



E6094.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E90

Rendered to:

CARDINAL COMMERCIAL PRODUCTS

Series/Model: CCW725 Captured

Type: Two-Lite Curtain Wall

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
E6094.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	32	27

Reference should be made to Intertek-ATI Report No. E6094.01-113-11 for complete test specimen description. This page alone is not a complete report. Flanking limit tests and reference specimen tests are available upon request.



Acoustical Performance Test Report

CARDINAL COMMERCIAL PRODUCTS
4795 Shepherdsville Road
Louisville, Kentucky 40218

Report No	E6094.01-113-11
Test Date	04/08/15
Report Date	04/15/15

Project Scope

Architectural Testing, Inc., an Intertek Company (“Intertek-ATI”), was contracted to conduct a sound transmission loss test. The complete test data is included as Appendix B of this report. The client provided the test specimen.

Test Methods

Testing for this project was conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

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

ASTM E413-10, *Classification for Rating Sound Insulation*

ASTM E1332-10a, *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*

Test Procedure

All measurements were conducted in the HT test chambers at Intertek-ATI located in York, Pennsylvania. 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 twenty-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.

Specimen Installation

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

The specimen plug was removed from the filler wall assembly. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen frame, 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 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 may not exceed 32. The maximum deficiency at any one frequency may 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.

Specimen Descriptions

		Frame
Size	78-3/4" by 78-3/4"	
Thickness	7"	
	Corners	Butted
	Fasteners	Screws
	Seal Method	Sealant
Material	Aluminum	
	Reinforcement	N/A
	Thermal Break Material	N/A
Daylight Opening Size	35-3/8" by 73-3/4"	

N/A-Not Applicable

Specimen Descriptions (Continued)

Measured Overall Insulation Glass Unit Thickness	0.970"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.226"	0.518"	0.226"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered	Air*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Exterior
Glazing Material	Compression gasket
Glazing Bead Material	Aluminum, pressure plate with compression gasket

	Type	Quantity	Location
Weatherstrip			
	No weatherstrip		
Hardware			
	No hardware		
Drainage			
	1/4" Weep hole	8	Four in head, four in sill

Total Weight (lbs)	Average Weight (lbs/ft²)
338	7.84

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

Comments

A drawing of the test specimen is included in Appendix D. Intertek-ATI will store samples of the test specimen for four years.

Intertek-ATI will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

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 tested. This report is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

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For INTERTEK-ATI:

Daniel P. Platts
Senior Technician - Acoustical Testing

Todd D. Kister
Laboratory Supervisor – Acoustical Testing

DPP:jmc

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (2)
- Appendix-C: Photographs (1)
- Appendix-D: Drawing (1)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
R0	04/15/15	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition card	65127	04/14 *
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	12/14
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	65103	05/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64906	12/14
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	11/14
Receive Room Environmental Indicator	Vaisala	HMW92	Temperature Humidity Sensor	64286	06/14
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature and Humidity Sensor	Y002653	06/14
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	65105	04/14

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

Test Chamber:

	Volume	Description
Receive Room	234 m ³ (8291.3 ft ³)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m ³ (7296.3 ft ³)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable



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Appendix B

Complete Test Results



AIRBORNE SOUND TRANSMISSION LOSS
ASTM E 90

Test Date	04/08/15						
Data File No.	E6094.01						
Client	Cardinal Commerical Products						
Description	Series/Model: CCW725 Captured, two-lite curtain wall system with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)						
Specimen Area	4.00 m ²	Receive Temp.	21.7 °C		Source Temp.	21.6 °C	
Technician	Daniel P. Platts	Receive Humidity	49%		Source Humidity	47%	

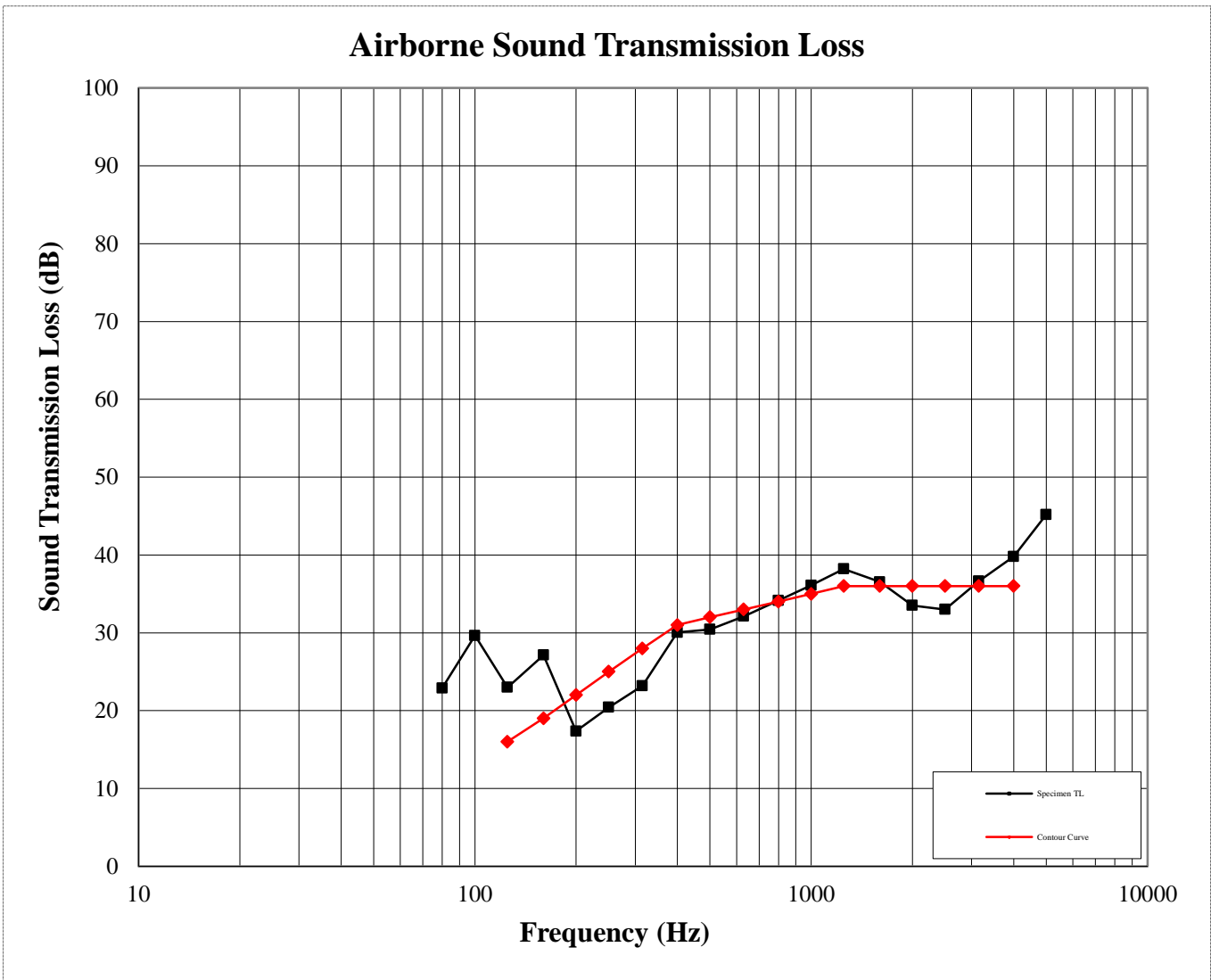
Freq (Hz)	Background SPL (dB)	Absorption (m ²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	38.7	5.1	104	82	22.9	2.09	-
100	36.1	4.8	105	76	29.6	1.56	-
125	39.2	4.6	105	81	23.0	1.15	0
160	42.0	4.6	106	78	27.1	1.03	0
200	40.2	4.9	106	87	17.4	0.72	5
250	36.2	5.2	106	84	20.4	0.53	5
315	28.9	5.6	101	76	23.2	0.44	5
400	25.1	5.8	101	69	30.0	0.27	1
500	22.1	6.3	100	68	30.4	0.47	2
630	21.0	5.9	101	67	32.1	0.21	1
800	18.9	6.0	101	65	34.2	0.32	0
1000	15.1	6.0	99	61	36.1	0.36	0
1250	12.2	6.7	97	57	38.2	0.23	0
1600	10.2	7.0	101	62	36.5	0.26	0
2000	9.0	7.5	99	63	33.5	0.15	2
2500	5.4	8.4	97	61	33.0	0.32	3
3150	5.1	9.9	98	57	36.6	0.13	0
4000	5.4	12.2	97	52	39.8	0.23	0
5000	5.9	15.7	95	44	45.2	0.22	-

STC Rating **32** *(Sound Transmission Class)*
Deficiencies **24** *(Sum of Deficiencies)*
OITC Rating **27** *(Outdoor-Indoor Transmission Class)*

Notes:
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.
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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Data File No.	E6094.01					
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Description	Series/Model: CCW725 Captured, two-lite curtain wall system with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)					
Specimen Area	4.00 m ²	Receive Temp.	21.7 °C		Source Temp.	21.6 °C
Technician	Daniel P. Platts	Receive Humidity	49%		Source Humidity	47%



Appendix C

Photographs



Receive Room View of Installed Test Specimen



Source Room View of Installed Test Specimen



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Appendix D

Drawing

