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FABRITRAK SYSTEMS, INC.
ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM C423 SOUND ABSORPTION TESTING ON BAFFLES

REPORT NUMBER
K3668.02-113-11-R0

TEST DATE
11/13/19

ISSUE DATE
12/09/19

PAGES
13

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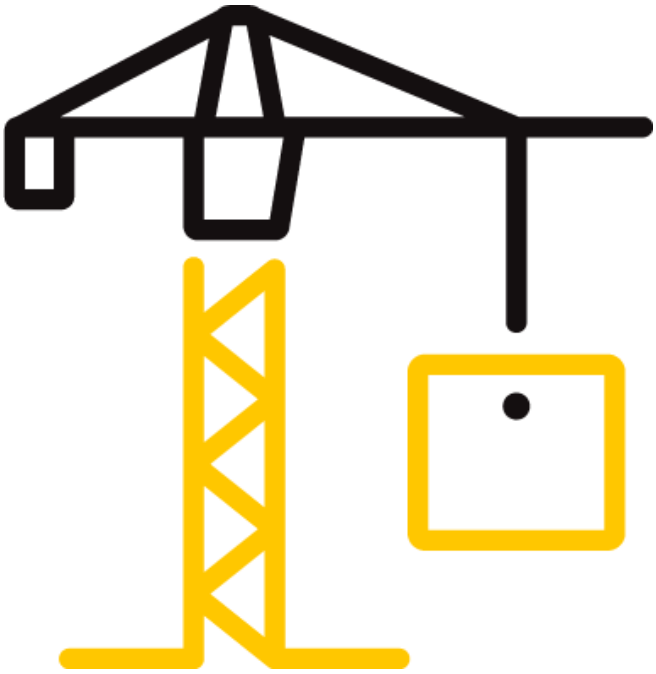

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Report No.: K3668.02-113-11-R0
Date: 12/09/19

REPORT ISSUED TO

FABRITRAK SYSTEMS, INC.
111 West Park Drive
Mt. Laurel, New Jersey 08054

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by FabriTrak Systems, Inc. to perform a sound absorption test. Results obtained are tested values and were secured by using the designated test methods. 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 York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Andrew M. Johnston	**REVIEWED BY:**	Kurt A. Golden
TITLE:	Technician Acoustical Testing	**TITLE:**	Project Lead Acoustical Testing
SIGNATURE:	Digitally Signed by: Andrew Johnston	**SIGNATURE:**	Digitally Signed by: Kurt A. Golden
DATE:	12/09/19	**DATE:**	12/09/19

AMJ:jmcs

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SECTION 2
SUMMARY OF TEST RESULTS

SERIES/MODEL	Terra Core Poly
SAMPLE TYPE	1" Baffles
CALCULATION	M^2/unit
MOUNTING TYPE	Type J

DATA FILE NO.	**1/3 OCTAVE SOUND ABSORPTION M^2/unit AT THE OCTAVE BAND FREQUENCIES**					
	125	**250**	**500**	**1000**	**2000**	**4000**
K3668.01B	0.23	0.43	0.65	0.93	1.05	1.10

SERIES/MODEL	Terra Core Poly
SAMPLE TYPE	1" Baffles
CALCULATION	Area foot print encompassing the 8-panel configuration*
MOUNTING TYPE	J

DATA FILE NO.	**1/3 OCTAVE SOUND ABSORPTION COEFFICIENTS AT THE OCTAVE BAND FREQUENCIES**						**NRC***	**SAA***
	125	**250**	**500**	**1000**	**2000**	**4000**		
K3668.01B2	0.20	0.36	0.55	0.79	0.89	0.94	0.65	0.66

** See Note in Section 8*

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM C423-17, *Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method*

ASTM E795-16, *Standard Practices for Mounting Test Specimens During Sound Absorption Tests*

SECTION 4
SPECIMEN MOUNTING

For Type J mounting the flat panels were suspended 24" off the floor vertically in four parallel rows with two panels per row. The panels were spaced 12" apart in each row and spaced 30" on center between each row. Panels were suspended using client supplied zip tie hangers and wire.

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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	PXI-4462	Data Acquisition Card	65125*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	65126*	05/18
Data Acquisition Card	National Instruments	PXI-4462	Data Acquisition Card	63763-3*	04/18
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	12/18
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	10/19
Receive Room Environmental Indicator	Comet	T7510	Receive Room	64915	01/19
Microphone Calibrator	Norsonic	1251	Acoustical Calibrator	Y002919	04/19

**- 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	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Andrew M. Johnston	Intertek B&C
Zachary P. Golden	Intertek B&C

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SECTION 7
TEST PROCEDURE

The sensitivity of the microphones was checked before measurements were conducted. Empty room sound absorption measurements were conducted before the specimen was installed. Full room sound absorption measurements were conducted after the specimen was installed.

For the empty and full room measurements, ten decay measurements were conducted at each of the five microphone positions. Data was obtained at 1/3 octave band frequencies ranging from 80 to 5000 hertz. The air temperature and relative humidity conditions were monitored and recorded during the measurements.

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

SECTION 8
TEST CALCULATIONS

TYPE J (M^2/UNIT CALCULATION)
The Sound Absorption Coefficient is the full room absorption minus the empty room absorption divided by the area of the sample in m^2. The Sound Absorption Coefficient is dimensionless.

AREA FOOT PRINT ENCOMPASSING THE 8-PANEL CONFIGURATION CALCULATION (Method 1)
The Noise Reduction Coefficient (NRC) rating is the arithmetic average of the sound absorption coefficients at 250, 500, 1000 and 2000 hertz. The average is rounded to the nearest multiple of 0.05.

The Sound Absorption Average (SAA) rating is the arithmetic average of the sound absorption coefficients at the frequencies ranging from 200 to 2500 hertz. The average is rounded to the nearest multiple of 0.01.

The area used in the calculation was comprised from the 8-panel configuration of hanging panels (90" by 108"), then adding an additional perimeter area to the overall foot print.

The size of additional perimeter area width was not an equal distance around the entire perimeter. On the sides where the panels were separated by 30", the perimeter was an additional 15" wide. On the sides where the panels were separated by 12", the perimeter was an additional 6" wide.

The total additional perimeter area used for the calculation was 100 ft^2 (122" by 120").

A drawing of the additional area used is in Section 12.

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***Note**: ASTM is currently working on the **Area Food Print Encompassing the 8-Panel Configuration Calculation (Method 1)** using the area calculation for NRC and SAA for hanging spaced baffles, but it has not been approved yet to date. The results should not be used as comparison to specimens that were tested in a single rectangular configuration. The results will be considered as the apparent noise reduction coefficient (NRC) rating and Sound Absorption Average (SAA).*

SECTION 9
TEST SPECIMEN DESCRIPTION

SERIES/MODEL	1" Terra Core Poly
SAMPLE TYPE	Baffles
MOUNTING TYPE	J

Eight, 1.22 m by 0.61 m (48" by 24"), panels were arranged to produce the test specimen. The total weight of the test specimen was 11.61 kg (25.6 lbs).

DESCRIPTION	THICKNESS	DENSITY	WEIGHT
FabriTrak Terra Core Poly Baffles	25.4 mm 1"	76.77 kg/m^3 4.80 lbs/ft^3	1.95 kg/m^2 0.40 lbs/ft^2

Photographs are included in Section 11.

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SECTION 10
TEST RESULTS

K3668.01B DATA

NO. OF UNITS	8.00	
MOUNTING TYPE	J	
	EMPTY	**FULL**
TEMP °C	20.2	20.3
RH %	49	49
B.P. (mb)	999	999

FREQ (Hz)	**EMPTY ROOM ABSORPTION** (m^2)	**UNCERTAINTY**	**FULL ROOM ABSORPTION** (m^2)	**UNCERTAINTY**	**ABSORPTION (M^2 per Unit)**	**RELATIVE UNCERTAINTY**
80	5.47	0.711	6.80	0.381	0.170	0.081
100	5.37	0.631	6.74	0.617	0.170	0.089
125	5.93	0.415	7.79	0.313	0.230	0.053
160	5.20	0.068	7.78	0.082	0.320	0.011
200	4.75	0.191	7.71	0.092	0.370	0.021
250	5.20	0.078	8.62	0.048	0.430	0.009
315	5.33	0.041	9.43	0.052	0.510	0.007
400	5.52	0.022	10.21	0.040	0.590	0.005
500	5.64	0.052	10.85	0.151	0.650	0.016
630	5.20	0.030	11.40	0.029	0.770	0.004
800	5.29	0.020	12.15	0.021	0.860	0.003
1000	5.34	0.019	12.76	0.023	0.930	0.003
1250	5.60	0.019	13.62	0.019	1.000	0.003
1600	5.66	0.016	13.99	0.008	1.040	0.002
2000	5.65	0.012	14.05	0.044	1.050	0.005
2500	5.98	0.012	15.01	0.084	1.130	0.009
3150	6.33	0.013	15.16	0.006	1.100	0.001
4000	6.89	0.005	15.73	0.005	1.100	0.001
5000	7.53	0.013	16.33	0.005	1.100	0.001

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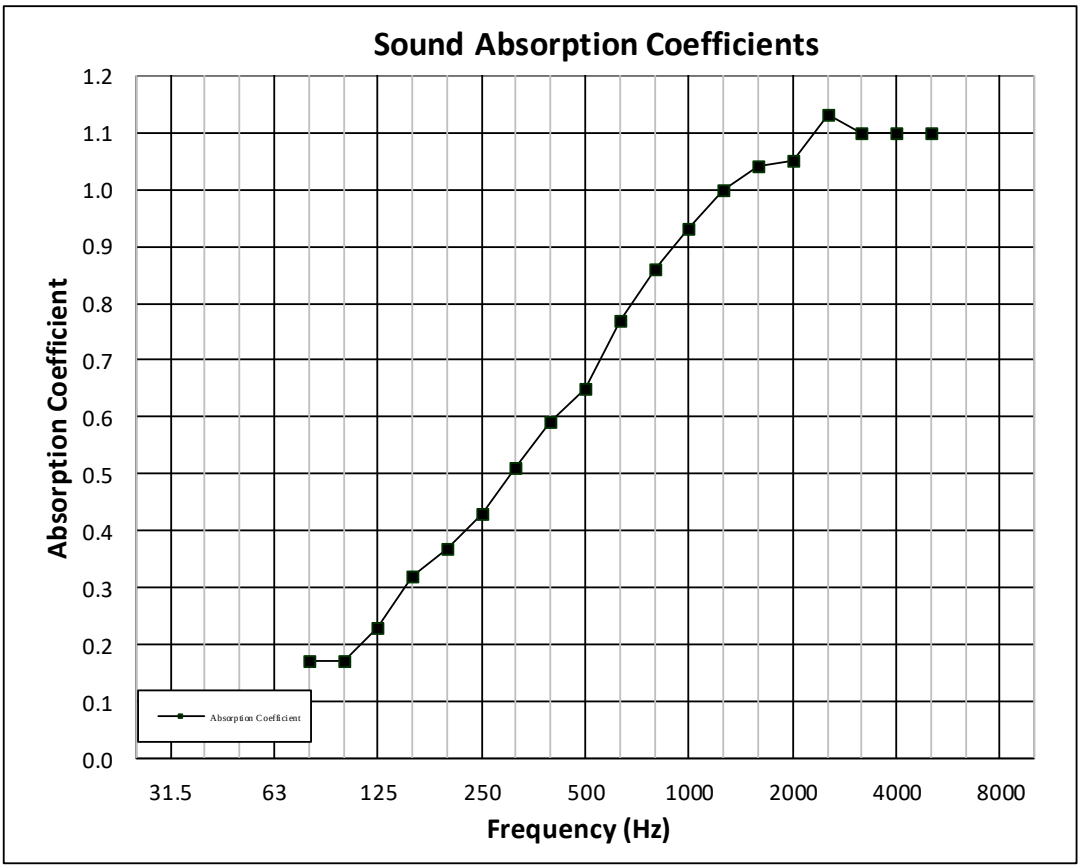
K3668.01B GRAPH



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K3668.01B2 FOOT PRINT DATA

SPECIMEN AREA	9.45 m²
MOUNTING TYPE	Type J

	EMPTY	**FULL**
TEMP °C	20.2	20.3
RH %	49	49
B.P. (mb)	999	1000

FREQ (Hz)	**EMPTY ROOM ABSORPTION** (m^2)	**UNCERTAINTY**	**FULL ROOM ABSORPTION** (m^2)	**UNCERTAINTY**	**ABSORPTION COEFFICIENT**	**RELATIVE UNCERTAINTY**
80	5.47	0.711	6.80	0.381	0.14	0.085
100	5.37	0.631	6.74	0.617	0.14	0.093
125	5.93	0.415	7.79	0.313	0.20	0.055
160	5.20	0.068	7.78	0.082	0.27	0.011
200	4.75	0.191	7.71	0.092	0.31	0.022
250	5.20	0.078	8.62	0.048	0.36	0.010
315	5.33	0.041	9.43	0.052	0.43	0.007
400	5.52	0.022	10.21	0.040	0.50	0.005
500	5.64	0.052	10.85	0.151	0.55	0.017
630	5.20	0.030	11.40	0.029	0.66	0.004
800	5.29	0.020	12.15	0.021	0.73	0.003
1000	5.34	0.019	12.76	0.023	0.79	0.003
1250	5.60	0.019	13.62	0.019	0.85	0.003
1600	5.66	0.016	13.99	0.008	0.88	0.002
2000	5.65	0.012	14.05	0.044	0.89	0.005
2500	5.98	0.012	15.01	0.084	0.96	0.009
3150	6.33	0.013	15.16	0.006	0.93	0.002
4000	6.89	0.005	15.73	0.005	0.94	0.001
5000	7.53	0.013	16.33	0.005	0.93	0.001

NRC RATING	0.65	*(Noise Reduction Coefficient)*
SAA RATING	0.66	*(Sound Absorption Average)*

Notes:

1) The NRC rating is the arithmetic average of the sound absorption coefficients at 250, 500, 1000, and 2000 hertz. The average is rounded to the nearest multiple of 0.05.
2) The SAA rating is the arithmetic average of the sound absorption coefficients at the frequencies ranging from 200 to 2500 hertz. The average is rounded to the nearest multiple of 0.01.

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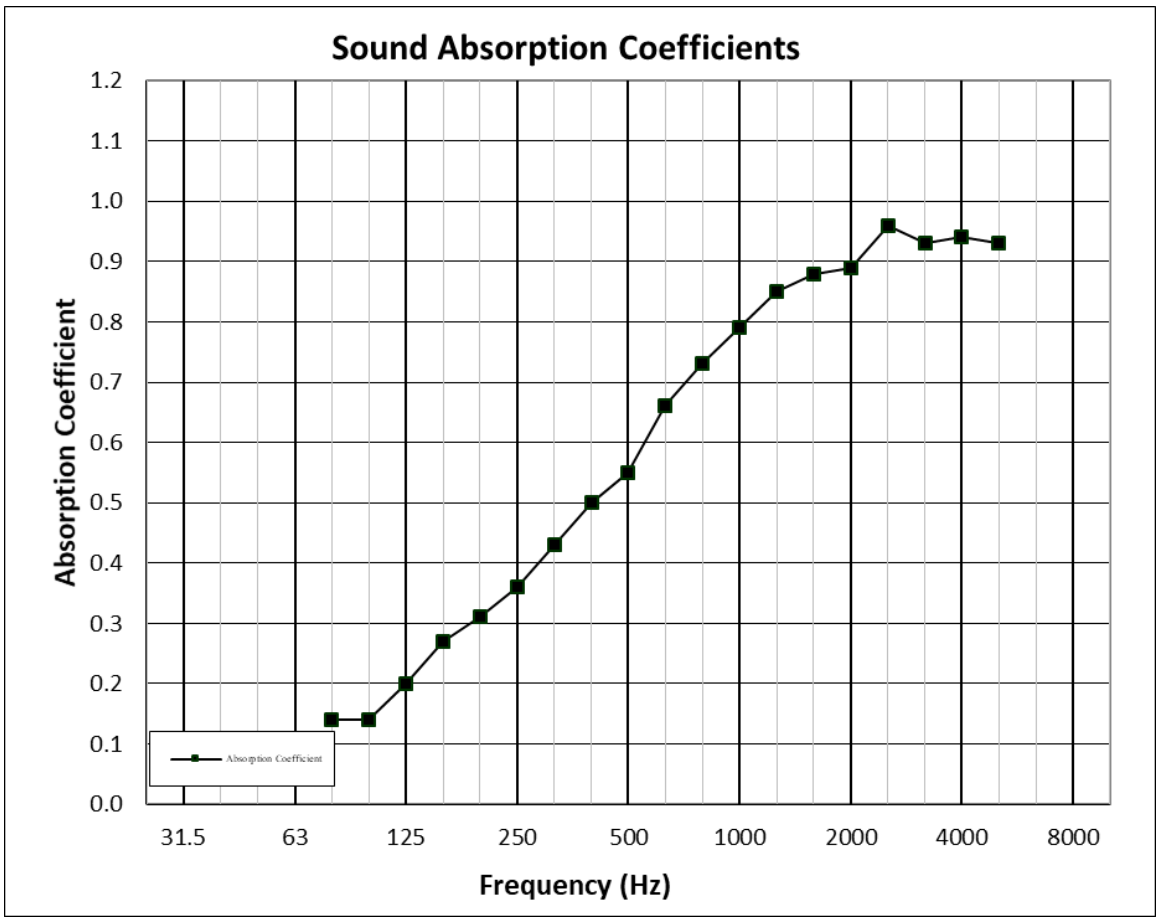
K3668.01B2 FOOT PRINT GRAPH



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SECTION 11
PHOTOGRAPHS

Photo No. 1
Photograph of Installed Test Specimen

Photo No. 2
Side View of Test Specimen

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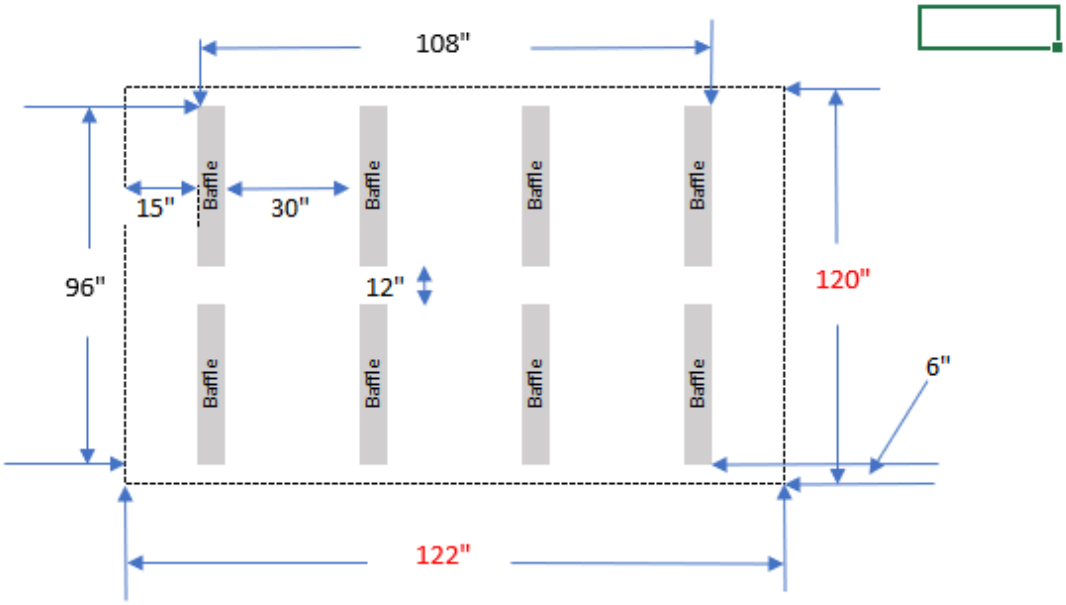
SECTION 12
DRAWING

AREA FOOT PRINT ENCOMPASSING THE 8-PANEL CONFIGURATION CALCULATION



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SECTION 13
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	12/09/19	N/A	Original Report Issue