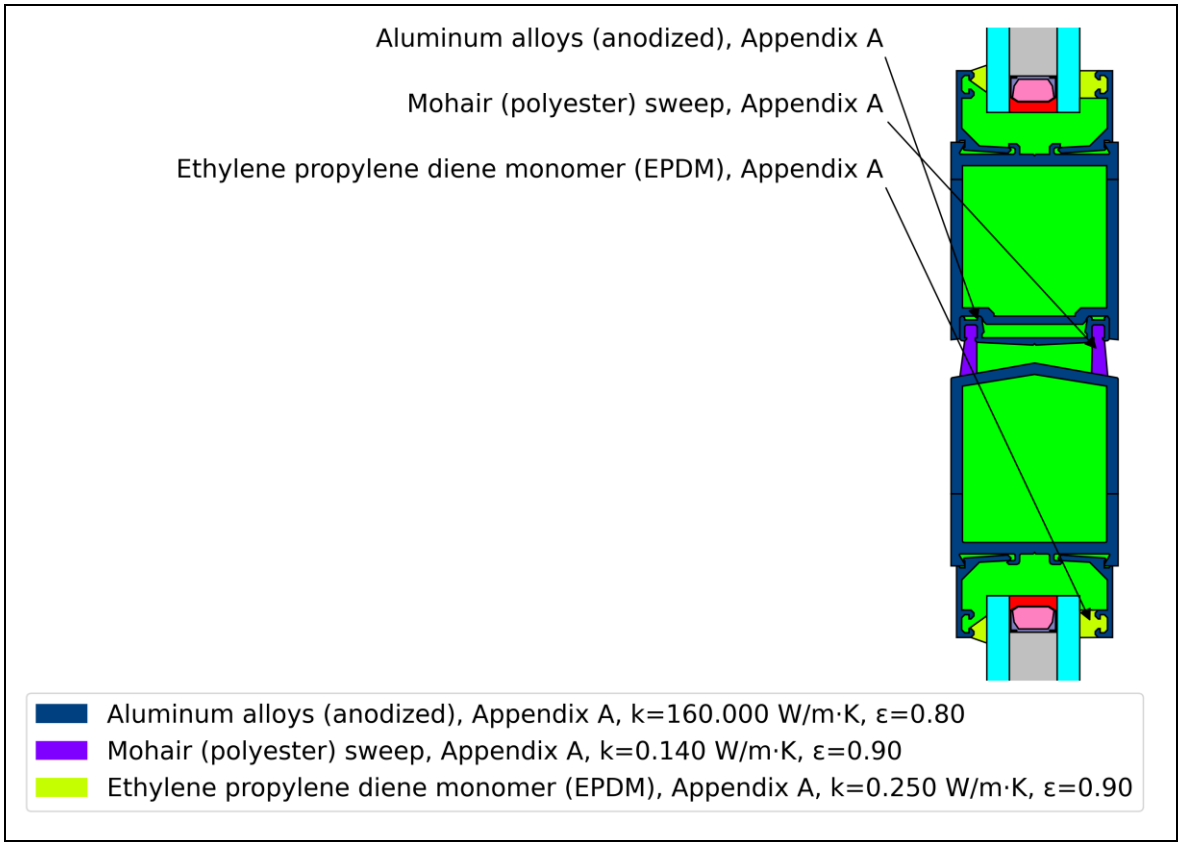

Figure 4: Model of the Acro Double Door Narrow Stile Small Sill to Show the Materials of Components Modelled

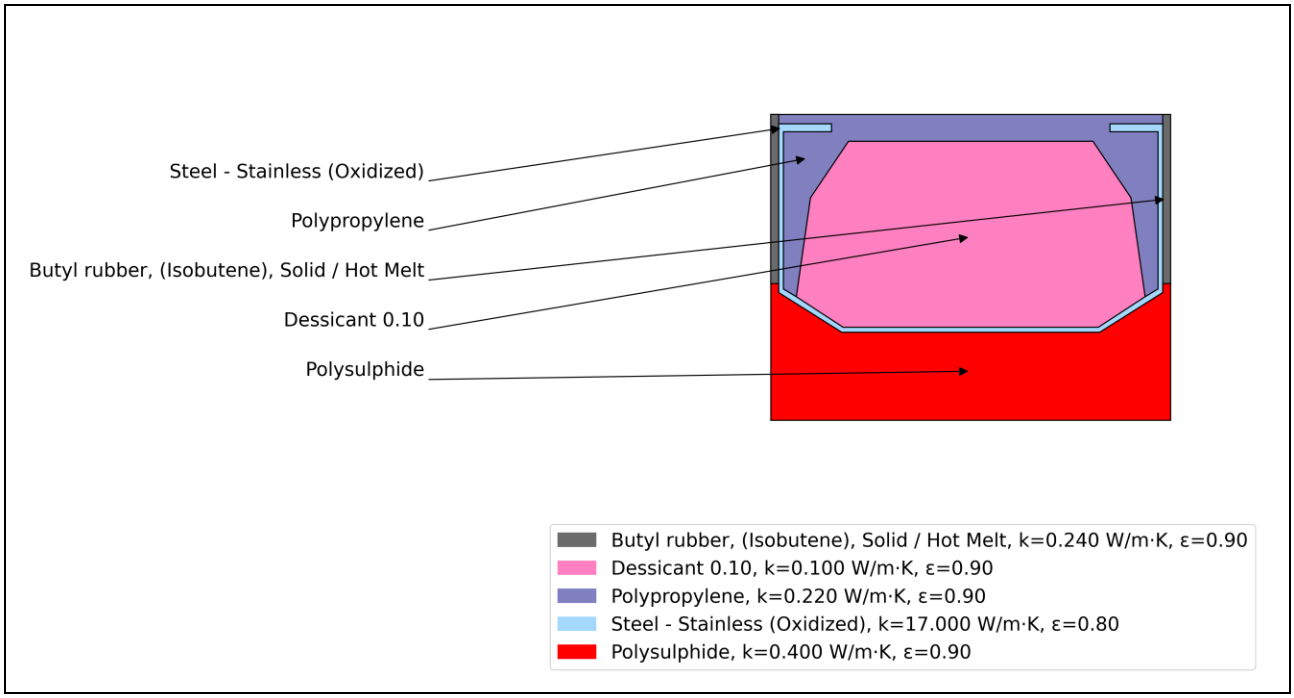

Figure 5: Spacer Material Details – Chromatech Ultra S

Insulated Glazing Unit (IGU) Details:

272/Clear: LoE² 272 on 6 mm Clear (Surface #2, ε = 0.042) / 12.7mm Air (10%) - Argon (90%) Mix / Generic Clear Glass (Total Thickness = 24.1mm)

272/i89: LoE² 272 on 6 mm Clear (Surface #2, ε = 0.042) / 12.7mm Air (10%) - Argon (90%) Mix / i89 on 6mm Clear (Surface #4, ε = 0.149) (Total Thickness = 24.1mm)

RESULTS

Table 2: Thermal Modelling Result

Product Name	Product Type	Frame Type	Sash Type	Glazing Type	Width x Height (mm)	U-Value (W/m^2-K)	U-Value (Btu/h-ft^2-°F)	SHGC	VT
Medium Stile Small Sill	EDSL	AN	AN	272/Clear	960 x 2090	3.78	0.67	0.26	0.38
Medium Stile Small Sill	EDSL	AN	AN	272/i89	960 x 2090	3.59	0.63	0.25	0.37
Medium Stile Large Sill	EDSL	AN	AN	272/Clear	960 x 2090	3.86	0.68	0.25	0.36
Medium Stile Large Sill	EDSL	AN	AN	272/i89	960 x 2090	3.68	0.65	0.25	0.36
Narrow Stile Small Sill	EDSL	AN	AN	272/Clear	960 x 2090	3.45	0.61	0.29	0.44
Narrow Stile Small Sill	EDSL	AN	AN	272/i89	960 x 2090	3.24	0.57	0.28	0.44
Narrow Stile Large Sill	EDSL	AN	AN	272/Clear	960 x 2090	3.54	0.62	0.28	0.42
Narrow Stile Large Sill	EDSL	AN	AN	272/i89	960 x 2090	3.34	0.59	0.27	0.42
Double Medium Stile Small Sill	DDFR	AN	AN	272/Clear	1920 x 2090	3.51	0.62	0.27	0.41
Double Medium Stile Small Sill	DDFR	AN	AN	272/i89	1920 x 2090	3.30	0.58	0.27	0.40
Double Medium Stile Large Sill	DDFR	AN	AN	272/Clear	1920 x 2090	3.59	0.63	0.26	0.39
Double Medium Stile Large Sill	DDFR	AN	AN	272/i89	1920 x 2090	3.39	0.60	0.26	0.39
Double Narrow Stile Small Sill	DDFR	AN	AN	272/Clear	1920 x 2090	3.17	0.56	0.30	0.47
Double Narrow Stile Small Sill	DDFR	AN	AN	272/i89	1920 x 2090	2.94	0.52	0.29	0.47
Double Narrow Stile Large Sill	DDFR	AN	AN	272/Clear	1920 x 2090	3.27	0.58	0.29	0.45
Double Narrow Stile Large Sill	DDFR	AN	AN	272/i89	1920 x 2090	3.04	0.54	0.28	0.45

APPENDIX

Figure 6: NFRC Certification of Laboratory and Simulator – Taylor Wight, Tyler Henderson

IGU Name: 272/Clear

	ID	Name	Thick	Surf	Tsol	Tvis	E	Source
Glass 1	2014	LoE272-6.CIG	5.7	2	0.411298	0.779911	0.04191	IGDB v97.0
Gap 1	9	Air (10%) - Argon (90%) Mix	12.7					
Glass 2	103	CLEAR_6.DAT	5.72		0.770675	0.883647		IGDB v11.4
		Overall Thickness (mm):	24.1					

IGU Name: 272/i89

	ID	Name	Thick	Surf	Tsol	Tvis	E	Source
Glass 1	2014	LoE272-6.CIG	5.7	2	0.411298	0.779911	0.04191	IGDB v97.0
Gap 1	9	Air (10%) - Argon (90%) Mix	12.7					
Glass 2	2162	i89-6.CIG	5.7	4	0.689242	0.868692	0.148902	IGDB v97.0
		Overall Thickness (mm):	24.1					

Figure 7: IGU Composition Details

Table 3: IGU Modelling Result

Name	U-Factor$_{cog}$	SHGC$_{cog}$	VT$_{cog}$
272/Clear	1.406	0.40	0.69
272/i89	1.136	0.39	0.68

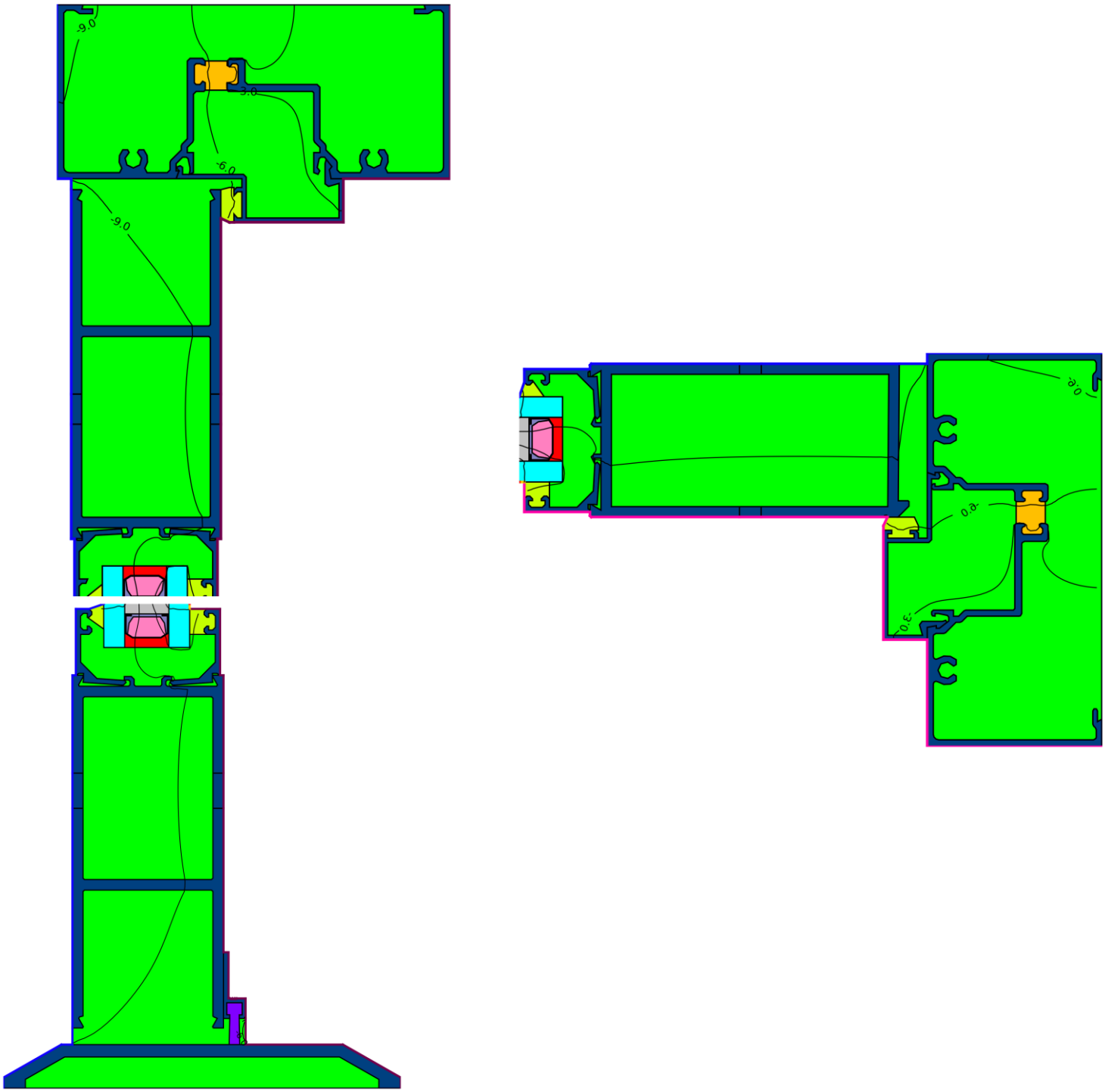

Figure 8: Thermal Modelling Result – Acro Door Medium Stile Small Sill

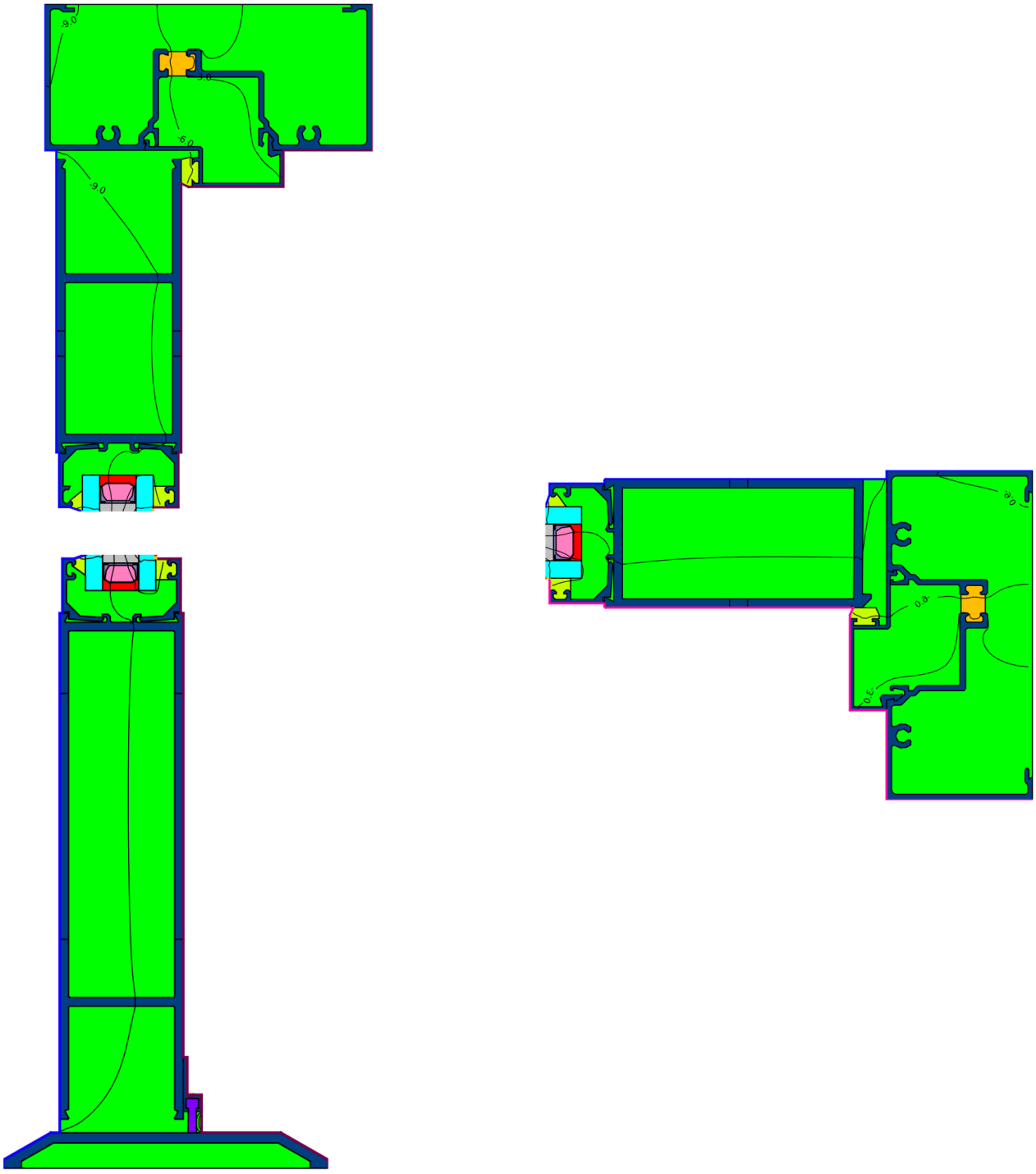

Figure 9: Thermal Modelling Result – Acro Door Medium Stile Large Sill

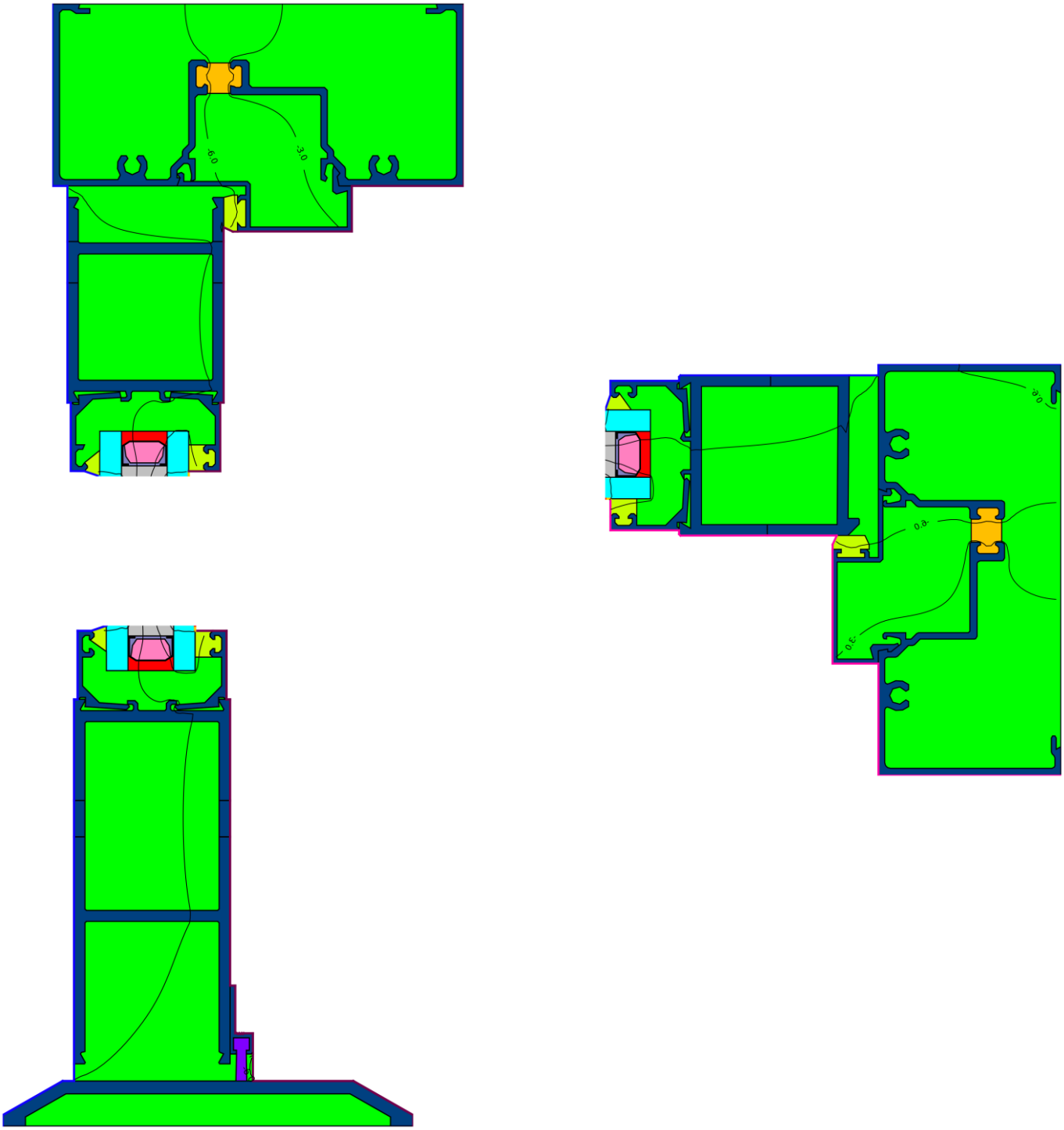

Figure 10: Thermal Modelling Result – Acro Door Narrow Stile Small Sill

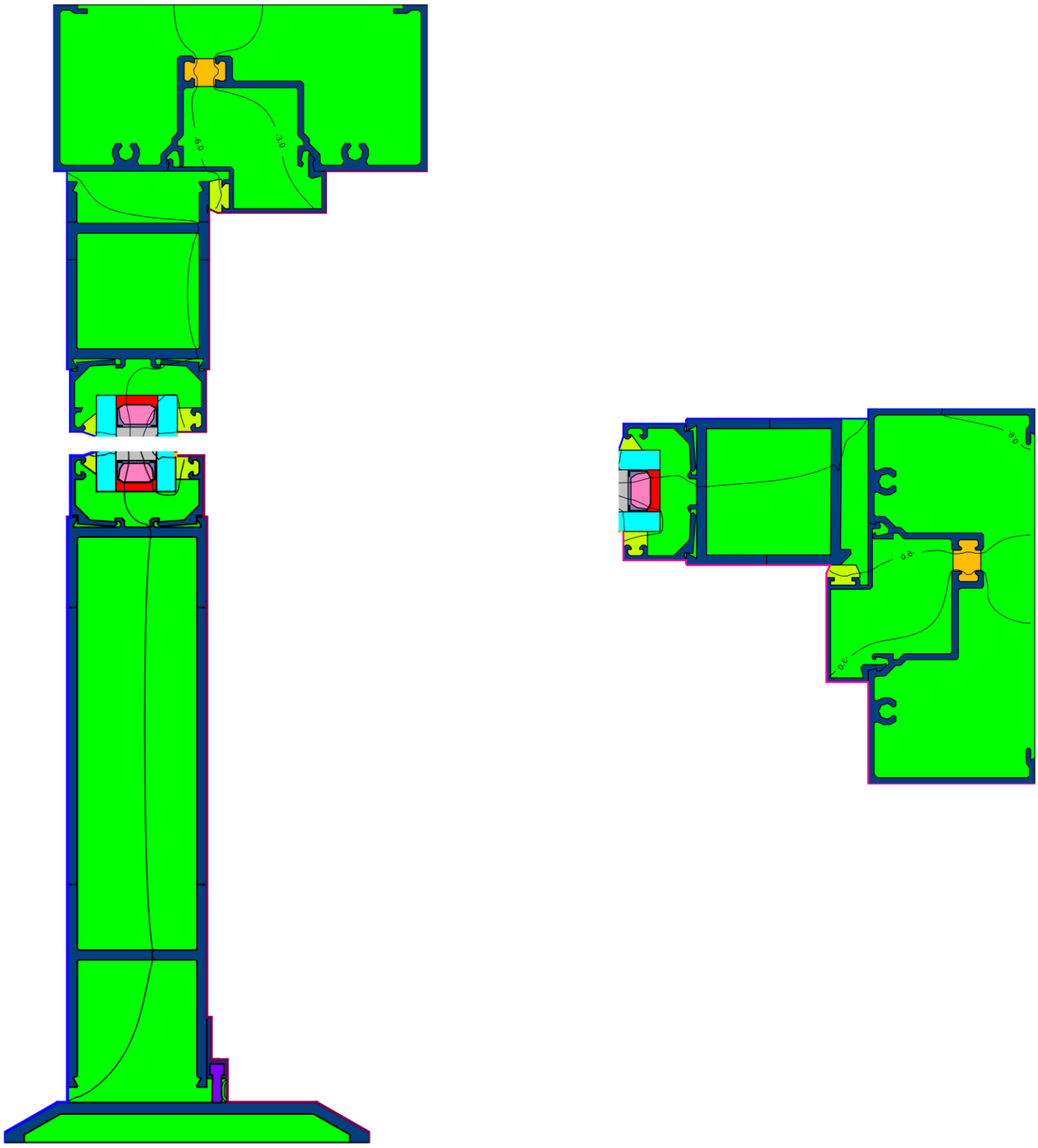

Figure 11: Thermal Modelling Result – Acro Door Narrow Stile Large Sill

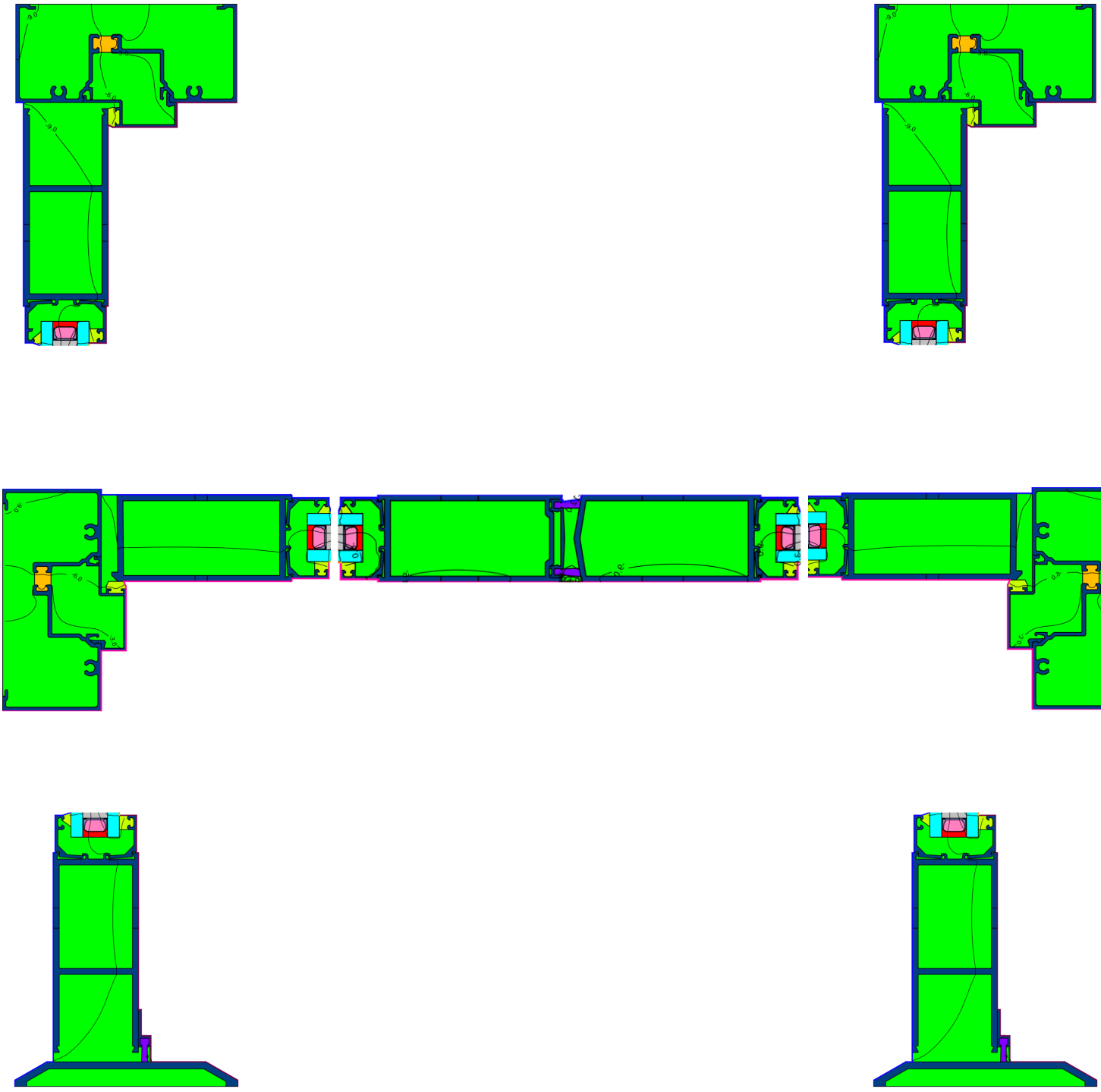

Figure 12: Thermal Modelling Result – Acro Double Door Medium Stile Small Sill

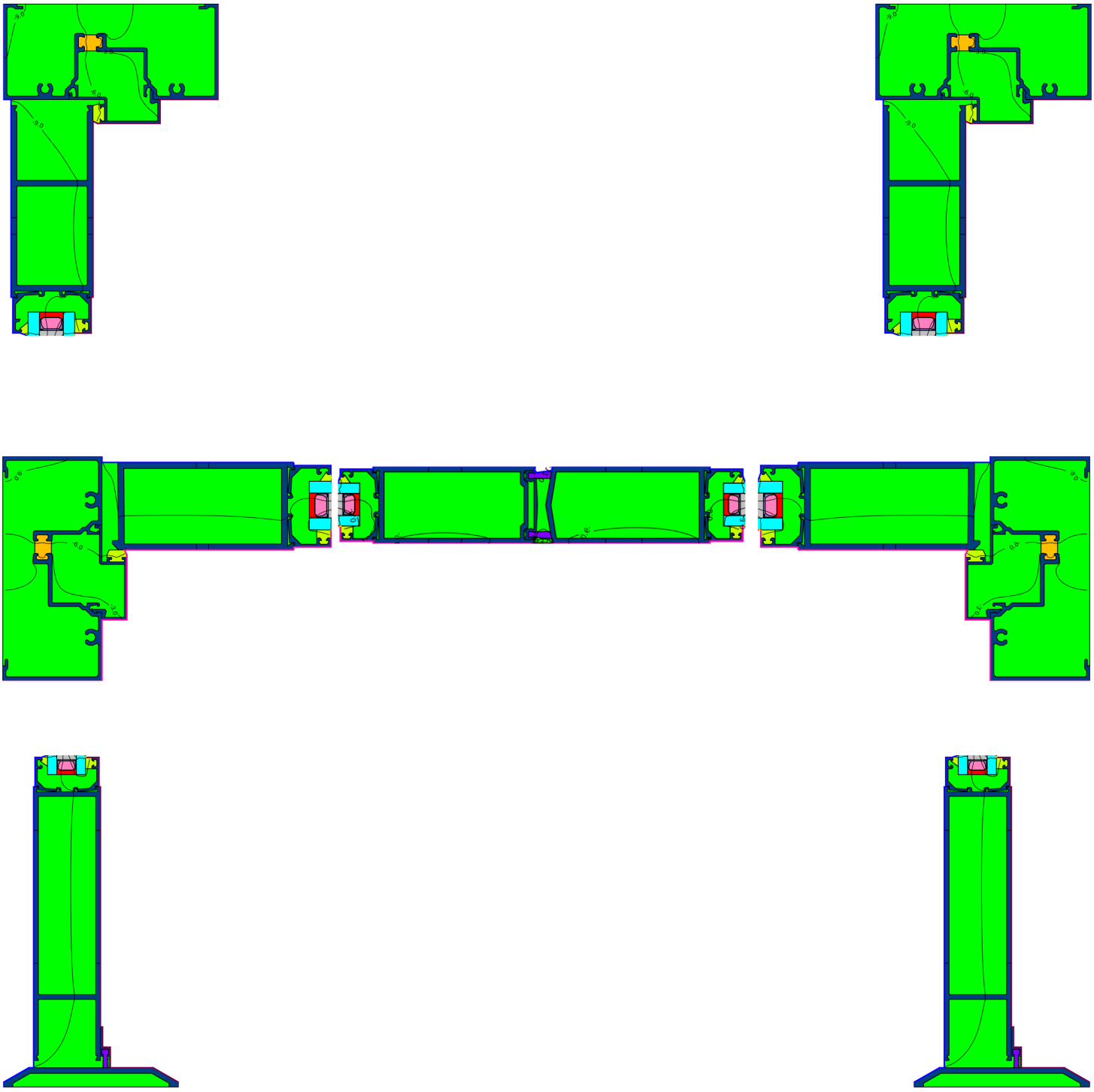

Figure 13: Thermal Modelling Result – Acro Double Door Medium Stile Large Sill

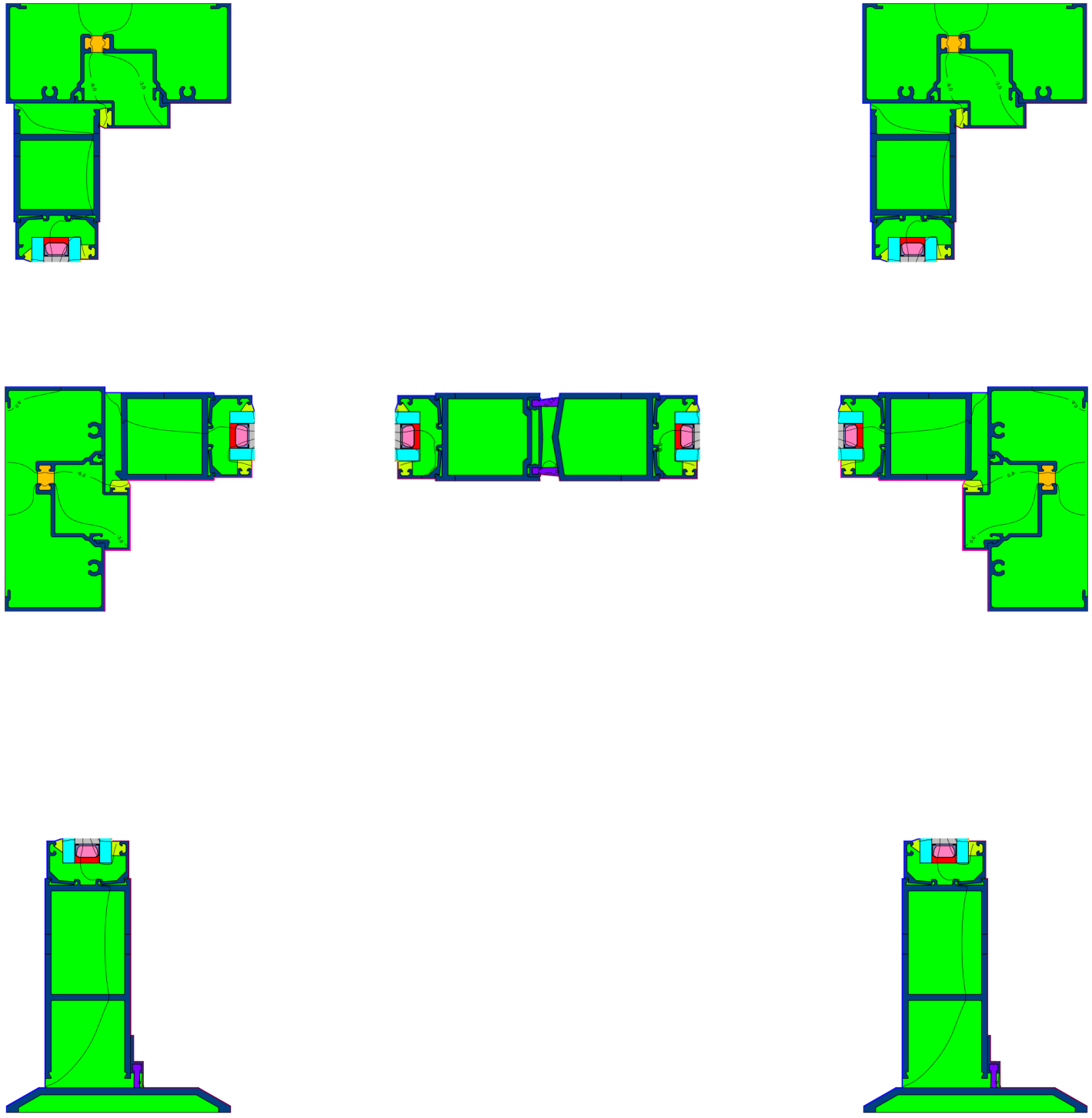

Figure 14: Thermal Modelling Result – Acro Double Door Narrow Stile Small Sill

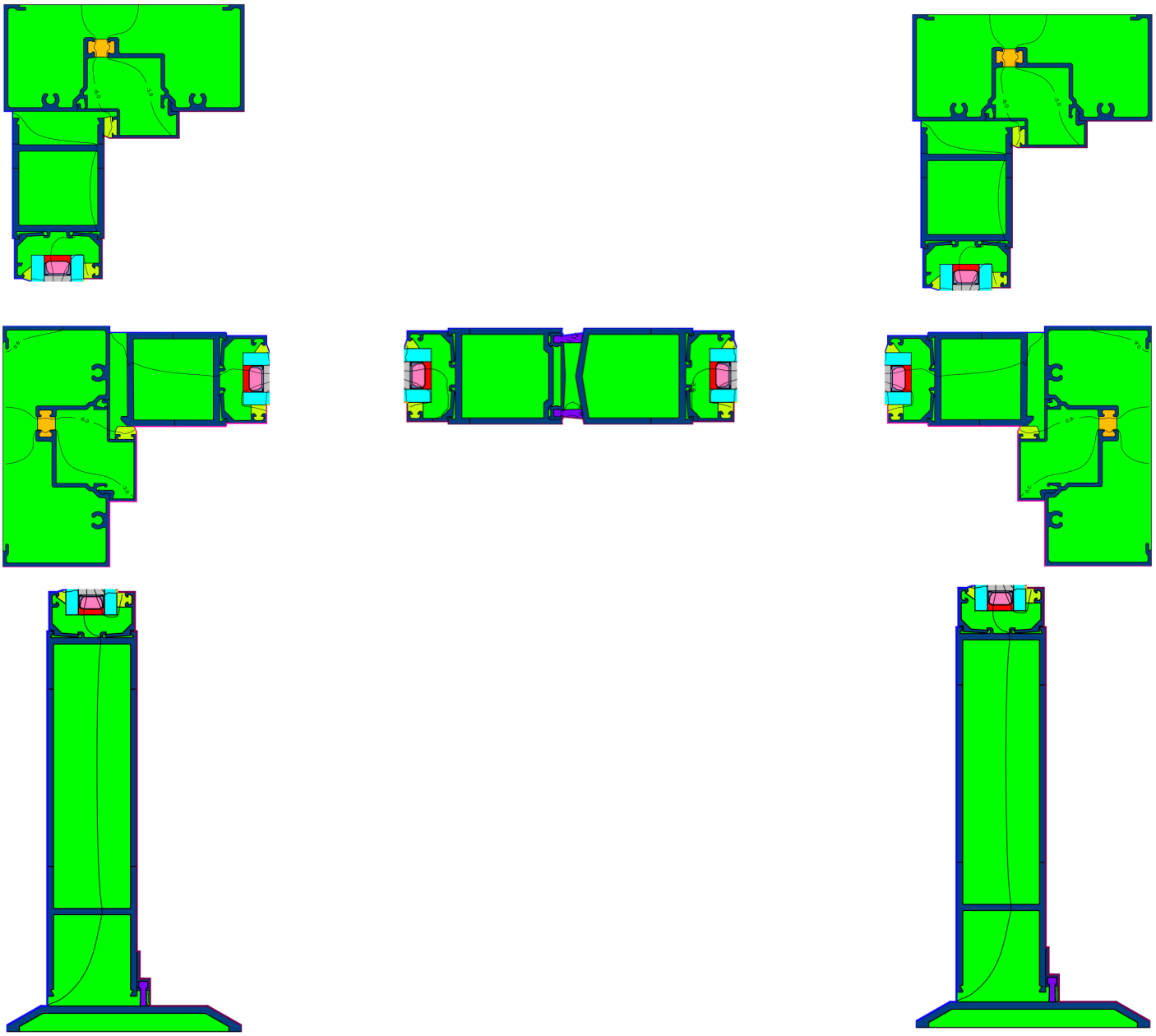

Figure 15: Thermal Modelling Result – Acro Double Door Narrow Stile Large Sill