

# FLEETWOOD WINDOWS & DOORS ACOUSTICAL PERFORMANCE TEST REPORT

**SCOPE OF WORK**

ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A 3800-T, OO FIXED WINDOW

**REPORT NUMBER**

I6982.01-303-11 R0

**TEST DATE(S)**

09/18/18

**ISSUE DATE**

10/03/18

**RECORD RETENTION END DATE**

09/18/22

**PAGES**

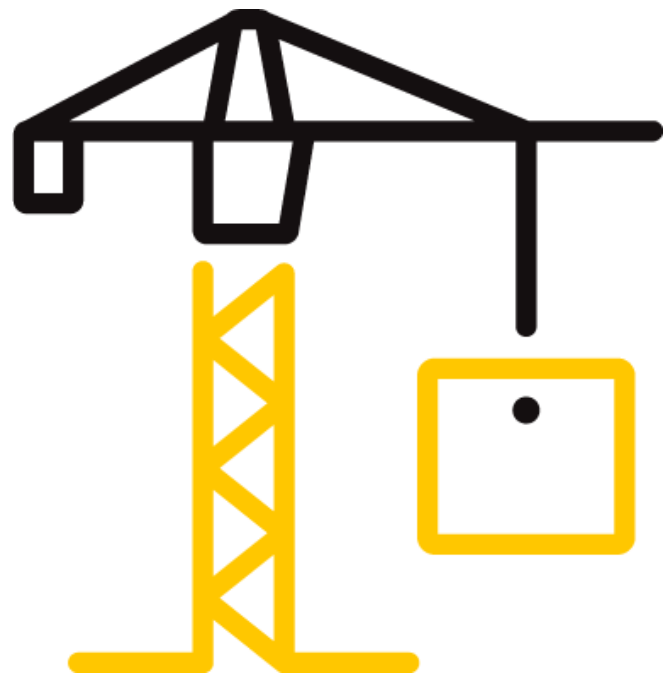
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## TEST REPORT FOR FLEETWOOD WINDOWS & DOORS

Report No.: I6982.01-303-11 R0

Date: 10/03/18

### REPORT ISSUED TO

#### FLEETWOOD WINDOWS & DOORS

P.O. Box 1086

Corona, California 92878

### SECTION 1

#### SCOPE

Intertek Building & Construction (B&C) was contracted by Fleetwood Windows & Doors to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located in Lake Forest, California.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

### SECTION 2

#### SUMMARY OF TEST RESULTS

<b>SERIES/MODEL</b>	3800-T
<b>TYPE</b>	OO Fixed Window
<b>GLAZING (Nominal Dimensions)</b>	1-1/2" IG (3/8" Laminated Exterior, 3/4" Air Space, 3/8" Laminated Interior), Glass Temperature 75° F
<b>DATA FILE NO.</b>	I6982.01
<b>STC</b>	41
<b>OITC</b>	32

For INTERTEK B&C:

**COMPLETED BY:** Ryan R. Lau  
**TITLE:** Technician II  
**SIGNATURE:**  
**DATE:** 10/03/18

**REVIEWED BY:** Leeland S. Hoover  
**TITLE:** Laboratory Manger  
**SIGNATURE:**  
**DATE:** 10/03/18

RRL:LSH:ab

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## TEST REPORT FOR FLEETWOOD WINDOWS & DOORS

Report No.: I6982.01-303-11 R0

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### SECTION 3

#### TEST METHOD(S)

The specimens were evaluated in accordance with the following with the exceptions stated in the Test Procedure section of this report:

**ASTM E90-09 (2016)**, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

**ASTM E413-16**, *Classification for Rating Sound Insulation*

**ASTM E1332-16**, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

**ASTM E2235-04 (2012)**, *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

### SECTION 4

#### SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. A filler wall-reducing element was used to adjust the test opening size to accommodate the test specimen. The reducing element consisted of a double 2x6 wood stud wall construction with three layers of 5/8" drywall on both sides. The stud cavities in the wall were insulated with two layers of R-19 fiberglass insulation. The specimen was placed on an isolation pad in the custom test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

## TEST REPORT FOR FLEETWOOD WINDOWS & DOORS

Report No.: I6982.01-303-11 R0

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### SECTION 5 EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00627	10/17 *
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00395	10/17 *
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00396	10/17 *
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00239	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00240	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00241	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00242	04/17
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT00243	04/17
Receive Room Microphone	PBC Piezotronics	378C20	Microphone and Preamplifier	INT00244	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00245	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00246	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00247	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00228	04/17
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00299	10/17
Source Room Environmental Indicator	Comet	T7510	Source Room	INT00300	10/17
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	INT00288	06/17

\*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

#### TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	231 m <sup>3</sup>	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	196 m <sup>3</sup>	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

N/A-Not Applicable

## TEST REPORT FOR FLEETWOOD WINDOWS & DOORS

Report No.: I6982.01-303-11 R0

Date: 10/03/18

### SECTION 6

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Corey Jones	Fleetwood Windows & Doors
Ryan R. Lau	Intertek B&C
David A. Pendleton	Intertek B&C

### SECTION 7

#### TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted.

The transmission loss values were obtained for a single direction of measurement.

Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions.

Two sound pressure levels were made simultaneously in the receive and source rooms at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

Intertek B&C will store samples of test specimens for four years.

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### SECTION 8

#### ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

#### STC Rating

To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

#### OITC Rating

The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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Report No.: I6982.01-303-11 R0

Date: 10/03/18

### SECTION 9

#### SPECIMEN DESCRIPTION

	FRAME	FIXED 1	FIXED 2
<b>SIZE</b>	96-1/4" by 96-1/8"	N/A	N/A
<b>THICKNESS</b>	4-1/2"	N/A	N/A
CORNERS	Coped	N/A	N/A
FASTENERS	Screws	N/A	N/A
SEAL METHOD	Sealant	N/A	N/A
<b>MATERIAL</b>	Aluminum	N/A	N/A
REINFORCEMENT	N/A	N/A	N/A
THERMAL BREAK MATERIAL	Insulbar	N/A	N/A
<b>DAYLIGHT OPENING SIZE</b>	N/A	45-1/2" by 93-1/4"	45-1/2" by 93-1/4"

<b>MEASURED OVERALL INSULATION GLASS UNIT THICKNESS</b>	1.495"
<b>SPACER TYPE</b>	Aluminum Box

	EXTERIOR SHEET	GAP	INTERIOR SHEET
<b>MEASURED THICKNESS</b>	0.155", 0.061", 0.156"	0.755"	0.154", 0.059", 0.155"
<b>MUNTIN PATTERN</b>	N/A	N/A	N/A
<b>MATERIAL</b>	Laminated	Air*	Laminated
<b>LAMINATE MATERIAL</b>	PVB	N/A	PVB

<b>GLAZING METHOD</b>	Exterior
<b>GLAZING MATERIAL</b>	Foam tape
<b>GLAZING BEAD MATERIAL</b>	Aluminum

	TYPE	QUANTITY	LOCATION
<b>WEATHERSTRIP</b>	N/A	N/A	N/A
<b>HARDWARE</b>	N/A	N/A	N/A
<b>DRAINAGE</b>	Weep slots (1/2" by 1/8")	4	Sill

<b>TOTAL WEIGHT (lbs)</b>	<b>AVERAGE WEIGHT (lbs / ft<sup>2</sup>)</b>
588	9.15

\* - Stated per Client/Manufacturer, N/A-Not Applicable

The client did not supply a report drawing of the test specimen.

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Report No.: I6982.01-303-11 R0

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### SECTION 10

#### TEST RESULTS

#### ASTM E90 AIRBORNE SOUND TRANSMISSION LOSS



TEST DATE	09/18/18				
DATA FILE NO.	I6982.01				
CLIENT	Fleetwood Windows & Doors				
DESCRIPTION	Series/Model: 3800-T OO Fixed Window with 1-1/2" IG (3/8" Laminated Exterior, 3/4" Air Space, 3/8" Laminated Interior), Glass Temperature 75°F				
SPECIMEN AREA	5.97 m <sup>2</sup>	RECEIVE TEMP.	22.4 °C	SOURCE TEMP	19.6 °C
TECHNICIAN	RRL	RECEIVE HUMIDITY	50%	SOURCE HUMIDIT	53%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m <sup>2</sup> )	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	37.0	4.8	101	78	25	1.44	-
100	32.8	4.7	101	82	21	1.31	-
125	37.2	5.0	104	80	24	1.91	1
160	43.4	5.4	104	80	25	1.10	3
200	36.4	6.8	103	78	24	0.68	7
250	23.2	7.2	103	71	32	0.48	2
315	17.7	7.0	104	69	34	0.50	3
400	20.3	6.1	104	67	36	0.44	4
500	18.0	5.5	103	65	39	0.35	2
630	19.0	5.7	104	63	41	0.26	1
800	19.1	5.7	104	62	42	0.32	1
1000	12.4	5.9	104	61	43	0.28	1
1250	6.3	6.1	102	58	43	0.26	2
1600	4.9	6.6	101	58	43	0.22	2
2000	4.8	7.7	103	57	45	0.19	0
2500	4.1	8.4	103	52	50	0.17	0
3150	4.2	9.7	102	46	54	0.12	0
4000	4.6	11.8	102	44	55	0.29	0
5000	5.0	14.9	100	40	57	0.42	-
STC RATING	41 (Sound Transmission Class)						
DEFICIENCIES	29 (Sum of Deficiencies)						
OITC RATING	32 (Outdoor-Indoor Transmission Class)						

- Notes:**
- 1) Receive Room levels less than 5 dB above the Background levels are red.
  - 2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
  - 3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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Date: 10/03/18

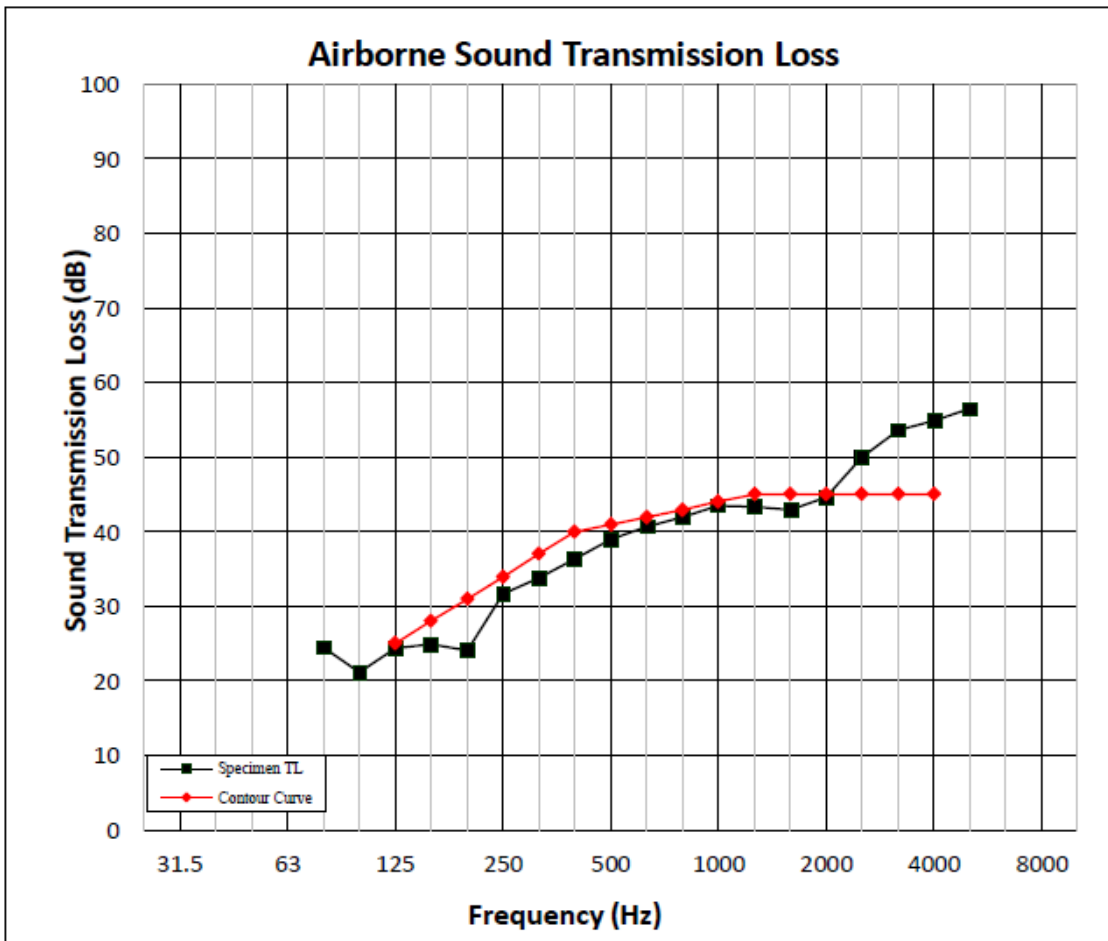
### SECTION 11

#### RESULTS GRAPH

#### ASTM E90 AIRBORNE SOUND TRANSMISSION LOSS



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Report No.: I6982.01-303-11 R0

Date: 10/03/18

### SECTION 12 PHOTOGRAPHS



Source Room View of Test Specimen



Receive Room View of Test Specimen



Total Quality. Assured.

25800 Commercentre Drive  
Lake Forest, California 92630

Telephone: 949-460-9600  
Facsimile: 717-764-4129  
[www.intertek.com/building](http://www.intertek.com/building)

## TEST REPORT FOR FLEETWOOD WINDOWS & DOORS

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### SECTION 13

#### REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/03/18	N/A	Original Report Issue