



# NATIONAL CERTIFIED TESTING LABORATORIES

8350 PARKLINE BLVD. STE. 12 • ORLANDO, FLORIDA 32809 • TELEPHONE (407) 240-1356  
FAX (407) 240 - 8882  
www.nctlinc.com

Florida Building Code TAS 201-94  
Florida Building Code TAS 202-94  
Florida Building Code TAS 203-94

## STRUCTURAL, IMPACT & CYCLING TEST REPORT SUMMARY

### RENDERED TO:

Kommerling USA, Inc.  
3402 Stanwood Boulevard  
Huntsville, AL 35811

"PREMIDOOR" 88MM Lift & Slide Door OX

SUMMARY OF RESULTS			
<b>Installation: Screw Installation</b>			
Specimen 1	TAS 202	+ 55.0 psf.	- 55.0 psf.
Specimens 2, 3, 4	TAS 201/203	+ 55.0 psf.	- 55.0 psf.
Specimen 1			
<b>Air Infiltration per ASTM E283 in accordance with TAS 202-94</b>			
		Infiltration:	<0.01 cfm/ft <sup>2</sup>
<b>Water Penetration Resistance per ASTM E331 in accordance with TAS 202-94</b>			
		8.25 psf - Passed/No water penetration	
Specimen 1			
<b>Static Air Pressure per ASTM E330 in accordance with TAS 202-94</b>			
Design Load Pressure		+/- 55.0 psf	
Overload/ Structural Load Pressure		+/- 82.5 psf.	
<b>Forced Entry Resistance per ASTM F588 in accordance with TAS 202-94</b>			
		Passed - Grade 10	
Specimens 2, 3 & 4			
<b>Large Missile Impact/ Pressure Loading in accordance with TAS 201-94 and TAS 203-94</b>			
Impacts rejected without allowing penetration and the product shows no resultant failure or distress			

**Test Completion Date:** 12/14/17

Reference must be made to NCTL Report Number NCTL-210-4082-01 report dated 01/02/18 for complete test sample description and data.



03/21/28



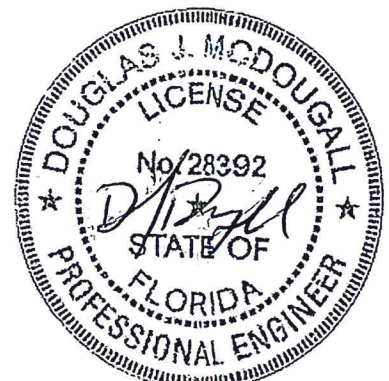
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National Certified Testing Laboratories

A handwritten signature in black ink, appearing to read "Mark Bennett", is written over a horizontal line.

Mark Bennett  
Manager of Testing Services



03/21/18



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Florida Building Code TAS 201-94  
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Florida Building Code TAS 203-94

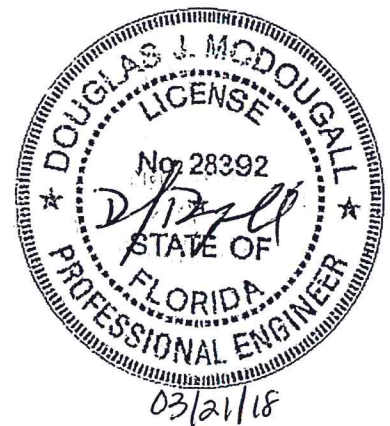
## STRUCTURAL, IMPACT & CYCLING PERFORMANCE TEST REPORT

### **NCTL-210-4082-01**

Kommerling USA, Inc.  
3402 Stanwood Boulevard  
Huntsville, AL 35811

REPORT NUMBER: NCTL-210-4082-01  
REPORT DATE: 01/02/18

"PREMIDOOR" 88MM  
Lift & Slide Door OX





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**Report Number** NCTL-210-4082-01

**Report Date** 01/02/18

**Report To** Kommerling USA, Inc.  
3402 Stanwood Boulevard  
Huntsville, AL 35811

**Test Start Date** 12/11/17  
**Test End Date** 12/14/17  
**Revision** 03/16/18

**Specification:** Florida Building Code TAS 201-94  
Impact Test Procedures  
Florida Building Code TAS 202-94  
Criteria for Testing Impact and Non-Impact Resistant Building Envelope  
Components using Uniform Static Air Pressure  
Florida Building Code TAS 203-94  
Criteria for Testing Products Subjected to Cyclic Pressure Loading

## Description of Sample Tested

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

**Model/Type** "PREMIDOOR" 88MM Lift & Slide Door OX

**Configuration** OX

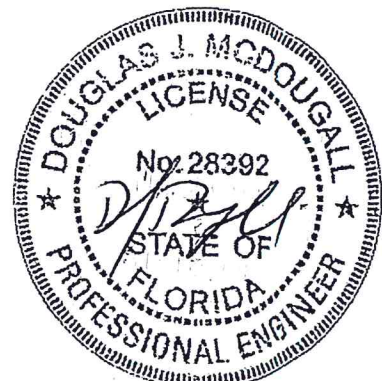
**Frame Size** 4572 mm x 2440 mm (180" x 96.06")

**Panel Size** Fixed and Active Panel  
2413 mm x 2305 mm (95" x 90.75")

**Viewing Area** 2210 mm x 2057 mm (87" x 81")

**Frame Type** Extruded vinyl

**Joint Construction** Frame & Panel  
Mitered, welded with corner keys



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The rigid vinyl head and jambs had an overall measurement of 207 mm x 65 mm (8.156" x 2.541"). The rigid vinyl main frame threshold had an overall measurement of 185.5 mm x 50 mm (7.309" x 1.97"). The aluminum sill cover had an overall measurement of 113.3 mm x 16.1 mm (4.64" x 0.63"). The aluminum connector had an overall measurement of 62.05 mm x 28.6 mm (2.713" x 1.113"). The aluminum head and jamb cover had an overall measurement of 99.2 mm x 20.3 mm (3.892" x 0.94"). The aluminum jamb cover had an overall measurement of 86 mm x 11.7 mm (3.366" x 0.461").

The top, bottom and rails shared the same rigid vinyl profile that had an overall measurement of 100 mm x 88 mm x 2.2 mm (3.938" x 3.466" x 0.106"). The cover profile had an overall measurement of 110 mm x 34.5 mm x 2.5 mm (4.334" x 1.339" x 0.099") and was used on the interlocking members and was secured using 25.4 mm (1") Phillips flat head screws located at approximately 50.8 mm (2") from the head and sill and approximately 146.05 mm (5.75") on center thereafter. The aluminum middle connector had an overall measurement of 50 mm x 23 mm x 2.01 mm (1.97" x 0.906" x 0.079"). Fixed panel top rail was secured to the test buck using (4) #14 x 215.9 mm (8.5") screws under the glass through the fixed panel and were located at approximately 292.1 mm (11.5") from the jamb frame and at approximately 781.05 mm, 1409.7 mm & 1968.5 mm (30.75", 55.5" & 77.5") from the fixed jamb. Fixed panel top rail was secured to the frame using (4) #14 x 133.35 mm (5.25") screws under the glass through the fixed panel and were located at approximately 177.8 mm (7") from the jamb frame and at approximately 838.2 mm, 1371.6 mm & 2070.1 mm (33", 54" & 81.5") from the fixed jamb. Fixed panel bottom rail was secured to the buck using (4) #14 x 215.9 mm (8.5") screws under the glass through the fixed panel and were located at approximately 292.1 mm (11.5") from the jamb frame and at approximately 781.05 mm, 1409.7 mm & 1968.5 mm (30.75", 55.5" & 77.5") from the fixed jamb. Fixed panel stile was secured to the buck using (4) #14 x 215.9 mm (8.5") screws under the glass through the fixed panel and were located at approximately 285.75 mm (11.25") from the head frame and at approximately 571.5 mm (22.5") on center thereafter. Fixed panel stile was secured to the frame using (4) #14 x 133.35 mm (5.25") screws under the glass through the fixed panel and were located at approximately 177.8 mm (7") from the head frame and at approximately 508 mm (20") on center thereafter.

**Glazing Components**

Overall

30.48 mm (1.18") Nominal (By ST. GOBAIN)

Glass Thickness

(1) Lite of 6.4 mm (0.25") nominal tempered glass to the exterior  
 (1) Lite of laminated glass to the interior

**Laminated Glass**

(2) Lites of 5 mm (0.1875") nominal heat strengthened glass separated by a 2.29 mm (0.090") "SentryGlas" interlayer by Kuraray America, Inc.

**Spacer Type/ Size**

9.65 mm (0.380") Swisspacer aluminum



**Glazing System**

Interior glazed with a silicone back-bedding "SikaFlex 552" and a snap-in (2)-leaf dual durometer rigid vinyl glazing bead with an overall measurement of 30.5 mm x 17.5 mm x 1.78 mm (1.20" x 0.689" x 0.07"). The glazing gasket (EPDM Rubber 70 Dur.) had an overall measurement of 11.2 mm (0.44") wide.

**Weatherstrip**

Type Interior frame gasket (EPDM Rubber 70 Dur.)  
 Size 15.7 mm (0.720") Wide  
 Location Interior panel top rail

Type Gasket (EPDM Rubber 70 Dur.)  
 Size 9.7 mm (0.720") Wide  
 Location Attached to aluminum connector profile

Type Gasket (EPDM Rubber 70 Dur.)  
 Size 9.7 mm (0.362") Wide  
 Location On interior and exterior of panel bottom rail

Type Sash gasket (EPDM Rubber 70 Dur.)  
 Size 9.7 mm (0.412") Wide  
 Location Inserted into the aluminum head and jamb cover

Type Sash gasket (EPDM Rubber 70 Dur.)  
 Size 9.7 mm (0.189") Wide  
 Location Underneath aluminum rolling track

**Operating Hardware**

Type Keepers  
 Location Located on active panel stile at approximately 476.3 mm, 1174.8 mm, 1625.6 mm & 2127.25 mm (18.75", 46.25", 64" & 83.75") from the frame head.

Type Locks  
 Location Located on active panel stile at approximately 476.3 mm, 1174.8 mm, 1625.6 mm & 2127.25 mm (18.75", 46.25", 64" & 83.75") from the frame head.

Type Handle set  
 Location Located on active panel stile at approximately 1003.3 mm (39.5") from bottom of panel

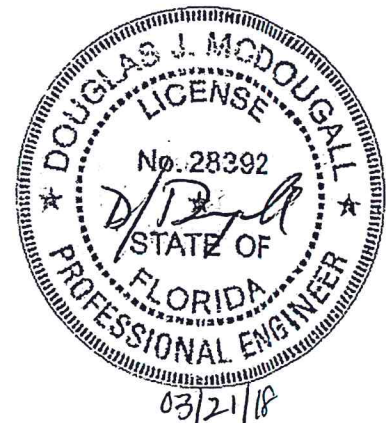
**Auxiliary**

Type Jamb spacing profile  
 Size 79.2 mm x 31.9 mm x 2.01 mm (3.12" x 1.257" x 0.079")  
 Location Fixed and active jambs

Type Aluminum connector adaptor  
 Size 63.9 mm x 27.3 mm (2.52" x 1.068)  
 Location Inserted inside frame head on active interior frame.



Type	Aluminum rolling track
Size	28.5 mm x 19.7 mm (1.12" x 0.776")
Location	Inserted inside frame sill on active interior frame.
Type	Aluminum connector profile
Size	39 mm x 12.9 mm x 2.01 mm (1.54" x 0.51" x 0.079")
Location	Inserted on active top rail.
<b>Reinforcement</b>	
Type	V191 Frame reinforcement (Galvanized Steel)
Size	70 mm x 35 mm x 1.5 mm (2.76" x 1.38" x 0.060")
Location	Frame
Type	V192 Panel reinforcement (Galvanized Steel)
Size	50 mm x 59 mm 2.01 mm (1.97" x 1.77" x 0.079")
Location	Panel horizontal and vertical rails
Type	Sash glazing reinforcement
Size	46 mm x 2.01 mm (1.81" x 0.079")
Location	Vertical rails
<b>Weep Description</b>	Weep holes without covers were located on the sill at approximately 114.3 mm (4.5") from each frame corner and approximately 768.35 mm (30.25") on center thereafter.
<b>Interior/Exterior Surface Finish</b>	White vinyl (PVC)
<b>Sealant</b>	
Location	Employed around interior & exterior perimeters of the frame sealed specimen to the wood test buck.
Material	Silicone
<b>Installation Method</b>	
Specimen 1, 2, 3 & 4	The specimen was installed in a 50.8 mm x 304.8 mm (2" x 12") spruce-pine-fir lumber test buck and was fastened #14 x 101.6 mm (4") flat head screws. (2) screws, in a double screw pattern, were located on the operable head and sill at approximately 685.8 mm (27") the interlock center point and at approximately 685.8 mm (27") on center thereafter. (1) screw was located on the fixed head and sill at approximately 685.8 mm (27") the interlock center point and at approximately 685.8 mm (27") on center thereafter. (2) screws, in a double screw pattern, were located on each jamb at approximately 241.3 mm (9.5") from each end and 673.1 mm (26.5") on center thereafter through each frame member. The exterior perimeter was sealed with silicone sealant.



**Test Results - TAS 202**

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Test Sequence: TAS 202

1. Air Infiltration
  2. 1/2 Test Pressure Positive
  3. 1/2 Test Pressure Negative
  4. Design Pressure Positive
  5. Design Pressure Negative
  6. Water Infiltration Positive Direction
  7. Full Test Pressure Positive
  8. Full Test Pressure Negative
  9. Forced Entrance Resistance
- 

Test Method  
ASTM E283-04(12)

Test  
Air Leakage Resistance

**Specimen 1**  
Information at 1.6 psf:

Maximum Allowable Infiltration Rate/ Area = 0.3 cfm/ft<sup>2</sup>  
= <0.01 cfm/ft<sup>2</sup>

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Test Method  
ASTM E331-00(09)

Test  
Water Resistance Test

**Specimen 1**  
The test specimen complies with the requirements of TAS 202 at 5.0 gph/ft<sup>2</sup>  
No Leakage after 1 cycle of 15 minutes at 396 Pa (8.25 psf)

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Test Method  
ASTM E330-14

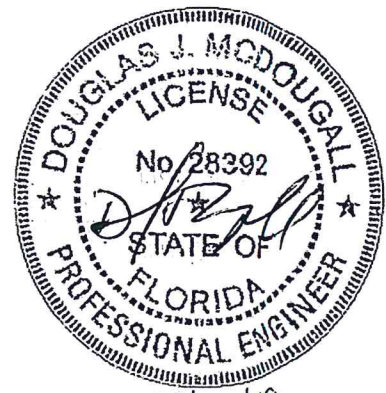
Test  
Static Air Pressure Tests

**Specimen 1**  
Half Test Load - ± 41.25 psf

Positive = No damage  
Negative = No damage

Design Loads - ± 55.0psf  
Midspan of fixed panel interlock

Measured Deflection <sub>Positive</sub> = 0.377 inches  
Measured Deflection <sub>Negative</sub> = 0.361 inches



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Test Loads - ± 82.5 psf

Midspan of fixed panel interlock

Measured Permanent Set <sub>Positive</sub> = 0.002 inches

Measured Permanent Set <sub>Negative</sub> = 0.001 inches

**NOTE:** Deflection and Permanent Set measurements taken on midspan of fixed panel interlock with a 0.4% x 2305.1 mm (90.75") permanent set limit.

**NOTE:** Upon completion of testing there was no structural distress indicative of failure

**Test Results - TAS 201**

Test

Large Missile Impact

Type and weight of missile

#2 Southern Yellow Pine 2x4, Length 92" & 9 lbs Speed 50.0 ft/ sec.

**Specimen 2**

Location

Impact

Midspan of Active Panel

Impact

Top Right Corner of Active Panel

Impact

Midspan of Interlock

**Specimen 3**

Impact

Midspan of Active Panel

Impact

Top Right Corner of Active Panel

Impact

Midspan of Interlock

**Specimen 4**

Impact

Midspan of Active Panel

Impact

Top Right Corner of Active Panel

Impact

Midspan of Interlock

**NOTE:** All missile impacts were rejected without penetration, tearing, or separation of the laminate. Shattered sacrificial and laminated glass. No visible damage to the frame was observed.

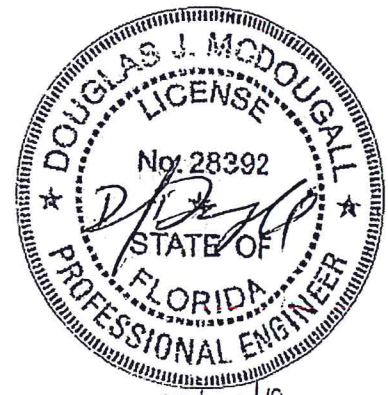
**Test Results - TAS 203**

Test

Cyclic Wind Pressure Loading

After completion of the impact tests, the test specimens were pressure cycled in accordance with Table 1626 of 2010 Florida Building Code Building.

Maximum Cyclic Load Test Pressure: +55.0 psf & -55.0 psf



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**Specimens 2, 3, 4**

Positive Loads

Range of Test	Actual				# of Cycles
+0.2 to +0.5 DP	11.0	psf to	27.5	Psf	3,500
+0.0 to +0.6 DP	0.0	psf to	33.0	Psf	300
+0.5 to +0.8 DP	27.5	psf to	44.0	Psf	600
+0.3 to +1.0 DP	16.5	psf to	55.0	Psf	100

Negative Loads

Range of Test	Actual				# of Cycles
-0.3 to -1.0 DP	16.5	psf to	55.0	psf	50
-0.5 to -0.8 DP	27.5	psf to	44.0	psf	1,050
-0.0 to -0.6 DP	0.0	psf to	33.0	psf	50
-0.2 to -0.5 DP	11.0	psf to	27.5	psf	3,350

**NOTE:** Specimens showed no resultant failure distress or permanent deformation with a recovery of at least 90% over maximum deflection after cycle test. No failure of fasteners or separation of glass from the frame.

Test Method  
ASTM F842-13

Test  
Forced Entry Resistance

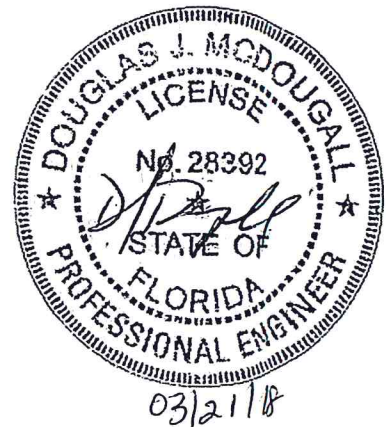
Type A SGD Assembly/ Grade 10: = Pass

Test	Results	Allowed
Hardware Manipulation Test	No Entry	No Entry
Test A1	No Entry	No Entry
Test A2	No Entry	No Entry
Test A3	No Entry	No Entry
Test A4	No Entry	No Entry
Test A5	No Entry	No Entry
Test A7	No Entry	No Entry
Hardware Manipulation Test	No Entry	No Entry

Test Observers

Mark Bennett	NCTL, Inc.
Christopher Bennett	NCTL, Inc.
Douglas J. McDougall	P.E.

Where required, plastic film (2-mil) was used to seal against air leakage. The film did not affect the performance of the specimens or influence the results of the tests. All tests were conducted in accordance with the TAS 201, TAS 202 and TAS 203 test methods. Upon completion of all testing, the specimens meet

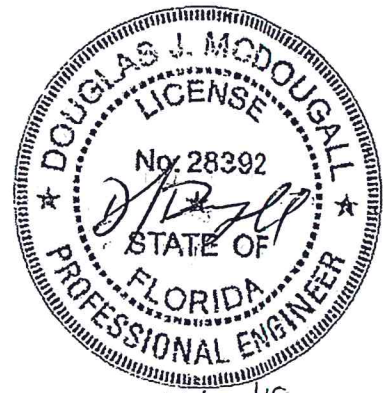


the requirements of Sections 1606, 1620 and 1626 of the "Florida Building Code, Building" and the TAS 201, 202 and 203 protocols.

This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client and it does not constitute certification of this product. The results are for the particular specimen tested and do not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. All testing was performed in compliance with the referenced test method or specification and any deviations are noted. Ambient conditions during the referenced testing are available upon request. Any film employed during testing had no effect upon test results.

The test specimen was supplied to NCTL by the above named client. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the ASTM E330-02(10) test. Forced entry resistance test equipment used is in compliance with Section 7 of the ASTM F842-13 test method. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. Component drawings were reviewed for product verification. The bill of materials contains details with any deviations noted. Ambient conditions during the referenced testing are available upon request. A copy of this report along with representative sections of the test specimen will be retained by NCTL. This report does not constitute certification or approval of the product, which may only be granted by a certification program validator or recognized approval entity. All tests were conducted in full compliance with the referenced specifications and/or test methods. This report may not be reproduced, except in full, without the written consent of NCTL.



03/21/18

**National Certified Testing Laboratories**



Mark Bennett  
Manager of Testing Services



Christopher Bennett  
Division Manager

MB/ cb

Attachments

NCTL Certification No.: 16-0218.06

Douglas J. McDougall, P.E.  
Florida Registration No. 28392  
3180 Demaret Drive  
Titusville, Florida 32780  
(321) 298-8982 – CELL PHONE  
(321) 383-5097 – HOME PHONE



**APPENDIX A**

**Section 1:**

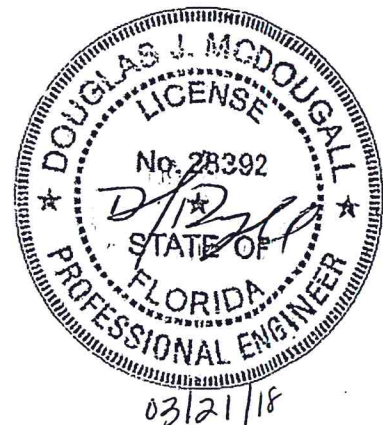
Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were reviewed (as submitted) for Product Verification (Reference: NCTL-210-4082-01)

See Attached Documentation;  
any deviations noted.

Note: The above referenced component drawings along with representative sections of the test specimen will be retained per procedure by NCTL. This testing facility assumes that all information provided by the client is accurate.

**Section 2:**

<u>Identification</u>	<u>Date</u>	<u>Revision</u>
Original Issue	01/02/18	Not Applicable
Revision 1	03/16/18	Changed laminated glass description



APPENDIX B  
DRAWINGS



03/21/18