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# SIMULATION TEST REPORT

## NCTL-610-22397-1$_{E0A0}$

**REPORT TO:**
ClimateGuard Manufacturing
2500 North Pulaski Road
Chicago, IL 60639

**SIMULATION DATE:** 09/17/19

**PRODUCT:**
1199 Awning

This report is for certification of a new product line.

## SIMULATION TEST REPORT

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| **Simulation Standards** | ANSI/NFRC 100-2017 “Procedure for Determining Fenestration Product U-factors” | |
| | ANSI/NFRC 200-2017 “Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence” | |
| | NFRC 500-2017 “Procedure for Determining Fenestration Product Condensation Resistance Values” | |
| | THERM 7 / WINDOW 7 NFRC Simulation Manual (July 2017)<br>NFRC 2010 Technical Interpretations Manual (November 2017) | |
| **Approved Simulation Software** | Center of Glass | Window 7.4 |
| | 2-D Heat Transfer | THERM 7.4 |
| | Total Product Calculations | Window 7.4 |

Note: All dimensions are in the order (Width x Height) unless otherwise noted.

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| **Report Number** | NCTL-610-22397-1$_{E0A0}$ |
| **Model/ Series** | 1199 Awning |
| **Operator Type** | Projected Awning (PRAW) |
| **Simulation Size** | 1500 mm x 600 mm (59” x 24”) |
| **Frame Type** | Thermally broken aluminum (AT) |
| **Nail Fin** | Not available |
| **Vent Type** | Thermally broken aluminum (AT) |
| **Frame/Vent Material & Finish** | Painted aluminum |
| **Weather Seal(s)** | Head<br>(2) Strips of EPDM gaskets<br><br>Jamb<br>(2) Strips of EPDM gaskets<br><br>Sill<br>(2) Strips of EPDM gaskets |
| **Edge of Glass** | Interior glazed with butyl tape back bedding, and snap-in aluminum glazing bead with flexible vinyl gasket and silicone back fill. |
| **Spacer System(s)** | Coated steel U-shaped spacer system - dual sealed (CU-D) |

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| **Gas Fillings** | Argon 95% dual probe per the client (ARG) |
| **Divider(s)** | Grid 1<br>0.1875” x 0.610” painted aluminum rectangle |
| **Divider Notes** | Where the space between lite and divider is greater than 3 mm, dividers are not modeled. Solar Heat Gain Coefficient (SHGC) and Visible Light Transmittance (VT) are calculated using default dividers of less than 1” and greater than/ equal to 1”.<br><br>For U-factor, SHGC, and VT calculations the standard default grid pattern of 12” is used, as established by the Window 7 program. |

## *Notes, Additional Information, Comments, and Assumptions*

All simulations use the emissivity from the approved ANSI/NFRC spectral data files with the International Glazing Database (IGDB).

For Solar Heat Gain and Visible Light Transmittance; all frame, divider and glass options are grouped using the best case center of glass/ worst-case frame values from the “U” Factor calculations as required by ANSI/NFRC 200-2017.

A default frame absorptance of 0.30 is assumed for all products except glazing window walls, glazing curtain walls, and slopped glazing wall - all of which will have a frame absorptance of 0.50



Supporting information including THERM 7 and WINDOW 7 files are being submitted as part of this report. The simulation matrix is being submitted electronically.

Detailed assembly drawings, horizontal and vertical cross-sectional drawings, profile drawings, parts drawings, and a bill of materials as supplied by the client were used as the basis for performing the simulations. Copies are attached to this report. The results were secured by using the designated methods and NFRC approved simulation programs as required by, and in full compliance with, NFRC procedures.

This report does not constitute certification of this product. The results in this report apply only to the sample as shown in the attached drawings, using the components and construction methods described herein. NCTL does not warrant the accuracy of the computer programs used to obtain the results. Client request for work performed by NCTL and its associated documentation constitute approval by client for Inspection Agency (IA) submission.

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 options identified on a valid Certificate of Authorization (CA) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes.

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 system opening.

Units and rounding is in accordance with NFRC 601, *Units and Measurement Policy* except that all units may be reported in IP as the primary units after conversion and any matrix is reported in IP units only unless requested otherwise by the client.

The manufacturer is capable of producing, in its normal manufacturing process, products in sizes identical to the model sizes listed in the ANSI/NFRC 100 Table 4-3 and have a least deviation of 0 within the tolerances of ANSI/NFRC 100. All simulations are performed in the sizes and configurations listed in ANSI/NFRC 100 Table 4-3 except that a non-standard size may be simulated and identified in the matrix to match the manufacturer's physical test sample. Glass and glazing types, Low-E placement, finishes and other required information is included in the NFRC U-Factor Simulation Summary Report and/ or the NFRC SHGC/ VT Simulation Summary Report included in this document. Additional supporting information and modeling assumptions are included in the individual reports obtained from the approved simulation programs and in the notes following the required summary reports.

**National Certified Testing Laboratories**

Performed by:

**BRYCE PETERS**
Simulator/Thermal Tech

Reviewed by:


**MARK BENNETT**
NFRC Certified Simulator
Simulator-In-Responsible-Charge

Attachments
- Glazing Matrix
- Appendix A - Revision Summary
- Appendix B - Product Drawings

| PRODUCT | Product Number | Pane ID #1 | Pane ID #2 | Pane ID #3 | Pane Thickness #1 | Pane Thickness #2 | Pane Thickness #3 | Gap 1 | Gap 2 | Gap Fill 1 | Gap Fill 2 | % of Gap Fill 1 | % of Gap Fill 2 | Emissivity Surface 1 | Emissivity Surface 2 | Emissivity Surface 3 | Emissivity Surface 4 | Emissivity Surface 5 | Emissivity Surface 6 | Tint | Spacer | Grid Type | Grid Size | U-factor | Condensation Resistance | | SHGC NO GRID | SHGC GRID<1" | SHGC GRID>=1" | VT NO GRID | VT GRID<1" | VT GRID >=1" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grids/ No Grids | 1 | 2 mm Clear | 2 mm Clear | | 0.087 | 0.087 | | 0.678 | | AIR | | | | | | | | | | CL | CU-D | N,G | 0.75 | 0.69 | 39 | | 0.53 | 0.48 | | 0.53 | 0.47 | |
| Grids/ No Grids | 2 | 3 mm Clear | 3 mm Clear | | 0.118 | 0.118 | | 0.639 | | AIR | | | | | | | | | | CL | CU-D | N,G | 0.75 | 0.69 | 39 | | 0.52 | 0.47 | | 0.52 | 0.47 | |
| No Grids | 3 | 2 mm Clear | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | AIR | AIR | | | | | | | | | CL | CU-D | N | | 0.62 | 41 | | 0.48 | | | 0.48 | | |
| Grids/ No Grids | 4 | 2 mm i89 | 2 mm Clear | | 0.087 | 0.087 | | 0.678 | | ARG | | 95 | | | 0.149 | | | | | CL | CU-D | N,G | 0.75 | 0.58 | 40 | | 0.47 | 0.43 | | 0.51 | 0.46 | |
| Grids/ No Grids | 5 | 3 mm i89 | 3 mm Clear | | 0.117 | 0.118 | | 0.639 | | ARG | | 95 | | | 0.149 | | | | | CL | CU-D | N,G | 0.75 | 0.58 | 40 | | 0.46 | 0.42 | | 0.51 | 0.46 | |
| No Grids | 6 | 2 mm i89 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.149 | | | | | CL | CU-D | N | | 0.55 | 41 | | 0.43 | | | 0.47 | | |
| Grids/ No Grids | 7 | 2 mm LoE³ 366 | 2 mm Clear | | 0.087 | 0.087 | | 0.678 | | ARG | | 95 | | | 0.022 | | | | | CL | CU-D | N,G | 0.75 | 0.55 | 40 | | 0.20 | 0.19 | | 0.41 | 0.37 | |
| Grids/ No Grids | 8 | 3 mm LoE³ 366 | 3 mm Clear | | 0.117 | 0.118 | | 0.639 | | ARG | | 95 | | | 0.022 | | | | | CL | CU-D | N,G | 0.75 | 0.55 | 40 | | 0.20 | 0.18 | | 0.41 | 0.37 | |
| No Grids | 9 | 2 mm LoE³ 366 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.022 | | | | | CL | CU-D | N | | 0.54 | 41 | | 0.19 | | | 0.38 | | |
| No Grids | 10 | 2 mm LoE³ 366 | 2 mm Clear | 2 mm LoE³ 366 | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.022 | | | 0.022 | | CL | CU-D | N | | 0.50 | 41 | | 0.18 | | | 0.30 | | |
| Grids/ No Grids | 11 | 2 mm LoE² 270 | 2 mm Clear | | 0.087 | 0.087 | | 0.678 | | ARG | | 95 | | | 0.037 | | | | | CL | CU-D | N,G | 0.75 | 0.56 | 40 | | 0.26 | 0.24 | | 0.45 | 0.40 | |
| Grids/ No Grids | 12 | 3 mm LoE² 270 | 3 mm Clear | | 0.118 | 0.118 | | 0.639 | | ARG | | 95 | | | 0.037 | | | | | CL | CU-D | N,G | 0.75 | 0.56 | 40 | | 0.26 | 0.24 | | 0.44 | 0.40 | |
| No Grids | 13 | 2 mm LoE² 270 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.037 | | | | | CL | CU-D | N | | 0.54 | 41 | | 0.25 | | | 0.41 | | |
| No Grids | 14 | 2 mm LoE² 270 | 2 mm Clear | 2 mm LoE² 270 | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.037 | | | 0.037 | | CL | CU-D | N | | 0.51 | 41 | | 0.23 | | | 0.35 | | |
| Grids/ No Grids | 15 | 2 mm LoE² 270 | 2 mm i89 | | 0.087 | 0.087 | | 0.678 | | ARG | | 95 | | | 0.037 | | 0.149 | | | CL | CU-D | N,G | 0.75 | 0.53 | 40 | | 0.26 | 0.24 | | 0.44 | 0.39 | |
| Grids/ No Grids | 16 | 3 mm LoE² 270 | 3 mm i89 | | 0.118 | 0.117 | | 0.639 | | ARG | | 95 | | | 0.037 | | 0.149 | | | CL | CU-D | N,G | 0.75 | 0.53 | 40 | | 0.26 | 0.24 | | 0.43 | 0.39 | |
| 0.1875" x 0.610" Rectangular Grid | 17 | 2 mm Clear | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | AIR | AIR | | | | | | | | | CL | CU-D | G | 0.75 | 0.62 | 41 | | | 0.44 | | | 0.44 | |
| 0.1875" x 0.610" Rectangular Grid | 18 | 2 mm i89 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.149 | | | | | CL | CU-D | G | 0.75 | 0.55 | 41 | | | 0.39 | | | 0.43 | |
| 0.1875" x 0.610" Rectangular Grid | 19 | 2 mm LoE³ 366 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.022 | | | | | CL | CU-D | G | 0.75 | 0.54 | 41 | | | 0.18 | | | 0.34 | |
| 0.1875" x 0.610" Rectangular Grid | 20 | 2 mm LoE³ 366 | 2 mm Clear | 2 mm LoE³ 366 | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.022 | | | 0.022 | | CL | CU-D | G | 0.75 | 0.51 | 41 | | | 0.17 | | | 0.27 | |
| 0.1875" x 0.610" Rectangular Grid | 21 | 2 mm LoE² 270 | 2 mm Clear | 2 mm Clear | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.037 | | | | | CL | CU-D | G | 0.75 | 0.54 | 41 | | | 0.23 | | | 0.37 | |
| 0.1875" x 0.610" Rectangular Grid | 22 | 2 mm LoE² 270 | 2 mm Clear | 2 mm LoE² 270 | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 95 | 95 | | 0.037 | | | 0.037 | | CL | CU-D | G | 0.75 | 0.51 | 41 | | | 0.21 | | | 0.31 | |
| Validation, No Grids | 0 | 2 mm LoE² 270 | 2 mm Clear | 2 mm LoE² 270 | 0.087 | 0.087 | 0.087 | 0.290 | 0.290 | ARG | ARG | 97 | 97 | | 0.037 | | | 0.037 | | CL | CU-D | N | | 0.50 | 41 | | 0.23 | | | 0.35 | | |