NORTH ORBIT ACOUSTIC LABORATORIES

REPORT NUMBER	NOAL 25-03006
TEST METHOD	ASTM C423-23e1: *Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method*
TEST SPONSOR	Cutting Edge Deck LLC, 12543 Unison Road, Houston, TX 77044
ISSUED TO	Cutting Edge Deck LLC, 12543 Unison Road, Houston, TX 77044
TEST SPECIMEN	3.0NA Acoustic Roof Deck
RESULT SUMMARY	NRC 0.80 SAA 0.79
TEST DATE	March 6, 2025
REPORT DATE	March 17, 2025
TEST SITE	North Orbit Acoustic Laboratory Facility, 917 Rice Street, St. Paul, MN 55117
TECHNICIAN	D. Berg

CONTENTS

ELECTRONICALLY REPRODUCED SIGNATURE

DAVID M MERG – LABORATORY MANAGER

ELECTRONICALLY REPRODUCED SIGNATURE

HEIDE GROSS – LABORATORY QUALITY MANAGER

ilac-MRA A2LA ACCREDITED

ISSUED TO Cutting Edge Deck LLC
12543 Unison Road
Houston, TX 77044

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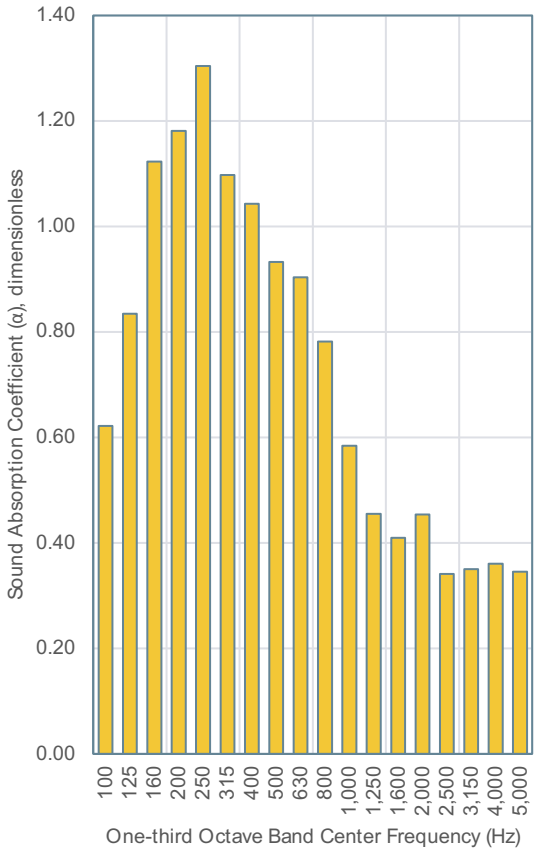
REPORT DATE March 17, 2025

SECTION A – DATA SUMMARY

NRC 0.80; SAA 0.79



FREQUENCY Hz	ABSORPTION COEFFICIENT α / dimensionless
100	0.62
125	0.83
160	1.12
200	1.18
250	1.30
315	1.10
400	1.04
500	0.93
630	0.90
800	0.78
1,000	0.58
1,250	0.46
1,600	0.41
2,000	0.45
2,500	0.34
3,150	0.35
4,000	0.36
5,000	0.35

SPECIMEN SUMMARY

Mounting	Type A Mounting - Test specimen laid directly against the test surface.
Identification	3.0NA Acoustic Roof Deck
Description	3.0NA Acoustic Roof Deck mounted over 2" rigid fiberglass - encapsulated insulation in flutes

See Section C on page 4 for a full specimen description.

SECTION B – APPROACH

INSTALLATION

The specimen was installed for testing at the Saint Paul, MN acoustic laboratory facility. The specimen description provided by the client can be found in Section C on page 4 of this report. Some details of the specimen design are proprietary and have been withheld at the request of the test sponsor.

Qualified representatives from North Orbit Acoustic Laboratories observed or performed the installation and inspected all major elements when completed and prior to testing.

Upon completion of the test, the specimen materials were returned to the test sponsor.

TEST METHODS

North Orbit Acoustic Laboratory (NOAL) is accredited through A2LA certificate number 4240.01 for this test method.

Test methods follow the published standards listed below.

> **ASTM C423-23e1:** *Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method*
>
> **ASTM E795-23:** *Standard Practices for Mounting Test Specimens During Sound Absorption Tests*

All results reported herein were derived from tests performed in full accordance with test method ASTM C423, except the decay slope was determined from 30 dB of measurement points in each band. Specifically, 30 dB was substituted for 25 dB in Equation 4 of Section 11.3 of the method. The laboratory and measurement systems fully meet all requirements of the test standard and the requirements of ASTM C423 Annex A3 with the same exception: *Tests to Qualify the Reverberation Room*. Measurement procedures and reverberation room descriptions and qualification documents are available upon request.

TEST REPORTS

This report does not constitute certification of the specimen under test, nor an opinion or endorsement by this laboratory. The report applies only to the specimen tested and may not be reproduced, except in full, without the permission of the client or test sponsor. It is the exclusive property of the test sponsor so named herein.

CONFIDENTIALITY

The test sponsor has full control over this information. Any release of information will be only to the test sponsor. The specific testing results are deemed to be confidential exclusively for the test sponsor's use. Reproduction of this report, except in full, is prohibited.

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SECTION C – SPECIMEN DESCRIPTION

The test specimen was designated as a 3.0NA acoustic roof deck by the test sponsor. The deck was installed over 2" FSK rigid fiberglass and with 0.83 PCF. encapsulated fiberglass insulation in white poly strips within the metal flutes. Four metal deck pieces were fastened together at the seam with four #10 x 1" S-12 screws and placed over the rigid fiberglass board. The exposed edge of the metal deck and fiberglass insulation was enclosed by four 20-gauge metal L angles that measured 1" x 3"and totaled 452" in length.

The specimen was installed according to Type A Mounting as specified in ASTM E795. Type A Mounting is the test specimen laid directly against the test surface, in this case, the bare concrete floor of the test chamber. The perimeter of the metal frame was sealed with 2" duct tape.

SPECIMEN OVERVIEW	
Mounting Condition	Type A Mount (ASTM E795)
Specimen Thickness	0.13 m [5.0"]
Coverage Dimensions	2.44 m x 3.31 m [96.0" x 130"]
Coverage Area	8.06 m² [86.8 SF]
Overall Mass	123 kg [271 lb]

SPECIMEN DETAIL OF METAL DECK	
Material	Fluted metal roof deck
Individual Dimensions	4 @ 2.4 m x 0.851 m [96.0" x 33.5"]
Overall Thickness	0.076 m [3.0"]
Metal Thickness	0.934 mm [0.037"]
Total Mass	85.73 kg [189.0lbs]
Perforation Diameter	3.96 mm [0.156"]
Perforation Pitch	60 ° staggered center, 9.53 mm [0.375"] on center, 8.31 mm [0.327"] on center
Open Area	15.69 %
Flute Spacing	0.203 m [8.0"] on center
Flute Maximum Width	0.111 m [4.375"]
Flute Minimum Width	0.053 m [2.06"]

SPECIMEN DETAIL OF INSULATED FLUTE	
Material	Encapsulated fiberglass insulation
Individual Dimensions	17 @ 2.44 m x 0.102 m [96.0" x 4.0"]
Thickness	0.077 m [3.0"]
Mass	4.26 kg [9.40 lb]
Density	13.29 kg/m³ [0.829 PCF]

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SECTION C - SPECIMEN DESCRIPTION CONT.

SPECIMEN DETAIL OF INSULATED BASE	
Material	FSK faced rigid insulation board
Total Dimensions	3.31 m x 2.44 m [130”x 96.0”]
Thickness	0.051 m [2.0”]
Mass	21.55 kg [47.50lb]
Density	52.70 kg/m^3 [3.29 PCF]

SPECIMEN DETAIL OF ACESSORIES	
Material	Metal L Angles
Dimensions	.076 m x .025 m x 11.5 m [3.0”x 1.0” x 452”]
Mass	11.34 kg [25.0lb]

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SECTION D – MEASUREMENT SET-UP

TEST ENVIRONMENT	
Chamber Temperature	20.9 °C [69.6 °F]
Chamber Relative Humidity	43.6%
Atmospheric Pressure	98.37 kPa [29.05" Hg]
Chamber Volume	348.3 m³ [12,300 CF]

INSTRUMENTATION

DESCRIPTION	BRAND	MODEL	SERIAL
Analyzer	Sinus	Apollo	7510
Software	Sinus	Samurai	ver. 2.8.3
Microphone	Brüel & Kjær	4166	1727058
Preamplifier	Brüel & Kjær	2669	2300986
Calibrator	Brüel & Kjær	4231	2314028
Thermohygrometer	Kestrel	5200	2807716

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SECTION E – TEST RESULTS

FREQUENCY BAND	TOTAL ABSORPTION AREA		ABSORPTION COEFFICIENTS
Hz	m²	SF	α / dimensionless
100	5.01	54.0	0.62
125	6.73	72.5	0.83
160	9.06	97.5	1.12
200	9.53	102.5	1.18
250	10.52	113.2	1.30
315	8.85	95.3	1.10
400	8.41	90.5	1.04
500	7.52	81.0	0.93
630	7.29	78.4	0.90
800	6.30	67.9	0.78
1,000	4.71	50.7	0.58
1,250	3.67	39.5	0.46
1,600	3.31	35.6	0.41
2,000	3.66	39.4	0.45
2,500	2.75	29.6	0.34
3,150	2.82	30.4	0.35
4,000	2.91	31.3	0.36
5,000	2.79	30.0	0.35
		SAA	0.79
		NRC	0.80