

**AAMA/WDMA/CSA 101/LS.2/A440-05  
TEST REPORT**

**Rendered to:**

**REMODELERS SUPPLY CENTER**

**SERIES/MODEL: ClimateGuard Classic  
PRODUCT TYPE: Horizontal Sliding Window**

Title	Summary of Results		
	Test Specimen #1 (XO)	Test Specimen #2 (1/4 – 1/2 – 1/4)	Test Specimen #3 (1/3 – 1/3 – 1/3)
Primary Product Designator	HS-R35 1829 x 1219 (72 x 48)	HS-R30 3048 x 1219* (120 x 48*)	HS-R30 3048 x 1219 (120 x 48)
Design Pressure	1680 Pa (35.11 psf)	1440 Pa (30.09 psf)	1440 Pa (30.09 psf)
Negative Design Pressure	2400 Pa (50.16 psf)	1440 Pa (30.09 psf)	1440 Pa (30.09 psf)
Operating Force (in motion)	53 N (12 lbf)	58 N (13 lbf)	53 N (12 lbf)
Air Infiltration	0.5 L/s/m <sup>2</sup> (0.10 cfm/ft <sup>2</sup> )	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )
Water Penetration Resistance Test Pressure	260 Pa (5.43 psf)	220 Pa (4.60 psf)	220 Pa (4.60 psf)
Uniform Load Structural Test Pressure	±3600 Pa (±75.24 psf)	±2160 Pa (±45.14 psf)	±2160 Pa (±45.14 psf)
Forced Entry Resistance	Grade 10	Grade 10	Grade 10

**Test Completion Date:** 11/29/07

Reference must be made to Report No. 77608.04-501-47, dated 06/05/09 for complete test specimen description and data.

**AAMA/WDMA/CSA 101/I.S.2/A440-05 TEST REPORT**

Rendered to:

REMODELERS SUPPLY CENTER  
2622 North Pulaski Road  
Chicago, Illinois 60639

Report No.: 77608.04-501-47  
Test Date: 11/28/07  
And: 11/29/07  
Report Date: 06/05/09  
Expiration Date: 11/29/11

**Project Summary:** Architectural Testing, Inc. was contracted by Veka Inc. to witness testing on three Series/Model SS54WW, PVC horizontal sliding windows at Veka's test facility in Fombell Pennsylvania. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1: HS-R35 1829 x 1219 (72 x 48); Test Specimen #2: HS-R30 3048 x 1219\* (120 x 48\*); Test Specimen #3: HS-R30 3048 x 1219 (120 x 48). This report is a reissue of the original Report No. 77608.01-501-47. This report is reissued in the name of Remodelers Supply Center through written authorization of Veka Inc. Test specimen description and results are reported herein. The samples were provided by the client.

**General Note:** *An asterisk (\*) next to the performance grade indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.*

**Test Specification:** The test specimens were evaluated in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights*.

**Test Specimen Description:**

**Series/Model:** ClimateGuard Classic

**Product Type:** Poly Vinyl Chloride (PVC) Horizontal Sliding Windows

**Test Specimen #1:** HS-R35 1829 x 1219 (72 x 48)

**Overall Size:** 1829 mm (72") wide by 1219 mm (48") high

**Sash Size:** 891 mm (35-1/16") wide by 1145 mm (45-1/16") high

**Daylight Opening Size:** 832 mm (32-3/4") wide by 1111 mm (43-3/4") high

**Test Specimen Description:** (Continued)

**Test Specimen #1:** HS-R35 1829 x 1219 (72 x 48) (Continued)

**Screen Size:** 857 mm (33-3/4") wide by 1135 mm (44-5/8") high

**Overall Area:** 2.2 m<sup>2</sup> (24.0 ft<sup>2</sup>)

**Test Specimen #2:** HS-R30 3048 x 1219\* (120 x 48\*)

**Overall Size:** 3048 mm (120") wide by 1219 mm (48") high

**Sash Size (2):** 764 mm (30-1/16") wide by 1145 mm (45-1/16") high

**Daylight Opening Size:** 1426 mm (56-1/8") wide by 1100 mm (43-3/4") high

**Screen Size:** 730 mm (28-3/4") wide by 1138 mm (44-11/16") high

**Overall Area:** 3.7 m<sup>2</sup> (40.0 ft<sup>2</sup>)

**Test Specimen #3:** HS-R30 3048 x 1219 (120 x 48)

**Overall Size:** 3048 mm (120") wide by 1219 mm (48") high

**Sash Size (2):** 1007 mm (39-5/8") wide by 1145 mm (45-1/16") high

**Daylight Opening Size:** 937 mm (36-7/8") wide by 1100 mm (43-3/4") high

**Screen Size (2):** 972 mm (38-1/4") wide by 1138 mm (44-11/16") high

**Overall Area:** 3.7 m<sup>2</sup> (40.0 ft<sup>2</sup>)

*The following descriptions apply to all specimens.*

**Finish:** All PVC was white.

**Frame Construction:** The PVC frames were constructed using mitered and welded corner construction. The fixed meeting stiles were secured to the head and sill with two #8 x 64 mm (2-1/2") long screws per end.

**Test Specimen Description:** (Continued)

**Sash Construction:** The PVC sash were constructed using mitered and welded corner construction.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
4.7 mm (0.187") backed by 7.4 mm (0.290") high center fin pile	1 Row	Head, sill, jambs, fixed meeting stile jamb stile and top rail
4.7 mm (0.187") backed by 7.4 mm (0.290") high center fin pile	2 Rows	Bottom rail

**Glazing Details:** The sash were exterior glazed with nominal 19 mm (3/4") thick insulating glass consisting of two sheets of 3 mm (1/8") clear annealed glass and an aluminum reinforced butyl spacer system embedded in sealant, single sealed. The insulating glass was set from the exterior against double-sided adhesive tape and secured with rigid vinyl glazing beads.

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
32 mm (1-1/4") wide by 7.9 mm (5/16") high weepslot with flap	2	Sill exterior face, one 108 mm (4-1/4") in from each end
32 mm (1-1/4") wide by 6.4 mm (1/4") high weepslot	2	Sill intermediate wall, one at each end through two walls
38 mm (1-1/2") wide by 4.7 mm (3/16") high weep notch	2	Sill insert, one at each end through three walls
9.5 mm (3/8") diameter hole	2	Sill insert adjacent to sash
9.5 mm (3/8") wide by from 3.2 mm (1/8") wide weepslot	2 (4)	Bottom rails, one 76 mm (3") in each end

**Test Specimen Description:** (Continued)

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal sweep lock and keepers	2 (4)	Lock stiles, one 305 mm (12") in from each end with corresponding keeper on fixed meeting stile
Roller assemblies	2 (4)	Bottom rails, one at each end

*Note: XOX quantities in parentheses.*

**Reinforcement:** The fixed meeting stiles contained a custom-shaped extruded aluminum reinforcement, reference Drawing No. RFSH5404AOM.

**Screen Construction:** The screen was constructed from roll-formed aluminum. The corners were square-cut and secured with snap-in plastic corner keys. Fiber mesh screen cloth was secured with a flexible vinyl spline.

**Installation:** The units were installed in wood bucks constructed from Spruce-Pine-Fir construction lumber and secured through the nailing fin with #8 x 51 mm (2") long truss screws spaced approximately 229 mm (9") on center. A nominal 5 mm (3/16") gap was maintained on the interior between the wood buck and test unit. The exterior nail fin perimeter was sealed with a silicone sealant.

**Test Results:** The temperature during testing was 21°C (70 °F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #1:</u></b> HS-R35 1829 x 1219 (72 x 48)			
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	76 N (17 lbf)	Report Only
	Maintain motion	53 N (12 lbf)	90 N (20 lbf)
	Latches	9 N (2 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	0.5 L/s/m <sup>2</sup> (0.10 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.

**Note #1:** *The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.*

5.3.3.2	Water Penetration Resistance per ASTM E 547		See Note #2
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**Note #2:** *The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".*

5.3.4.2	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	720 Pa (15.05 psf) (positive)	2.8 mm (0.11")	See Note #3
	720 Pa (15.05 psf) (negative)	2.5 mm (0.10")	See Note #3

**Note #3:** *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440-05 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

5.3.4.3	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	1080 Pa (22.57 psf) (positive)	0.3 mm (0.01")	4.4 mm (0.175") max.
	1080 Pa (22.57 psf) (negative)	0.3 mm (0.01")	4.4 mm (0.175") max.

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #1:</u></b> H-R35 1829 x 1219 (72 x 48) (Continued)			
5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Tests A1 through A7	No entry	No entry
	Sash Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated
5.3.6.3	Deglazing Test		
	In operating direction - 320 N (70 lbf)		
	Lock stile	6.4 mm (0.25")	11.4 mm (0.45")
	Jamb stile	6.4 mm (0.25")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Top rail	3.2 mm (0.25")	11.4 mm (0.45")
	Bottom rail	3.2 mm (0.25")	11.4 mm (0.45")
<u>Optional Performance</u>			
4.4.2.6	Water Penetration Resistance per ASTM E 547 (with and without insect screen)		
	260 Pa (5.43 psf)	No leakage	No leakage
4.4.2.6	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	2400 Pa (50.16 psf) (positive)	10.7 mm (0.42")	See Note #3
	2400 Pa (50.16 psf) (negative)	9.1 mm (0.36")	See Note #3
4.4.2.6	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	3600 Pa (75.24 psf) (positive)	0.8 mm (0.08")	4.4 mm (0.175") max.
	3600 Pa (75.24 psf) (negative)	<0.3 mm (<0.01")	4.4 mm (0.175") max.

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #2:</u></b> HS-R30 3048 x 1219* (120 x 48*)			
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	80 N (18 lbf)	Report Only
	Maintain motion	58 N (13 lbf)	90 N (20 lbf)
	Latches	9 N (2 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.</i>			
5.3.3.3	Water Penetration Resistance per ASTM E 547		See Note #2
5.3.4.2	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	720 Pa (15.05 psf) (positive)	3.3 mm (0.13")	See Note #3
	720 Pa (15.05 psf) (negative)	2.3 mm (0.09")	See Note #3
5.3.4.3	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	1080 Pa (22.57 psf) (positive)	0.3 mm (0.01")	4.4 mm (0.175") max.
	1080 Pa (22.57 psf) (negative)	0.3 mm (0.01")	4.4 mm (0.175") max.
5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Tests A1 through A7	No entry	No entry
	Sash Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #2:</u></b> HS-R30 3048 x 1219* (120 x 48*) (Continued)			
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated
5.3.6.3	Deglazing Test In operating direction - 320 N (70 lbf)		
	Lock stile	6.4 mm (0.25")	11.4 mm (0.45")
	Jamb stile	4.7 mm (0.19")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Top rail	3.2 mm (0.13")	11.4 mm (0.45")
	Bottom rail	3.2 mm (0.13")	11.4 mm (0.45")

Optional Performance

4.4.2.6	Water Penetration Resistance per ASTM E 547 (with and without insect screen) 220 Pa (4.60 psf)	No leakage	No leakage
4.4.2.6	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	1440 Pa (30.09 psf) (positive)	6.6 mm (0.26")	See Note #3
	1440 Pa (30.09 psf) (negative)	5.1 mm (0.20")	See Note #3
4.4.2.6	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	2160 Pa (45.14 psf) (negative)	0.5 mm (0.03")	4.4 mm (0.175") max.
	2160 Pa (45.14 psf) (negative)	0.3 mm (0.01")	4.4 mm (0.175") max.

**Test Specimen #3:** HS-R30 3048 x 1219 (120 x 48)

5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	71 N (16 lbf)	Report Only
	Maintain motion	53 N (12 lbf)	90 N (20 lbf)
	Latches	9 N (2 lbf)	100 N (22.5 lbf)

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #3:</u></b> HS-R30 3048 x 1219 (120 x 48) (Continued)			
5.3.2.1	Air Leakage Resistance per ASTM E 283 75 Pa (1.6 psf)	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.</i>			
5.3.3.4	Water Penetration Resistance per ASTM E 547		See Note #2
5.3.4.2	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	720 Pa (15.05 psf) (positive)	4.1 mm (0.16")	See Note #3
	720 Pa (15.05 psf) (negative)	3.8 mm (0.15")	See Note #3
5.3.4.3	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	1080 Pa (22.57 psf) (positive)	0.3 mm (0.01")	4.4 mm (0.175") max.
	1080 Pa (22.57 psf) (negative)	0.3 mm (0.01")	4.4 mm (0.175") max.
5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Tests A1 through A7	No entry	No entry
	Sash Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated

**Test Results:** (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
<b><u>Test Specimen #3:</u></b> HS-R30 3048 x 1219 (120 x 48) (Continued)			
5.3.6.3	Deglazing Test		
	In operating direction - 320 N (70 lbf)		
	Lock stile	4.7 mm (0.19")	11.4 mm (0.45")
	Jamb stile	4.7 mm (0.19")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Top rail	3.2 mm (0.13")	11.4 mm (0.45")
	Bottom rail	3.2 mm (0.13")	11.4 mm (0.45")

**Optional Performance**

4.4.2.6	Water Penetration Resistance per ASTM E 547 (with and without insect screen) 220 Pa (4.60 psf)	No leakage	No leakage
4.4.2.6	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	1440 Pa (30.09 psf) (positive)	37.3 mm (1.47")	See Note #3
	1440 Pa (30.09 psf) (negative)	6.4 mm (0.25")	See Note #3
4.4.2.6	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the right fixed meeting stile) (Loads were held for 10 seconds)		
	2160 Pa (45.14 psf) (positive)	0.8 mm (0.03")	4.4 mm (0.175") max.
	2160 Pa (45.14 psf) (negative)	0.8 mm (0.03")	4.4 mm (0.175") max.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

**Drawing Reference:** The test specimen drawings have been reviewed by Architectural Testing, Inc. and are representative of the test specimen reported herein.

**List of Official Observers:**

<u>Name</u>	<u>Company</u>
Mike Zilian	Veka Inc.
Mike Clay	Architectural Testing Inc.

This report is reissued in the name of Remodelers Supply Center through written authorization of Veka Inc. to whom the original report was rendered. The original Veka Inc. Report No. is 77608.01-501-47.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.



Digitally Signed by: Michael Clay

Michael Clay  
Laboratory Manager



Digitally Signed by: Lynn George

Lynn George  
Director – Regional Operations

MC:sld

Attachments (pages): This report is complete only when all attachments listed are included.  
Appendix-A: Alteration Addendum (1)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	06/05/09	N/A	Original report issue – Reissue of Report No. 77608.01-501-47 in the name of Remodelers Supply Center.

**Appendix A**  
**Alteration Addendum**

*Note: No alterations were required.*