

1512 S BATAVIA AVENUE  
GENEVA, IL 60134  
630-232-0104

An ALION Technical Center

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FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

SPONSOR: **ezoBord**  
Mississauga, Ontario, Canada

Sound Absorption  
**RAL™-A21-252**

CONDUCTED: 2021-04-07

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ON: Summit-Yumuska (corrugated) - Type A mounting

### TEST METHODOLOGY

Riverbank Acoustical Laboratories™ is accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) as an ISO 17025:2017 Laboratory (NVLAP Lab Code: 100227-0) and for this test procedure. The test reported in this document conformed explicitly with ASTM C423-17: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-16: "Standard Practices for Mounting Test Specimens During Sound Absorption Tests." A description of the measurement procedure and room specifications are available upon request. The results presented in this report apply to the sample as received from the test sponsor.

### INFORMATION PROVIDED BY SPONSOR

The test specimen was designated by the sponsor as Summit-Yumuska (corrugated) - Type A mounting. The following nominal product information was provided by the sponsor prior to testing. The accuracy of such sponsor-provided information can affect the validity of the test results.

#### Product Under Test

Trade Name: Summit-Yumuska  
Manufacturer: ezoBord

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

Through a full internal inspection performed on the test specimen, Riverbank personnel verified the following information:

#### Test Specimen

Materials: Adhered semirigid felt panel shells with steel and felt structural supports, open at wider base  
Quantity: 4 shells  
Geometry: Trapezoidal profile; base widths @ 595 mm (23.425 in.) and 390 mm (15.354 in.), height @ 229 mm (9.0 in.)  
Center corrugation; maximum width @ 203 mm (7.992 in.), minimum width @ 94 mm (3.701 in.), depth @ 117 mm (4.6 in.)  
Shell Thickness: 12 mm (0.472 in.)  
Length: 2438 mm (96 in.)

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### Test Specimen (continued)

Supports: Felt panels (3) oriented perpendicular to length of shells, centered over midline, spaced 814 mm (32.0 in.) on center  
Steel T-beams (2), 42 mm (1.654 in.) high by 24 mm (0.945 in.) wide, oriented parallel to and spanning full length of shells, spaced 410 mm (16.142 in.) on center, adhered to matching penetrations in felt panel supports and side panels of shells

Overall Weight: 31.3 kg (69 lbs)  
Installation: Open face mated to horizontal test surface

### Overall Specimen Properties

Size: 2.39 m (94.0 in) wide by 2.44 m (96.0 in) long  
Thickness: 0.23 m (9.0 in)  
Weight: 31.3 kg (69.0 lbs)  
Mass per Unit Area: 5.38 kg/m<sup>2</sup> (1.1 lbs/ft<sup>2</sup>)  
Calculation Area: 5.822 m<sup>2</sup> (62.67 ft<sup>2</sup>)

### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.7 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 60.6 % ± 1.0 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 98.0 kPa (Requirement not defined)

### MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Per sponsor request, the perimeter edges were left exposed, as would be typical of a field installation of the product under test.

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Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of specimen material, corrugated profile

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Figure 3 – Underside of individual shell, felt and steel supporting members

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### TEST RESULTS

Specimen total absorption and absorption coefficient are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages.

| 1/3 Octave Center<br>Frequency<br>(Hz) | Total Absorption<br>(m <sup>2</sup> ) | Total Absorption<br>(Sabins) | Absorption<br>Coefficient |
|--|---------------------------------------|------------------------------|---------------------------|
| 100                                    | 3.70                                  | 39.79                        | 0.63                      |
| ** 125                                 | 5.13                                  | 55.19                        | 0.88                      |
| 160                                    | 4.71                                  | 50.74                        | 0.81                      |
| 200                                    | 6.28                                  | 67.57                        | 1.08                      |
| ** 250                                 | 6.66                                  | 71.65                        | 1.14                      |
| 315                                    | 7.10                                  | 76.38                        | 1.22                      |
| 400                                    | 7.20                                  | 77.45                        | 1.24                      |
| ** 500                                 | 7.49                                  | 80.58                        | 1.29                      |
| 630                                    | 6.84                                  | 73.58                        | 1.17                      |
| 800                                    | 6.68                                  | 71.88                        | 1.15                      |
| ** 1000                                | 7.21                                  | 77.62                        | 1.24                      |
| 1250                                   | 7.43                                  | 79.94                        | 1.28                      |
| 1600                                   | 7.39                                  | 79.50                        | 1.27                      |
| ** 2000                                | 7.75                                  | 83.40                        | 1.33                      |
| 2500                                   | 7.90                                  | 85.07                        | 1.36                      |
| 3150                                   | 7.91                                  | 85.16                        | 1.36                      |
| ** 4000                                | 8.05                                  | 86.66                        | 1.38                      |
| 5000                                   | 8.13                                  | 87.51                        | 1.40                      |

**SAA = 1.23**

**NRC = 1.25**

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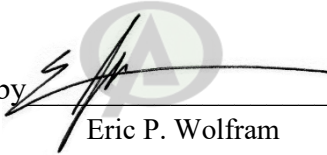
### TEST RESULTS (continued)

The sound absorption average (SAA) is defined in ASTM C423-17 Section 3.1.1 as the arithmetic average of the sound absorption coefficients of a material for the twelve one-third octave bands from 200 Hz through 2500 Hz, inclusive, rounded to the nearest integer multiple of 0.01.

The noise reduction coefficient (NRC) is defined from previous versions of ASTM C423 as the arithmetic average of the sound absorption coefficients at 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz, rounded to the nearest integer multiple of 0.05.

Tested by   
Marc Sciaky  
Senior Experimentalist

Report by   
Malcolm Kelly  
Acoustical Test Engineer

Approved by   
Eric P. Wolfram  
Laboratory Manager

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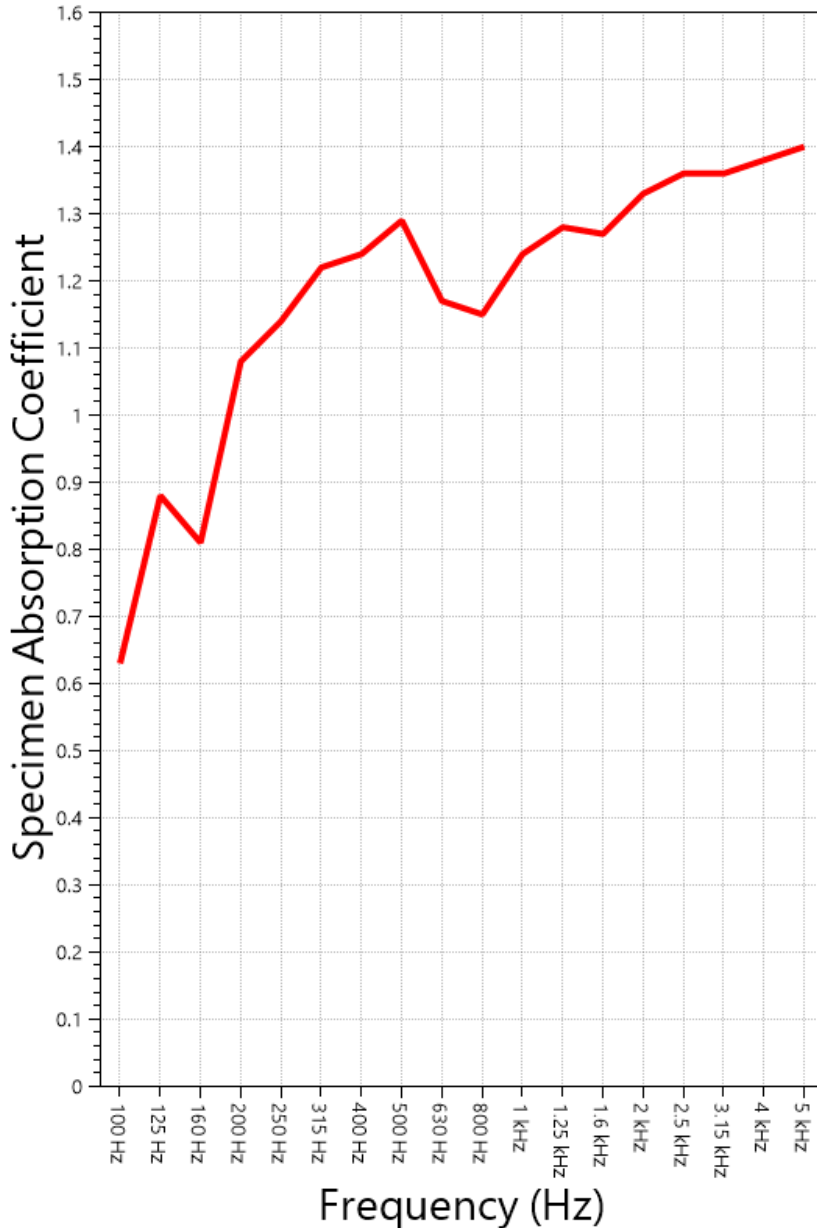
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SOUND ABSORPTION REPORT

Summit-Yumuska (corrugated) - Type A mounting



**SAA = 1.23**  
**NRC = 1.25**



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### APPENDIX A: Extended Frequency Range Data

Specimen: Summit-Yumuska (corrugated) - Type A mounting (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-17, but extend beyond the defined frequency range of 100Hz to 5,000Hz. These unofficial results are representative of the RAL test environment only and intended for research & comparison purposes.*

| 1/3 Octave Band<br>Center Frequency<br>(Hz) | Total Absorption<br>(Sabins) | Absorption<br>Coefficient |
|---|------------------------------|---------------------------|
| 31.5  | 3.34                         | 0.05                      |
| 40  | 1.84                         | 0.03                      |
| 50  | 25.76                        | 0.41                      |
| 63  | 15.33                        | 0.24                      |
| 80  | 34.54                        | 0.55                      |
| 100   | 39.79                        | 0.63                      |
| 125   | 55.19                        | 0.88                      |
| 160   | 50.74                        | 0.81                      |
| 200   | 67.57                        | 1.08                      |
| 250   | 71.65                        | 1.14                      |
| 315   | 76.38                        | 1.22                      |
| 400   | 77.45                        | 1.24                      |
| 500   | 80.58                        | 1.29                      |
| 630   | 73.58                        | 1.17                      |
| 800   | 71.88                        | 1.15                      |
| 1000  | 77.62                        | 1.24                      |
| 1250  | 79.94                        | 1.28                      |
| 1600  | 79.50                        | 1.27                      |
| 2000  | 83.40                        | 1.33                      |
| 2500  | 85.07                        | 1.36                      |
| 3150  | 85.16                        | 1.36                      |
| 4000  | 86.66                        | 1.38                      |
| 5000  | 87.51                        | 1.40                      |
| 6300  | 89.57                        | 1.43                      |
| 8000  | 92.44                        | 1.48                      |
| 10000                                       | 94.96                        | 1.52                      |
| 12500                                       | 100.57                       | 1.60                      |



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### **APPENDIX B: Instruments of Traceability**

Specimen: Summit-Yumuska (corrugated) - Type A mounting (See Full Report)

| <b><u>Description</u></b>      | <b><u>Model</u></b> | <b><u>Serial Number</u></b> | <b><u>Date of Certification</u></b> | <b><u>Calibration Due</u></b> |
|--------------------------------|---------------------|-----------------------------|-------------------------------------|-------------------------------|
| System 1                       | Type 3160-A-042     | 3160-106968                 | 2020-06-26                          | 2021-06-26                    |
| Bruel & Kjaer Mic And Preamp A | Type 4943-B-001     | 2311428                     | 2020-09-30                          | 2021-09-30                    |
| Bruel & Kjaer Pistonphone      | Type 4228           | 2781248                     | 2020-08-12                          | 2021-08-12                    |
| EXTECH Hygro 639               | SD700               | A.103639                    | 2020-12-18                          | 2021-12-18                    |

### **APPENDIX C: Revisions to Original Test Report**

Specimen: Summit-Yumuska (corrugated) - Type A mounting (See Full Report)

| <b><u>Date</u></b> | <b><u>Revision</u></b> |
|--------------------|------------------------|
| 2021-04-09         | Original report issued |

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END