

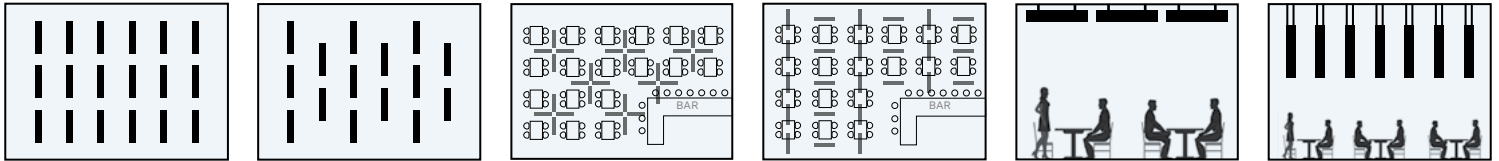
## Understanding this Document

The layout you choose to suspend your baffles in, will have an impact on their performance. The tests on the following pages will show how density, spacing and suspension height effect acoustic performance, allowing you to optimize your design accordingly.

The key figure to look for is 'Array NRC.' This is the NRC (Noise Reduction Coefficient) value of the panel when placed in the particular array situation. Compare this to the panel's NRC when hanging by itself and you'll see the benefits of certain array layouts over others.

### General Principles

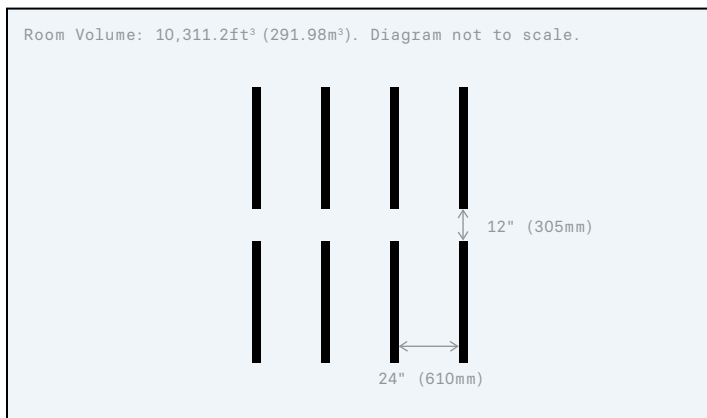
- **Density:** The number of baffles in a given area will determine the rate of sound absorption. This can vary depending on room size and noise levels.
- **Pattern:** Spread evenly for general sound control or alternate panel direction to absorb sound waves moving in multiple directions. Using a grid like 'tic-tac-toe' layout will improve the performance as more random energy will be absorbed in the room. Suspending the baffles in both X and Y axes will capture noise in both directions.
- **Suspension Height:** Leave a minimum 3" (76mm) of air space between the panel and ceiling, up to a maximum of 75" (150cm). Panels can be suspended horizontally or vertically.



## Array Variations

### Array 1 (Pages 3-12)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
 2x4 grid, 24" (610mm) between rows  
 12" (305mm) between panels in row  
 Suspended 30.25" (768mm) from the ceiling  
 RAL™A24-480 Test

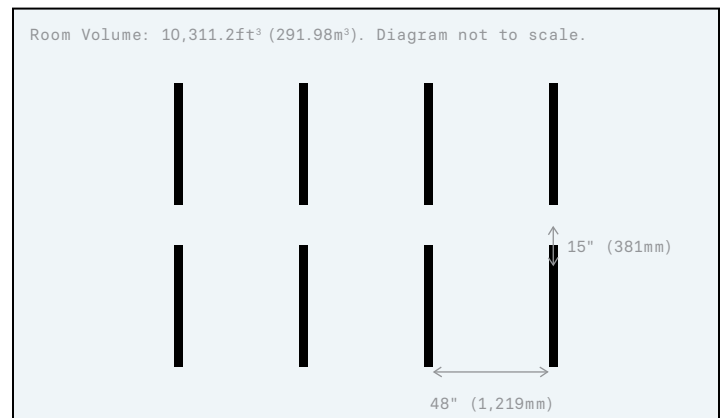


**Array-NRC: 1.05**

over 79.87ft² (7.42m²) of extended continuous surface area

### Array 2 (Pages 13-21)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
 2x4 grid, 48" (1,219mm) between rows  
 15" (381mm) between panels in row  
 Suspended 33" (838mm) from the ceiling  
 RAL™A24-483 Test



**Array-NRC: 0.55**

over 172.22ft² (16m²) of extended continuous surface area



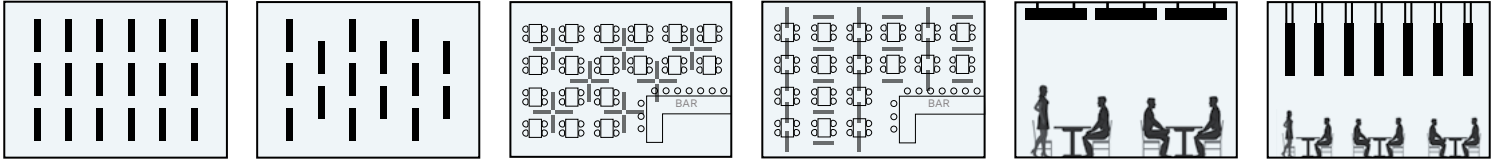
## Understanding this Document

The layout you choose to suspend your baffles in, will have an impact on their performance. The tests on the following pages will show how density, spacing and suspension height effect acoustic performance, allowing you to optimize your design accordingly.

The key figure to look for is 'Array NRC.' This is the NRC (Noise Reduction Coefficient) value of the panel when placed in the particular array situation. Compare this to the panel's NRC when hanging by itself and you'll see the benefits of certain array layouts over others.

### General Principles

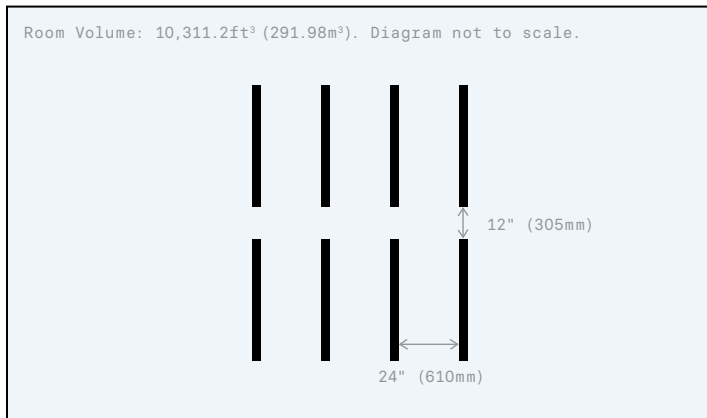
- **Density:** The number of baffles in a given area will determine the rate of sound absorption. This can vary depending on room size and noise levels.
- **Pattern:** Spread evenly for general sound control or alternate panel direction to absorb sound waves moving in multiple directions. Using a grid like 'tic-tac-toe' layout will improve the performance as more random energy will be absorbed in the room. Suspending the baffles in both X and Y axes will capture noise in both directions.
- **Suspension Height:** Leave a minimum 3" (76mm) of air space between the panel and ceiling, up to a maximum of 75" (150cm). Panels can be suspended horizontally or vertically.



## Array Variations

### Array 3 (Pages 22-31)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
 2x4 grid, 24" (610mm) between rows  
 12" (305mm) between panels in row  
 Suspended 32" (813mm) from the ceiling  
 RAL™A24-481 Test

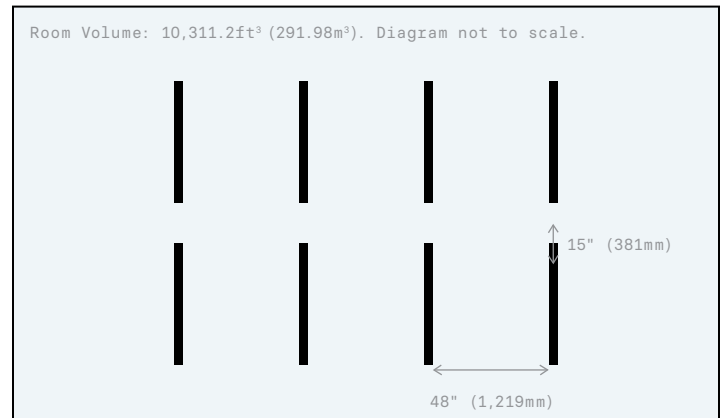


**Array-NRC: 0.95**

over 80.08ft² (7.44m²) of extended continuous surface area

### Array 4 (Pages 32-40)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
 2x4 grid, 48" (1,219mm) between rows  
 15" (381mm) between panels in row  
 Suspended 32.5" (826mm) from the ceiling  
 RAL™A24-482 Test



**Array-NRC: 0.50**

over 172.22ft² (16m²) of extended continuous surface area

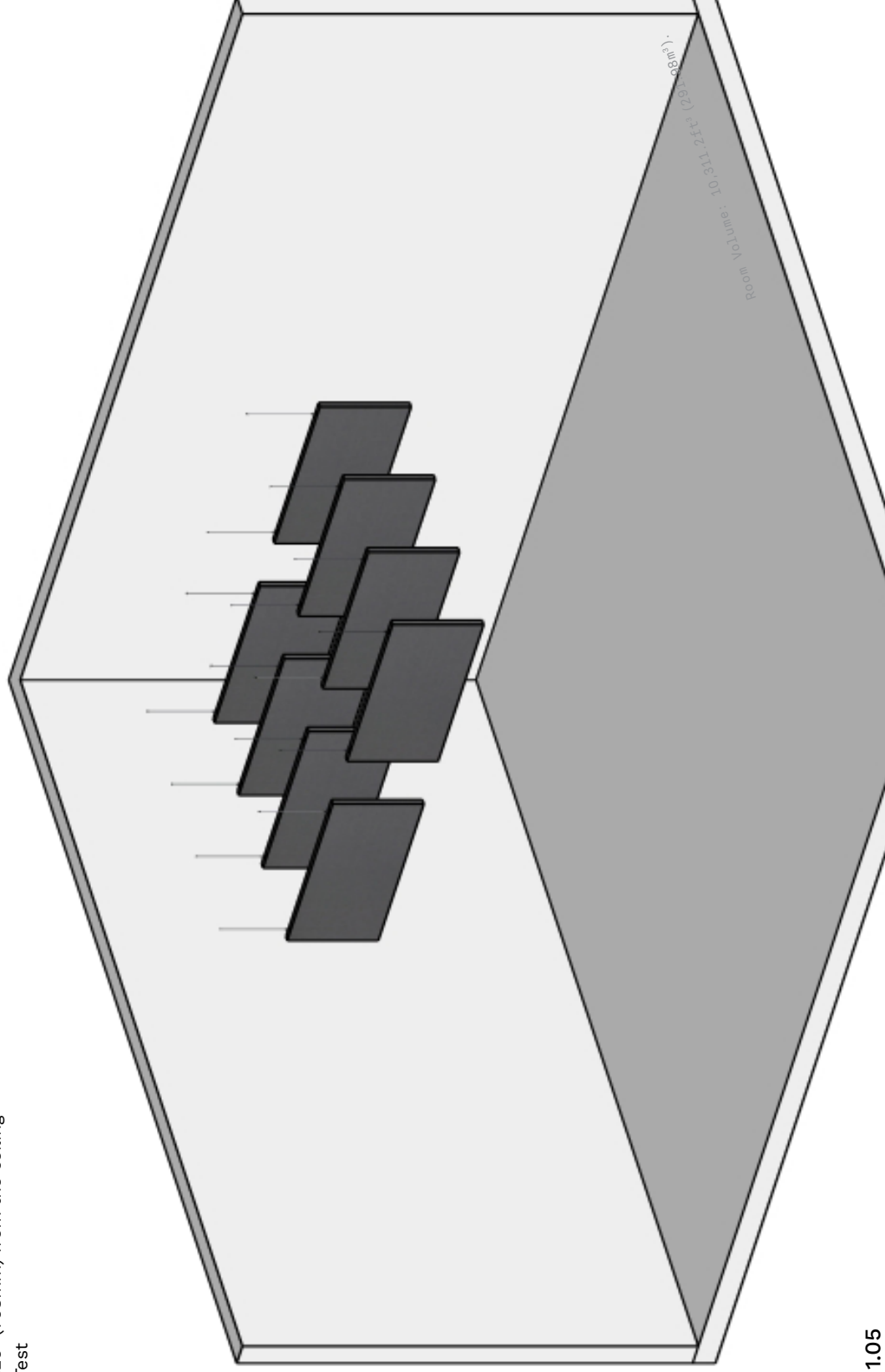


# BROADWAY Baffles

Array 1

Saturna (Fabric Finish)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
2x4 grid, 24" (610mm) between rows  
12" (305mm) between panels in row  
Suspended 30.25" (768mm) from the ceiling  
RAL™ A24-480 Test



**Array-NRC: 1.05**  
over 79.87ft<sup>2</sup> (7.42m<sup>2</sup>) of extended continuous surface area



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Port Coquitlam, BC, Canada

**Sound Absorption**  
**RAL™-A24-480**

CONDUCTED: 2024-12-13

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ON: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart)

### 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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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 Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart). 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**

---

Product Name: Primacoustic - Saturna Baffles Fabric Finish  
Manufacturer: Radial Engineering

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### **Test Specimen**

---

Product Type: Baffles  
Dimensions: 8 baffles @ 41.72 mm (1.6425 in.) wide by 1219 mm (48 in.) long  
Depth: 610 mm (24 in.)  
Overall Weight: 28.01 kg (61.75 lbs)

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### SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

#### Physical Measurements (per object)

Dimensions: 0.61 m (24.0 in) wide by 1.22 m (48.0 in) long  
Thickness: 0.04 m (1.642 in)  
Weight: 3.5 kg (7.72 lbs)

#### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.3 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 60.0 % ± 1.4 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 100.7 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 1.64 m<sup>2</sup> (17.6 ft<sup>2</sup>). The total exposed surface area of all sound-absorbing objects was 13.1 m<sup>2</sup> (141 ft<sup>2</sup>).

### MOUNTING METHOD

Type JV-MOD Mounting: The specimen is an array of 8 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 768 mm (30.25 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in four rows of two objects each, with rows spaced 610 mm (24 in.) on center and objects in each row spaced 305 mm (12 in.) apart. The width of the installed object array was 1867 mm (73.5 in.) and the length of the installed object array was 2743 mm (108 in.). The area of extended continuous surface attributed to the object array was 7.42 m<sup>2</sup> (79.9 ft<sup>2</sup>).



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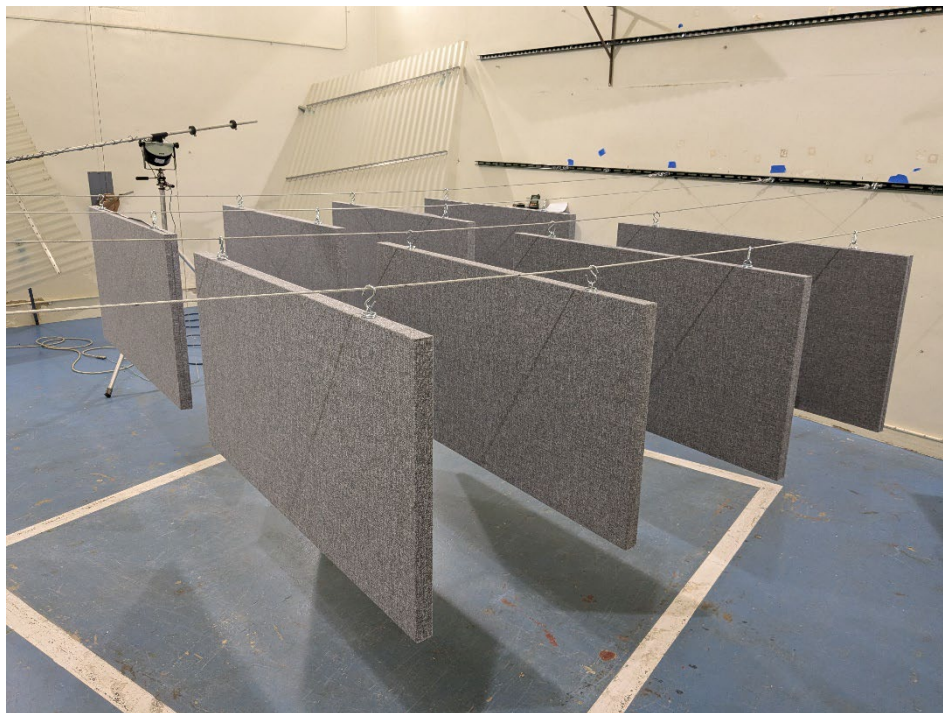


Figure 1 – Specimen mounted in test chamber



Figure 2 – Individual specimen object

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Figure 3 – Detail of specimen materials

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### TEST RESULTS

The preferred presentation of sound absorption test results for arrays of spaced objects is sound absorption ( $m^2$ ) per object and total sound absorption ( $m^2$ ) at each one-third-octave band

ASTM C423-23 Appendix X2 allows calculation of sound absorption per  $m^2$  ( $SA/m^2$ ) based on the projected horizontal surface area attributable to an array of objects. The extended continuous surface area used in this calculation is to be determined using the following procedure:

$S_{array} = (w + w_1) \times (l + l_1)$  If the set of objects consists of a rectangular array of equal sized objects with equal space between each object in a row and equal space between rows. (ASTM E423-23 X.2.3.1)

Where:

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$

$w$  = the measured width of the installed object array, in meters

$w_1$  = the space between objects in the array along the width, in meters

$l$  = the measured length of the installed object array, in meters

$l_1$  = the space between objects in the array along the length, in meters

The sound absorption per  $m^2$  ( $SA/m^2$ ) is calculated based on the following formula:

$$\alpha_{array} = (A_2 - A_1)/S_{array}$$

Where:

$\alpha_{array}$  = sound absorption per  $m^2$  ( $SA/m^2$ ) of extended continuous surface, no units,

$A_1$  = absorption of the empty reverberation room,  $m^2$  and

$A_2$  = absorption of the room after the specimen has been installed,  $m^2$ .

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$



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TEST RESULTS (continued)

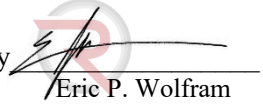
| 1/3 Octave<br>Center Frequency<br>(Hz) | Total Absorption  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> )<br>(SA/m <sup>2</sup> ) |
|--|-------------------|----------|---------------------------|-------------------|---|
|  | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) |   |
| 100                                    | 0.61              | 6.58     | 0.08                      | 0.82              | 0.08  |
| ** 125                                 | 1.29              | 13.84    | 0.16                      | 1.73              | 0.17  |
| 160                                    | 1.63              | 17.52    | 0.20                      | 2.19              | 0.22  |
| 200                                    | 2.63              | 28.28    | 0.33                      | 3.53              | 0.35  |
| ** 250                                 | 3.47              | 37.33    | 0.43                      | 4.67              | 0.47  |
| 315                                    | 4.49              | 48.32    | 0.56                      | 6.04              | 0.60  |
| 400                                    | 5.30              | 57.09    | 0.66                      | 7.14              | 0.71  |
| ** 500                                 | 6.99              | 75.25    | 0.87                      | 9.41              | 0.94  |
| 630                                    | 9.01              | 96.95    | 1.13                      | 12.12             | 1.21  |
| 800                                    | 10.37             | 111.60   | 1.30                      | 13.95             | 1.40  |
| ** 1000                                | 10.53             | 113.31   | 1.32                      | 14.16             | 1.42  |
| 1250                                   | 10.49             | 112.94   | 1.31                      | 14.12             | 1.41  |
| 1600                                   | 10.24             | 110.27   | 1.28                      | 13.78             | 1.38  |
| ** 2000                                | 9.88              | 106.37   | 1.24                      | 13.30             | 1.33  |
| 2500                                   | 9.49              | 102.14   | 1.19                      | 12.77             | 1.28  |
| 3150                                   | 9.08              | 97.77    | 1.14                      | 12.22             | 1.22  |
| ** 4000                                | 8.70              | 93.69    | 1.09                      | 11.71             | 1.17  |
| 5000                                   | 8.45              | 90.92    | 1.06                      | 11.37             | 1.14  |

**Array-NRC 1.05** over 7.42 m<sup>2</sup> of extended continuous surface area

**Array-SAA 1.04** over 7.42 m<sup>2</sup> of extended continuous surface area

Tested by   
Marc Sciaky  
Senior Experimentalist

Report by   
Keith Kimberling  
Test Engineer

Approved by   
Eric P. Wolfram  
Laboratory Manager

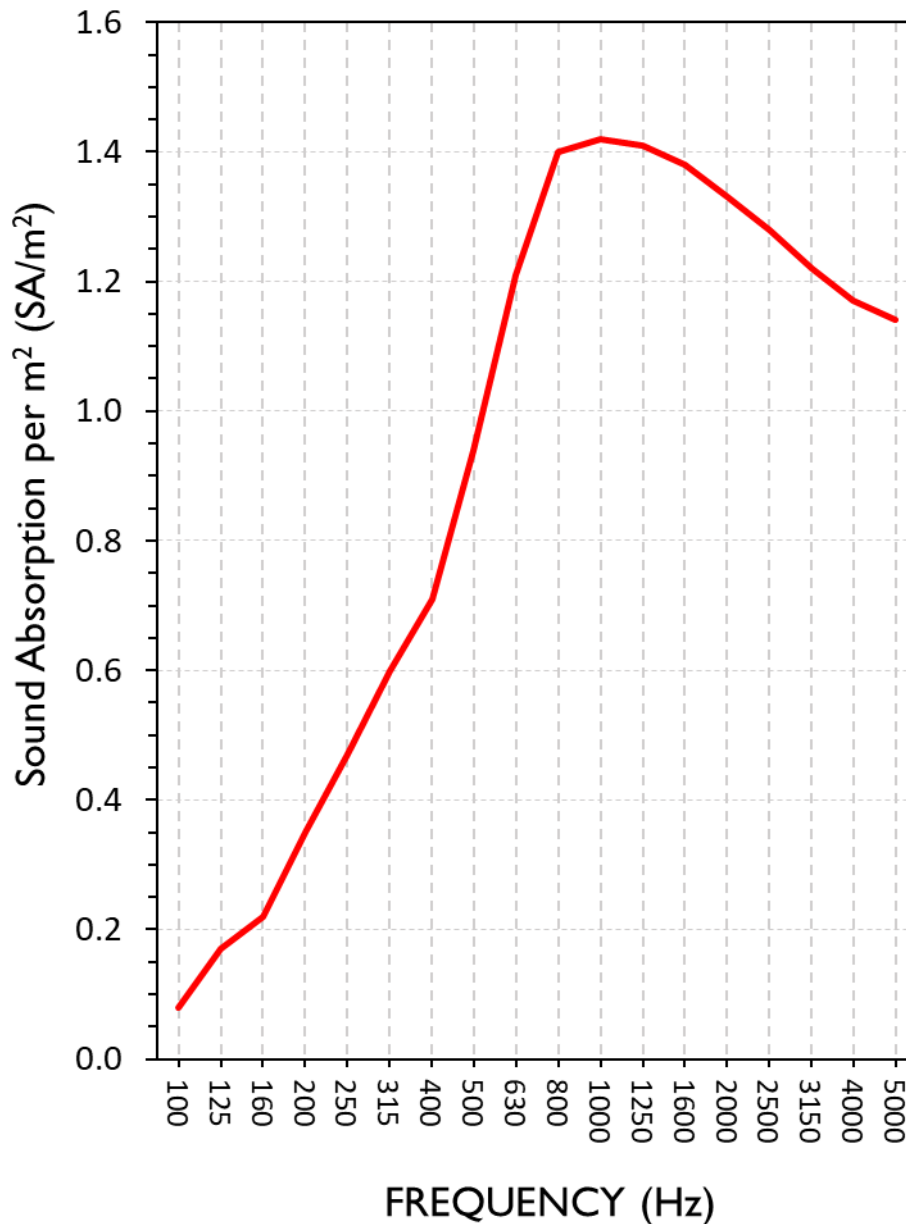
*Note: Sound absorption per m<sup>2</sup> (SA/m<sup>2</sup>), and therefore the reported Single Number Ratings, are highly dependent on the exact sample shape, size, spacing, and extended continuous surface area present in the test and subsequent calculations. Changes to any of these parameters will change the resulting values. These presented results are valid only for the specific configuration present in this test.*

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### SOUND ABSORPTION REPORT

Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart)



**Array-NRC 1.05** over 7.42 m<sup>2</sup> of extended continuous surface area

**Array-SAA 1.04** over 7.42 m<sup>2</sup> of extended continuous surface area



NVLAP LAB CODE 100227-0

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### **APPENDIX A: Extended Frequency Range Data**

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-23, 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  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> ) |
|---|-------------------|----------|---------------------------|-------------------|---|
|   | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) | (SA/m <sup>2</sup> )                          |
| 31.5  | 0.72              | 7.72     | 0.09                      | 0.96              | 0.10  |
| 40  | 0.11              | 1.21     | 0.01                      | 0.15              | 0.02  |
| 50  | -1.78             | -19.15   | -0.22                     | -2.39             | -0.24   |
| 63  | -0.03             | -0.31    | 0.00                      | -0.04             | 0.00  |
| 80  | 0.75              | 8.03     | 0.09                      | 1.00              | 0.10  |
| 100   | 0.61              | 6.58     | 0.08                      | 0.82              | 0.08  |
| 125   | 1.29              | 13.84    | 0.16                      | 1.73              | 0.17  |
| 160   | 1.63              | 17.52    | 0.20                      | 2.19              | 0.22  |
| 200   | 2.63              | 28.28    | 0.33                      | 3.53              | 0.35  |
| 250   | 3.47              | 37.33    | 0.43                      | 4.67              | 0.47  |
| 315   | 4.49              | 48.32    | 0.56                      | 6.04              | 0.60  |
| 400   | 5.30              | 57.09    | 0.66                      | 7.14              | 0.71  |
| 500   | 6.99              | 75.25    | 0.87                      | 9.41              | 0.94  |
| 630   | 9.01              | 96.95    | 1.13                      | 12.12             | 1.21  |
| 800   | 10.37             | 111.60   | 1.30                      | 13.95             | 1.40  |
| 1000  | 10.53             | 113.31   | 1.32                      | 14.16             | 1.42  |
| 1250  | 10.49             | 112.94   | 1.31                      | 14.12             | 1.41  |
| 1600  | 10.24             | 110.27   | 1.28                      | 13.78             | 1.38  |
| 2000  | 9.88              | 106.37   | 1.24                      | 13.30             | 1.33  |
| 2500  | 9.49              | 102.14   | 1.19                      | 12.77             | 1.28  |
| 3150  | 9.08              | 97.77    | 1.14                      | 12.22             | 1.22  |
| 4000  | 8.70              | 93.69    | 1.09                      | 11.71             | 1.17  |
| 5000  | 8.45              | 90.92    | 1.06                      | 11.37             | 1.14  |
| 6300  | 8.32              | 89.58    | 1.04                      | 11.20             | 1.12  |
| 8000  | 7.74              | 83.28    | 0.97                      | 10.41             | 1.04  |
| 10000                                       | 7.50              | 80.73    | 0.94                      | 10.09             | 1.01  |
| 12500                                       | 7.05              | 75.92    | 0.88                      | 9.49              | 0.95  |



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

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (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     | 3160-106974                 | 2024-08-15                          | 2025-08-15                    |
| Bruel & Kjaer Mic And Preamp G | Type 4943-B-001     | 2525858                     | 2024-05-07                          | 2025-05-07                    |
| Bruel & Kjaer Pistonphone      | Type 4228           | 2781248                     | 2024-07-19                          | 2025-07-19                    |
| EXTECH Hygro 959               | SD700               | A099959                     | 2024-03-29                          | 2025-03-29                    |

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

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (See Full Report)

| <b><u>Date</u></b> | <b><u>Revision</u></b> |
|--------------------|------------------------|
| 2025-01-28         | Original report issued |

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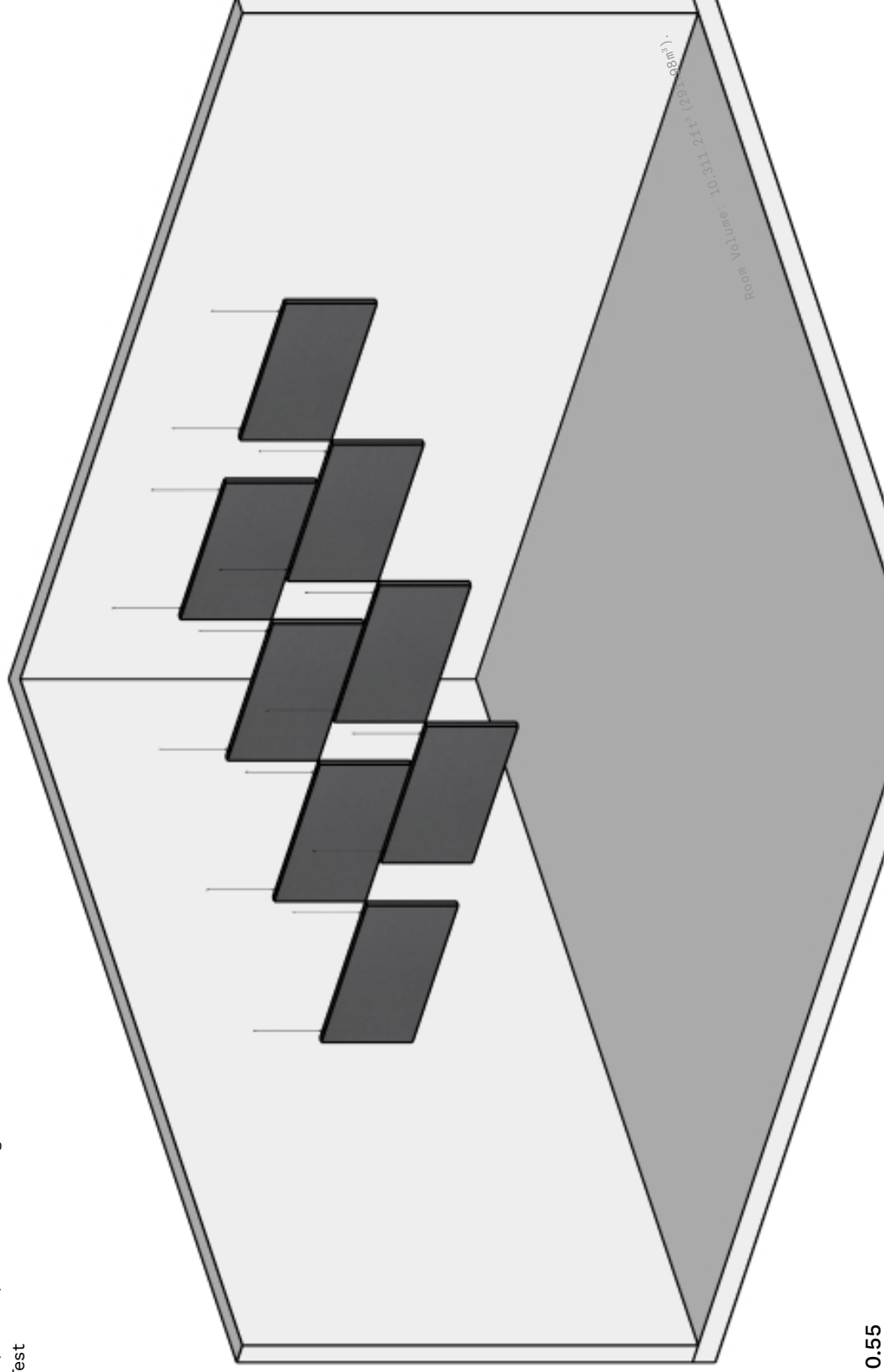
END

# BROADWAY Baffles

Array 2

Saturna (Fabric Finish)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
2x4 grid, 48" (1,219mm) between rows  
15" (381mm) between panels in row  
Suspended 33" (838mm) from the ceiling  
RAL™ A24-483 Test



**Array-NRC: 0.55**  
over 172.22ft<sup>2</sup> (16m<sup>2</sup>) of extended continuous surface area



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ON: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart)

### 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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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 Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart). 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**

---

Product Name: Primacoustic - Saturna Baffles Fabric Finish  
Manufacturer: Radial Engineering

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### **Test Specimen**

---

Product Type: Baffles  
Dimensions: 8 baffles @ 41.72 mm (1.6425 in.) wide by 1219 mm (48 in.) long  
Depth: 610 mm (24 in.)  
Overall Weight: 28.01 kg (61.75 lbs)

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2024-12-16

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### SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

#### Physical Measurements (per object)

Dimensions: 0.61 m (24.0 in) wide by 1.22 m (48.0 in) long  
Thickness: 0.04 m (1.6425 in)  
Weight: 3.5 kg (7.72 lbs)

#### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.3 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 60.7 % ± 3.6 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 98.4 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 1.64 m<sup>2</sup> (17.6 ft<sup>2</sup>). The total exposed surface area of all sound-absorbing objects was 13.1 m<sup>2</sup> (141 ft<sup>2</sup>).

#### MOUNTING METHOD

Type JV-MOD Mounting: The specimen is an array of 8 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 838 mm (33 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in four rows of two objects each, with rows spaced 1219 mm (48 in.) on center and objects in each row spaced 381 mm (15 in.) apart. The width of the installed object array was 3816 mm (150.25 in.) and the length of the installed object array was 2819 mm (111 in.). The area of extended continuous surface attributed to the object array was 16.0 m<sup>2</sup> (172 ft<sup>2</sup>).

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Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of specimen materials

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### TEST RESULTS

The preferred presentation of sound absorption test results for arrays of spaced objects is sound absorption ( $m^2$ ) per object and total sound absorption ( $m^2$ ) at each one-third-octave band

ASTM C423-23 Appendix X2 allows calculation of sound absorption per  $m^2$  ( $SA/m^2$ ) based on the projected horizontal surface area attributable to an array of objects. The extended continuous surface area used in this calculation is to be determined using the following procedure:

$S_{array} = (w + w_1) \times (l + l_1)$  If the set of objects consists of a rectangular array of equal sized objects with equal space between each object in a row and equal space between rows. (ASTM E423-23 X.2.3.1)

Where:

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$

$w$  = the measured width of the installed object array, in meters

$w_1$  = the space between objects in the array along the width, in meters

$l$  = the measured length of the installed object array, in meters

$l_1$  = the space between objects in the array along the length, in meters

The sound absorption per  $m^2$  ( $SA/m^2$ ) is calculated based on the following formula:

$$\alpha_{array} = (A_2 - A_1)/S_{array}$$

Where:

$\alpha_{array}$  = sound absorption per  $m^2$  ( $SA/m^2$ ) of extended continuous surface, no units,

$A_1$  = absorption of the empty reverberation room,  $m^2$  and

$A_2$  = absorption of the room after the specimen has been installed,  $m^2$ .

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$

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TEST RESULTS (continued)

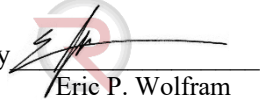
| 1/3 Octave<br>Center Frequency<br>(Hz) | Total Absorption  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> )<br>(SA/m <sup>2</sup> ) |
|--|-------------------|----------|---------------------------|-------------------|---|
|  | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) |   |
| 100                                    | 1.41              | 15.12    | 0.18                      | 1.89              | 0.09  |
| ** 125                                 | 1.32              | 14.26    | 0.17                      | 1.78              | 0.08  |
| 160                                    | 1.73              | 18.57    | 0.22                      | 2.32              | 0.11  |
| 200                                    | 2.63              | 28.36    | 0.33                      | 3.55              | 0.16  |
| ** 250                                 | 3.74              | 40.27    | 0.47                      | 5.03              | 0.23  |
| 315                                    | 5.53              | 59.52    | 0.69                      | 7.44              | 0.35  |
| 400                                    | 6.13              | 66.02    | 0.77                      | 8.25              | 0.38  |
| ** 500                                 | 8.11              | 87.24    | 1.01                      | 10.91             | 0.51  |
| 630                                    | 10.29             | 110.79   | 1.29                      | 13.85             | 0.64  |
| 800                                    | 11.35             | 122.16   | 1.42                      | 15.27             | 0.71  |
| ** 1000                                | 12.03             | 129.46   | 1.50                      | 16.18             | 0.75  |
| 1250                                   | 11.83             | 127.29   | 1.48                      | 15.91             | 0.74  |
| 1600                                   | 11.38             | 122.47   | 1.42                      | 15.31             | 0.71  |
| ** 2000                                | 11.22             | 120.81   | 1.40                      | 15.10             | 0.70  |
| 2500                                   | 10.61             | 114.18   | 1.33                      | 14.27             | 0.66  |
| 3150                                   | 10.23             | 110.09   | 1.28                      | 13.76             | 0.64  |
| ** 4000                                | 9.89              | 106.48   | 1.24                      | 13.31             | 0.62  |
| 5000                                   | 9.73              | 104.78   | 1.22                      | 13.10             | 0.61  |

**Array-NRC 0.55** over 16.0 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.55** over 16.0 m<sup>2</sup> of extended continuous surface area

Tested by   
Marc Sciaky  
Senior Experimentalist

Report by   
Keith Kimberling  
Test Engineer

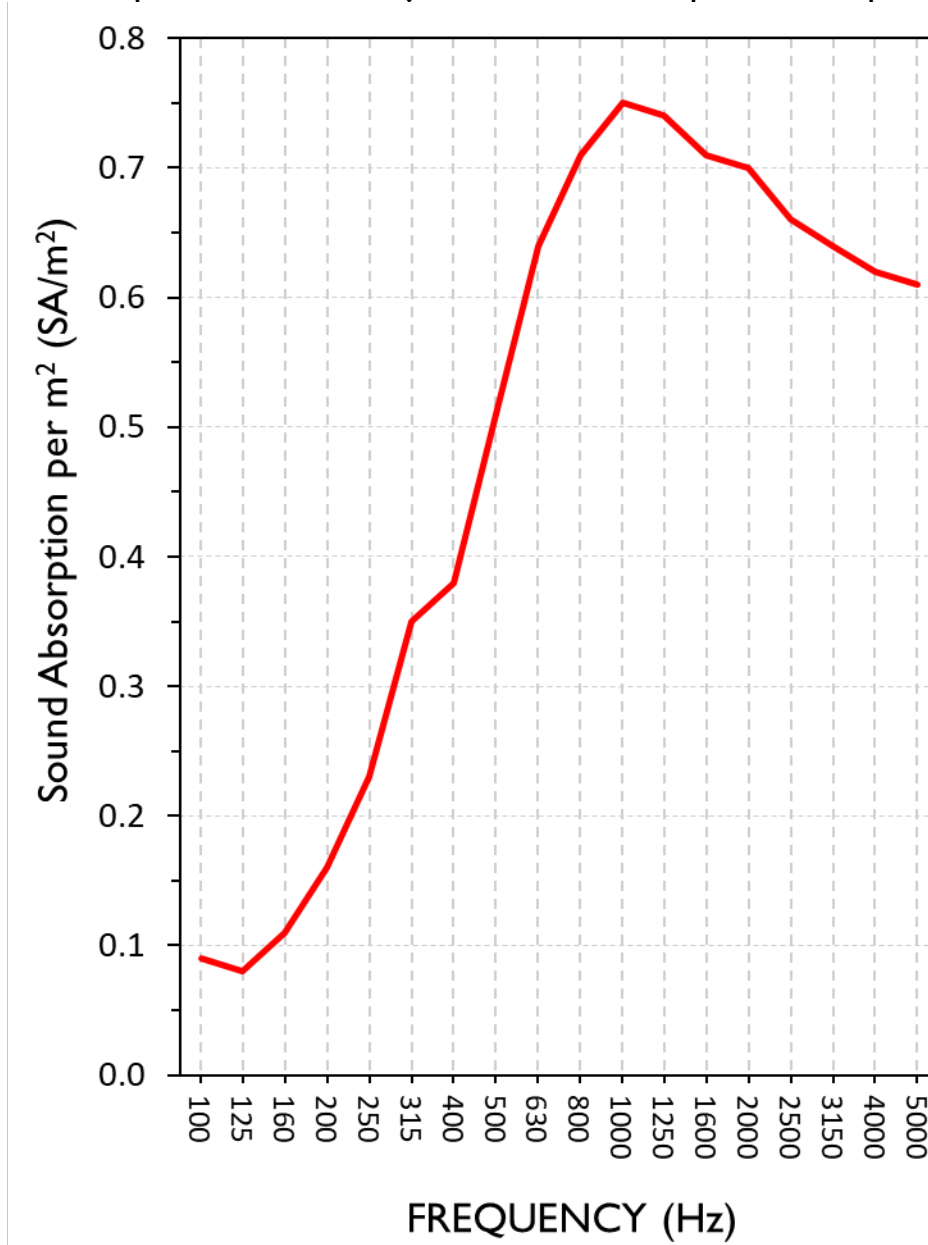
Approved by   
Eric P. Wolfram  
Laboratory Manager

*Note: Sound absorption per m<sup>2</sup> (SA/m<sup>2</sup>), and therefore the reported Single Number Ratings, are highly dependent on the exact sample shape, size, spacing, and extended continuous surface area present in the test and subsequent calculations. Changes to any of these parameters will change the resulting values. These presented results are valid only for the specific configuration present in this test.*



### SOUND ABSORPTION REPORT

Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart)



**Array-NRC 0.55** over 16.0 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.55** over 16.0 m<sup>2</sup> of extended continuous surface area

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### **APPENDIX A: Extended Frequency Range Data**

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-23, 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  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> ) |
|---|-------------------|----------|---------------------------|-------------------|---|
|   | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) | (SA/m <sup>2</sup> )                          |
| 31.5  | 0.78              | 8.41     | 0.10                      | 1.05              | 0.05  |
| 40  | 0.54              | 5.85     | 0.07                      | 0.73              | 0.03  |
| 50  | 0.40              | 4.29     | 0.05                      | 0.54              | 0.02  |
| 63  | 0.08              | 0.89     | 0.01                      | 0.11              | 0.01  |
| 80  | 1.53              | 16.49    | 0.19                      | 2.06              | 0.10  |
| 100   | 1.41              | 15.12    | 0.18                      | 1.89              | 0.09  |
| 125   | 1.32              | 14.26    | 0.17                      | 1.78              | 0.08  |
| 160   | 1.73              | 18.57    | 0.22                      | 2.32              | 0.11  |
| 200   | 2.63              | 28.36    | 0.33                      | 3.55              | 0.16  |
| 250   | 3.74              | 40.27    | 0.47                      | 5.03              | 0.23  |
| 315   | 5.53              | 59.52    | 0.69                      | 7.44              | 0.35  |
| 400   | 6.13              | 66.02    | 0.77                      | 8.25              | 0.38  |
| 500   | 8.11              | 87.24    | 1.01                      | 10.91             | 0.51  |
| 630   | 10.29             | 110.79   | 1.29                      | 13.85             | 0.64  |
| 800   | 11.35             | 122.16   | 1.42                      | 15.27             | 0.71  |
| 1000  | 12.03             | 129.46   | 1.50                      | 16.18             | 0.75  |
| 1250  | 11.83             | 127.29   | 1.48                      | 15.91             | 0.74  |
| 1600  | 11.38             | 122.47   | 1.42                      | 15.31             | 0.71  |
| 2000  | 11.22             | 120.81   | 1.40                      | 15.10             | 0.70  |
| 2500  | 10.61             | 114.18   | 1.33                      | 14.27             | 0.66  |
| 3150  | 10.23             | 110.09   | 1.28                      | 13.76             | 0.64  |
| 4000  | 9.89              | 106.48   | 1.24                      | 13.31             | 0.62  |
| 5000  | 9.73              | 104.78   | 1.22                      | 13.10             | 0.61  |
| 6300  | 9.57              | 103.00   | 1.20                      | 12.87             | 0.60  |
| 8000  | 9.40              | 101.20   | 1.18                      | 12.65             | 0.59  |
| 10000                                       | 9.36              | 100.77   | 1.17                      | 12.60             | 0.59  |
| 12500                                       | 9.30              | 100.13   | 1.16                      | 12.52             | 0.58  |



**RIVERBANK ACOUSTICAL LABORATORIES IS ACCREDITED BY NVLAP (LAB CODE 100227-0) FOR ACOUSTICAL TESTING SERVICES IN ACCORDANCE WITH ISO/IEC 17025:2017 AND FOR THIS PROCEDURE. THIS REPORT MUST NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY RAL, NVLAP, NIST, OR ANY AGENCY OF THE U.S. GOVERNMENT.**

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

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (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     | 3160-106974                 | 2024-08-15                          | 2025-08-15                    |
| Bruel & Kjaer Mic And Preamp G | Type 4943-B-001     | 2525858                     | 2024-05-07                          | 2025-05-07                    |
| Bruel & Kjaer Pistonphone      | Type 4228           | 2781248                     | 2024-07-19                          | 2025-07-19                    |
| EXTECH Hygro 959               | SD700               | A099959                     | 2024-03-29                          | 2025-03-29                    |

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

Specimen: Primacoustic - Saturna Baffles Fabric Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (See Full Report)

| <b><u>Date</u></b> | <b><u>Revision</u></b> |
|--------------------|------------------------|
| 2025-01-28         | Original report issued |

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END

# BROADWAY Baffles

Array 3

Saturna (Paintable Finish)

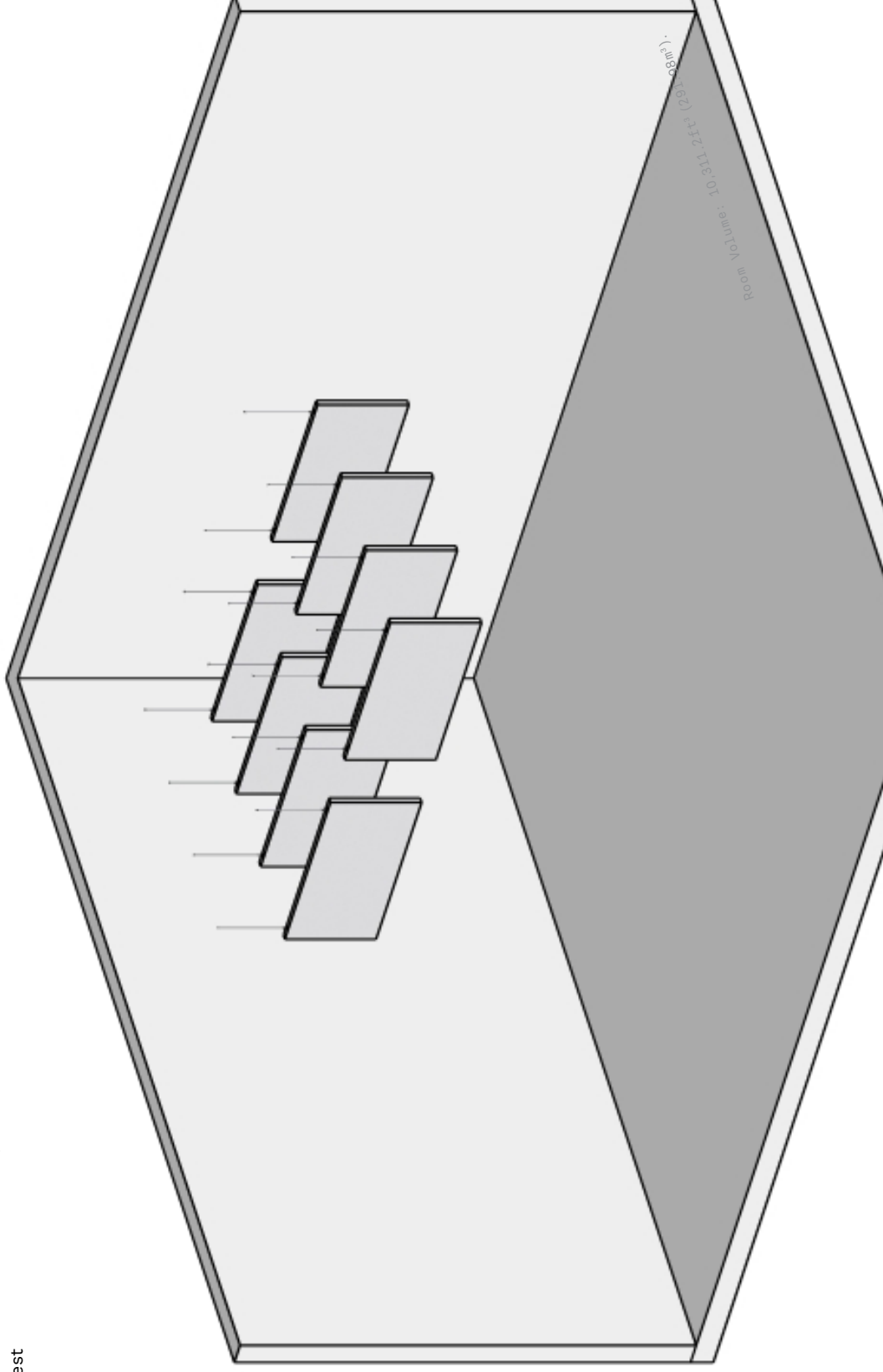
Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)

2x4 grid, 24" (610mm) between rows

12" (305mm) between panels in row

Suspended 32" (813mm) from the ceiling

RAL™A24-481 Test



**Array-NRC: 0.95**  
over 80.08ft<sup>2</sup> (7.44m<sup>2</sup>) of extended continuous surface area



A division of Radial Engineering Ltd.  
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Tel: 604-942-1001 • Fax: 604-942-1010 • [www.primacoustic.com](http://www.primacoustic.com)

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Port Coquitlam, BC, Canada

**Sound Absorption**  
**RAL™-A24-481**

CONDUCTED: 2024-12-13

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ON: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart)

### 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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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 Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart). 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**

---

Product Name: Primacoustic - Saturna Baffles Paintable Finish  
Manufacturer: Radial Engineering

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### **Test Specimen**

---

Product Type: Baffles  
Dimensions: 8 baffles @ 40.26 mm (1.585 in.) wide by 1219 mm (48 in.) long  
Depth: 610 mm (24 in.)  
Overall Weight: 33.79 kg (74.5 lbs)



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### SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

#### Physical Measurements (per object)

Dimensions: 0.61 m (24.0 in) wide by 1.22 m (48.0 in) long  
Thickness: 0.04 m (1.585 in)  
Weight: 4.22 kg (9.31 lbs)

#### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.3 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 60.4 % ± 2.8 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 100.7 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 1.63 m<sup>2</sup> (17.6 ft<sup>2</sup>). The total exposed surface area of all sound-absorbing objects was 13.1 m<sup>2</sup> (141 ft<sup>2</sup>).

#### MOUNTING METHOD

Type JV-MOD Mounting: The specimen is an array of 8 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 813 mm (32 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in four rows of two objects each, with rows spaced 610 mm (24 in.) on center and objects in each row spaced 305 mm (12 in.) apart. The width of the installed object array was 1870 mm (73.625 in.) and the length of the installed object array was 2743 mm (108 in.). The area of extended continuous surface attributed to the object array was 7.44 m<sup>2</sup> (80.0 ft<sup>2</sup>).

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Figure 1 – Specimen mounted in test chamber

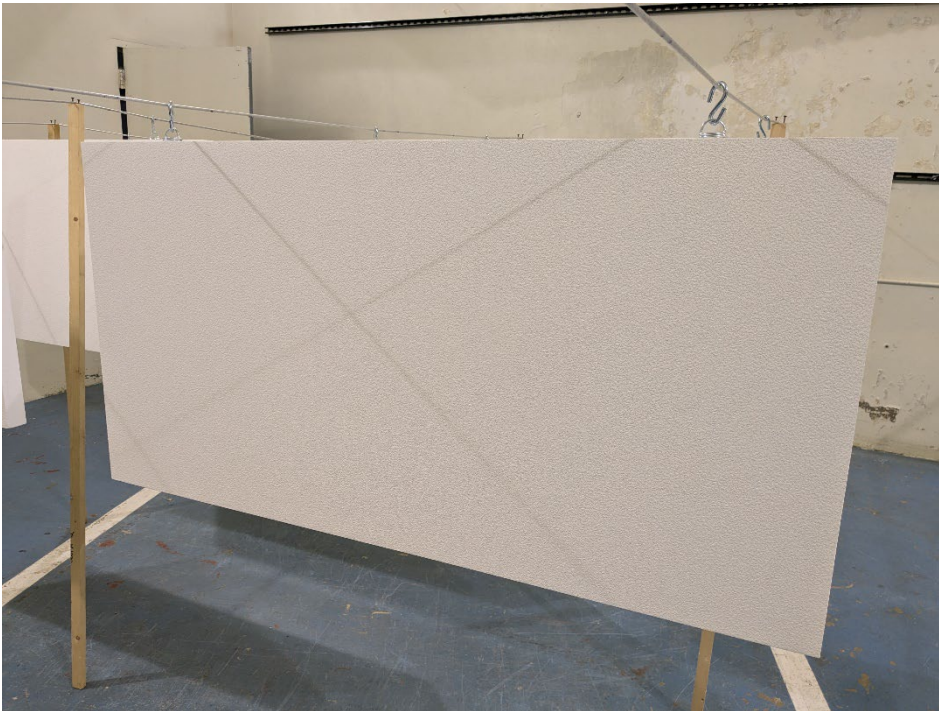


Figure 2 – Individual specimen object

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Figure 3 – Detail of specimen materials

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### TEST RESULTS

The preferred presentation of sound absorption test results for arrays of spaced objects is sound absorption ( $m^2$ ) per object and total sound absorption ( $m^2$ ) at each one-third-octave band

ASTM C423-23 Appendix X2 allows calculation of sound absorption per  $m^2$  ( $SA/m^2$ ) based on the projected horizontal surface area attributable to an array of objects. The extended continuous surface area used in this calculation is to be determined using the following procedure:

$S_{array} = (w + w_1) \times (l + l_1)$  If the set of objects consists of a rectangular array of equal sized objects with equal space between each object in a row and equal space between rows. (ASTM E423-23 X.2.3.1)

Where:

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$   
 $w$  = the measured width of the installed object array, in meters  
 $w_1$  = the space between objects in the array along the width, in meters  
 $l$  = the measured length of the installed object array, in meters  
 $l_1$  = the space between objects in the array along the length, in meters

The sound absorption per  $m^2$  ( $SA/m^2$ ) is calculated based on the following formula:

$$\alpha_{array} = (A_2 - A_1)/S_{array}$$

Where:

$\alpha_{array}$  = sound absorption per  $m^2$  ( $SA/m^2$ ) of extended continuous surface, no units,  
 $A_1$  = absorption of the empty reverberation room,  $m^2$  and  
 $A_2$  = absorption of the room after the specimen has been installed,  $m^2$ .  
 $S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$



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TEST RESULTS (continued)

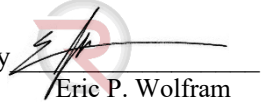
| 1/3 Octave<br>Center Frequency<br>(Hz) | Total Absorption  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> )<br>(SA/m <sup>2</sup> ) |
|--|-------------------|----------|---------------------------|-------------------|---|
|  | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) |   |
| 100                                    | 0.52              | 5.55     | 0.06                      | 0.69              | 0.07  |
| ** 125                                 | 1.04              | 11.21    | 0.13                      | 1.40              | 0.14  |
| 160                                    | 1.41              | 15.14    | 0.18                      | 1.89              | 0.19  |
| 200                                    | 2.54              | 27.33    | 0.32                      | 3.42              | 0.34  |
| ** 250                                 | 2.94              | 31.64    | 0.37                      | 3.95              | 0.40  |
| 315                                    | 3.71              | 39.88    | 0.46                      | 4.99              | 0.50  |
| 400                                    | 4.56              | 49.04    | 0.57                      | 6.13              | 0.61  |
| ** 500                                 | 6.37              | 68.61    | 0.80                      | 8.58              | 0.86  |
| 630                                    | 9.07              | 97.61    | 1.13                      | 12.20             | 1.22  |
| 800                                    | 9.43              | 101.51   | 1.18                      | 12.69             | 1.27  |
| ** 1000                                | 9.27              | 99.80    | 1.16                      | 12.47             | 1.25  |
| 1250                                   | 9.45              | 101.68   | 1.18                      | 12.71             | 1.27  |
| 1600                                   | 9.55              | 102.81   | 1.19                      | 12.85             | 1.28  |
| ** 2000                                | 9.28              | 99.88    | 1.16                      | 12.48             | 1.25  |
| 2500                                   | 9.00              | 96.92    | 1.13                      | 12.11             | 1.21  |
| 3150                                   | 8.80              | 94.68    | 1.10                      | 11.83             | 1.18  |
| ** 4000                                | 8.57              | 92.25    | 1.07                      | 11.53             | 1.15  |
| 5000                                   | 8.48              | 91.27    | 1.06                      | 11.41             | 1.14  |

**Array-NRC 0.95** over 7.44 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.96** over 7.44 m<sup>2</sup> of extended continuous surface area

Tested by   
Marc Sciaky  
Senior Experimentalist

Report by   
Keith Kimberling  
Test Engineer

Approved by   
Eric P. Wolfram  
Laboratory Manager

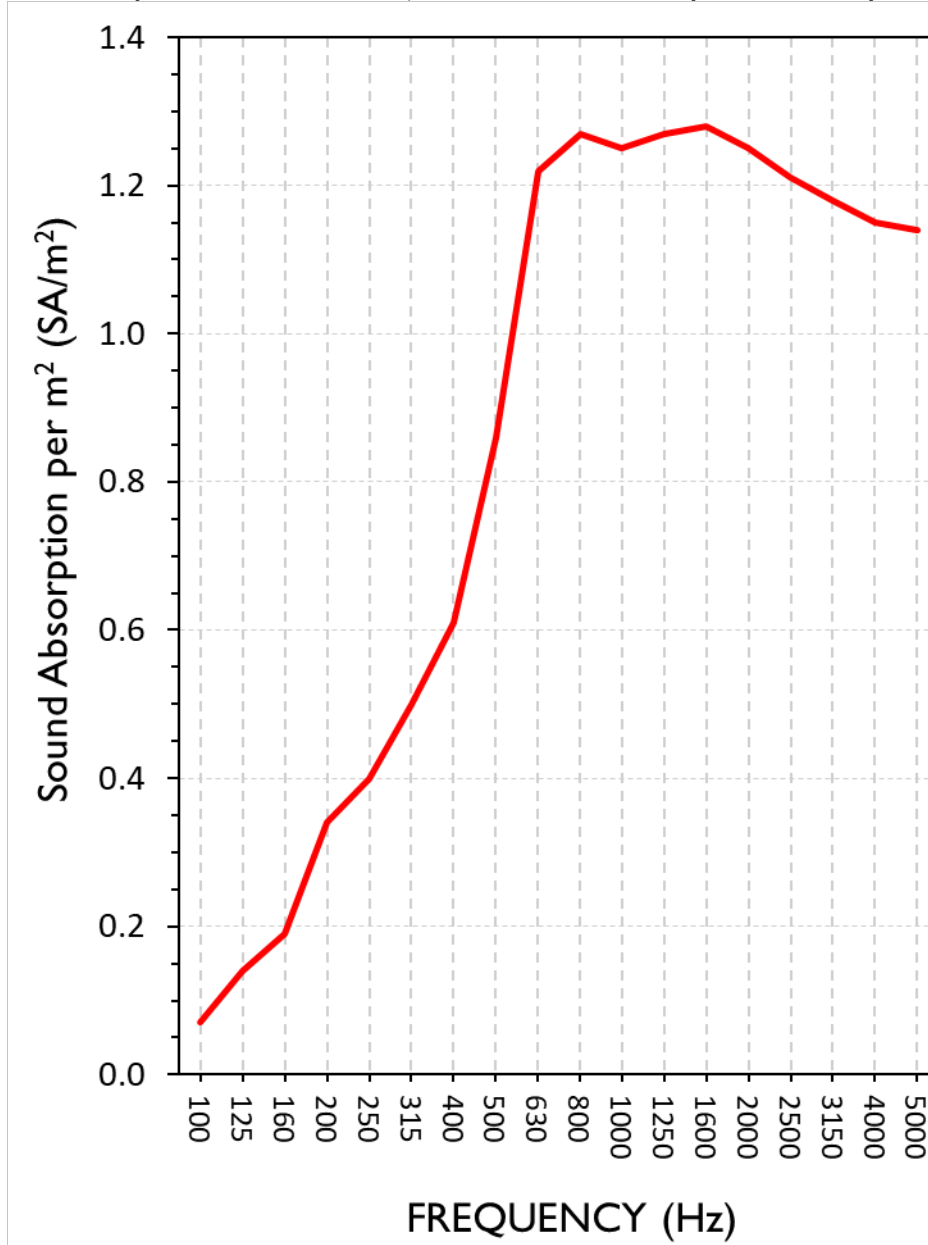
*Note: Sound absorption per m<sup>2</sup> (SA/m<sup>2</sup>), and therefore the reported Single Number Ratings, are highly dependent on the exact sample shape, size, spacing, and extended continuous surface area present in the test and subsequent calculations. Changes to any of these parameters will change the resulting values. These presented results are valid only for the specific configuration present in this test.*

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### SOUND ABSORPTION REPORT

Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart)



**Array-NRC 0.95** over 7.44 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.96** over 7.44 m<sup>2</sup> of extended continuous surface area



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### APPENDIX A: Extended Frequency Range Data

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-23, 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  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> ) |
|---|-------------------|----------|---------------------------|-------------------|---|
|   | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) | (SA/m <sup>2</sup> )                          |
| 31.5  | 0.67              | 7.25     | 0.08                      | 0.91              | 0.09  |
| 40  | 0.55              | 5.95     | 0.07                      | 0.74              | 0.07  |
| 50  | -2.17             | -23.34   | -0.27                     | -2.92             | -0.29   |
| 63  | 0.07              | 0.72     | 0.01                      | 0.09              | 0.01  |
| 80  | 1.07              | 11.47    | 0.13                      | 1.43              | 0.14  |
| 100   | 0.52              | 5.55     | 0.06                      | 0.69              | 0.07  |
| 125   | 1.04              | 11.21    | 0.13                      | 1.40              | 0.14  |
| 160   | 1.41              | 15.14    | 0.18                      | 1.89              | 0.19  |
| 200   | 2.54              | 27.33    | 0.32                      | 3.42              | 0.34  |
| 250   | 2.94              | 31.64    | 0.37                      | 3.95              | 0.40  |
| 315   | 3.71              | 39.88    | 0.46                      | 4.99              | 0.50  |
| 400   | 4.56              | 49.04    | 0.57                      | 6.13              | 0.61  |
| 500   | 6.37              | 68.61    | 0.80                      | 8.58              | 0.86  |
| 630   | 9.07              | 97.61    | 1.13                      | 12.20             | 1.22  |
| 800   | 9.43              | 101.51   | 1.18                      | 12.69             | 1.27  |
| 1000  | 9.27              | 99.80    | 1.16                      | 12.47             | 1.25  |
| 1250  | 9.45              | 101.68   | 1.18                      | 12.71             | 1.27  |
| 1600  | 9.55              | 102.81   | 1.19                      | 12.85             | 1.28  |
| 2000  | 9.28              | 99.88    | 1.16                      | 12.48             | 1.25  |
| 2500  | 9.00              | 96.92    | 1.13                      | 12.11             | 1.21  |
| 3150  | 8.80              | 94.68    | 1.10                      | 11.83             | 1.18  |
| 4000  | 8.57              | 92.25    | 1.07                      | 11.53             | 1.15  |
| 5000  | 8.48              | 91.27    | 1.06                      | 11.41             | 1.14  |
| 6300  | 8.40              | 90.45    | 1.05                      | 11.31             | 1.13  |
| 8000  | 8.04              | 86.49    | 1.00                      | 10.81             | 1.08  |
| 10000                                       | 7.71              | 82.98    | 0.96                      | 10.37             | 1.04  |
| 12500                                       | 7.22              | 77.75    | 0.90                      | 9.72              | 0.97  |



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

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (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     | 3160-106974                 | 2024-08-15                          | 2025-08-15                    |
| Bruel & Kjaer Mic And Preamp G | Type 4943-B-001     | 2525858                     | 2024-05-07                          | 2025-05-07                    |
| Bruel & Kjaer Pistonphone      | Type 4228           | 2781248                     | 2024-07-19                          | 2025-07-19                    |
| EXTECH Hygro 959               | SD700               | A099959                     | 2024-03-29                          | 2025-03-29                    |

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

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 24" o.c., objects in each row spaced 12" apart) (See Full Report)

| <b><u>Date</u></b> | <b><u>Revision</u></b> |
|--------------------|------------------------|
| 2025-01-28         | Original report issued |

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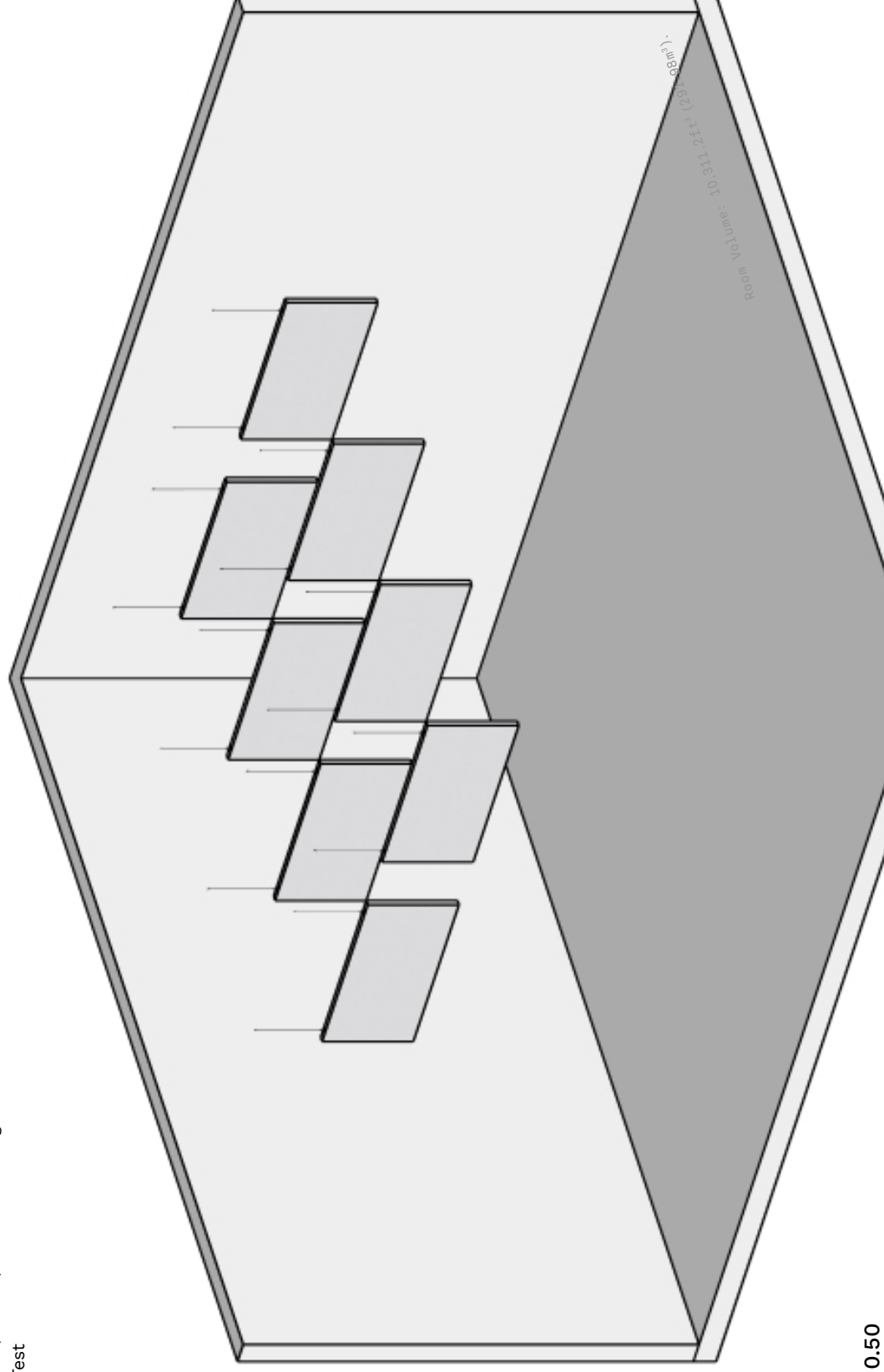
END

# BROADWAY Baffles

Array 4

Saturna (Paintable Finish)

Broadway Saturna Baffles 48 x 24 x 1.5" (1,219 x 610 x 38mm)  
2x4 grid, 48" (1,219mm) between rows  
15" (381mm) between panels in row  
Suspended 32.5" (826mm) from the ceiling  
RAL™ A24-482 Test



**Array-NRC: 0.50**  
over 172.22ft<sup>2</sup> (16m<sup>2</sup>) of extended continuous surface area



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**Be Heard**

SPONSOR: **Radial Engineering**  
Port Coquitlam, BC, Canada

**Sound Absorption**  
**RAL™-A24-482**

CONDUCTED: 2024-12-13

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ON: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart)

### 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 C423-23: "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The specimen mounting was performed according to ASTM E795-23: "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 Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart). 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**

---

Product Name: Primacoustic - Saturna Baffles Paintable Finish  
Manufacturer: Radial Engineering

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### **Test Specimen**

---

Product Type: Baffles  
Dimensions: 8 baffles @ 40.26 mm (1.585 in.) wide by 1219 mm (48 in.) long  
Depth: 610 mm (24 in.)  
Overall Weight: 33.79 kg (74.5 lbs)

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### SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

#### Physical Measurements (per object)

Dimensions: 0.61 m (24.0 in) wide by 1.22 m (48.0 in) long  
Thickness: 0.04 m (1.585 in)  
Weight: 4.22 kg (9.31 lbs)

#### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.3 °C ± 0.0 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 61.3 % ± 0.2 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 100.8 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 1.63 m<sup>2</sup> (17.6 ft<sup>2</sup>). The total exposed surface area of all sound-absorbing objects was 13.1 m<sup>2</sup> (141 ft<sup>2</sup>).

### MOUNTING METHOD

Type JV-MOD Mounting: The specimen is an array of 8 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 826 mm (32.5 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in four rows of two objects each, with rows spaced 1219 mm (48 in.) on center and objects in each row spaced 381 mm (15 in.) apart. The width of the installed object array was 3820 mm (150.375 in.) and the length of the installed object array was 2819 mm (111 in.). The area of extended continuous surface attributed to the object array was 16.0 m<sup>2</sup> (172 ft<sup>2</sup>).

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Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of specimen materials



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### TEST RESULTS

The preferred presentation of sound absorption test results for arrays of spaced objects is sound absorption ( $m^2$ ) per object and total sound absorption ( $m^2$ ) at each one-third-octave band

ASTM C423-23 Appendix X2 allows calculation of sound absorption per  $m^2$  ( $SA/m^2$ ) based on the projected horizontal surface area attributable to an array of objects. The extended continuous surface area used in this calculation is to be determined using the following procedure:

$S_{array} = (w + w_1) \times (l + l_1)$  If the set of objects consists of a rectangular array of equal sized objects with equal space between each object in a row and equal space between rows. (ASTM E423-23 X.2.3.1)

Where:

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$

$w$  = the measured width of the installed object array, in meters

$w_1$  = the space between objects in the array along the width, in meters

$l$  = the measured length of the installed object array, in meters

$l_1$  = the space between objects in the array along the length, in meters

The sound absorption per  $m^2$  ( $SA/m^2$ ) is calculated based on the following formula:

$$\alpha_{array} = (A_2 - A_1)/S_{array}$$

Where:

$\alpha_{array}$  = sound absorption per  $m^2$  ( $SA/m^2$ ) of extended continuous surface, no units,

$A_1$  = absorption of the empty reverberation room,  $m^2$  and

$A_2$  = absorption of the room after the specimen has been installed,  $m^2$ .

$S_{array}$  = area of extended continuous surface attributed to the test specimen,  $m^2$

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TEST RESULTS (continued)

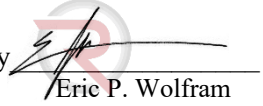
| 1/3 Octave<br>Center Frequency<br>(Hz) | Total Absorption  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> )<br>(SA/m <sup>2</sup> ) |
|--|-------------------|----------|---------------------------|-------------------|---|
|  | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) |   |
| 100                                    | 0.57              | 6.11     | 0.07                      | 0.76              | 0.04  |
| ** 125                                 | 0.93              | 10.04    | 0.12                      | 1.26              | 0.06  |
| 160                                    | 1.62              | 17.39    | 0.20                      | 2.17              | 0.10  |
| 200                                    | 2.24              | 24.15    | 0.28                      | 3.02              | 0.14  |
| ** 250                                 | 3.26              | 35.11    | 0.41                      | 4.39              | 0.20  |
| 315                                    | 4.40              | 47.37    | 0.55                      | 5.92              | 0.28  |
| 400                                    | 4.86              | 52.33    | 0.61                      | 6.54              | 0.30  |
| ** 500                                 | 7.45              | 80.14    | 0.93                      | 10.02             | 0.47  |
| 630                                    | 10.05             | 108.22   | 1.26                      | 13.53             | 0.63  |
| 800                                    | 10.38             | 111.74   | 1.30                      | 13.97             | 0.65  |
| ** 1000                                | 10.32             | 111.06   | 1.29                      | 13.88             | 0.64  |
| 1250                                   | 10.42             | 112.12   | 1.30                      | 14.01             | 0.65  |
| 1600                                   | 10.39             | 111.88   | 1.30                      | 13.99             | 0.65  |
| ** 2000                                | 10.30             | 110.88   | 1.29                      | 13.86             | 0.64  |
| 2500                                   | 9.97              | 107.34   | 1.25                      | 13.42             | 0.62  |
| 3150                                   | 9.68              | 104.24   | 1.21                      | 13.03             | 0.61  |
| ** 4000                                | 9.52              | 102.46   | 1.19                      | 12.81             | 0.60  |
| 5000                                   | 9.40              | 101.20   | 1.18                      | 12.65             | 0.59  |

**Array-NRC 0.50** over 16.0 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.49** over 16.0 m<sup>2</sup> of extended continuous surface area

Tested by   
Marc Sciaky  
Senior Experimentalist

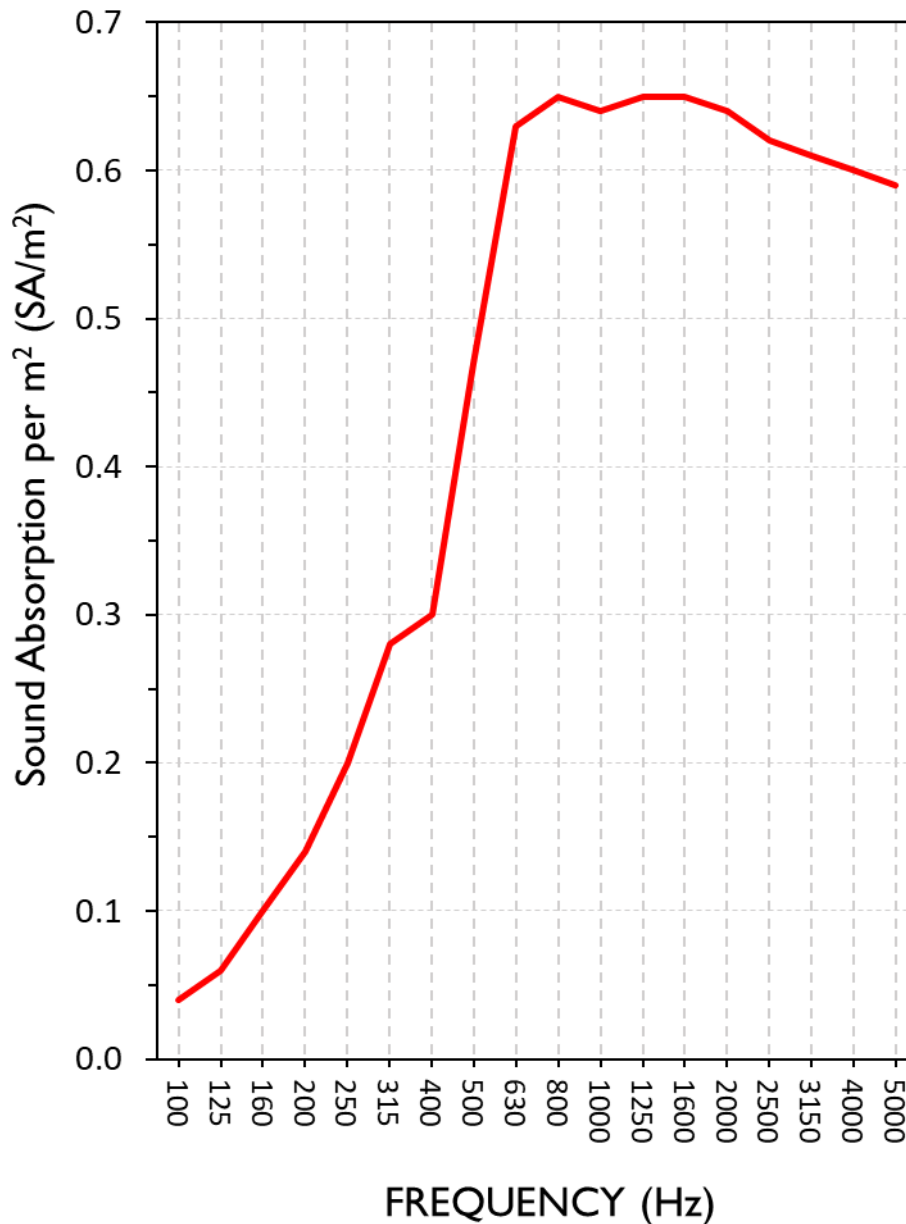
Report by   
Keith Kimberling  
Test Engineer

Approved by   
Eric P. Wolfram  
Laboratory Manager

*Note: Sound absorption per m<sup>2</sup> (SA/m<sup>2</sup>), and therefore the reported Single Number Ratings, are highly dependent on the exact sample shape, size, spacing, and extended continuous surface area present in the test and subsequent calculations. Changes to any of these parameters will change the resulting values. These presented results are valid only for the specific configuration present in this test.*

### SOUND ABSORPTION REPORT

Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart)



**Array-NRC 0.50** over 16.0 m<sup>2</sup> of extended continuous surface area

**Array-SAA 0.49** over 16.0 m<sup>2</sup> of extended continuous surface area

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### **APPENDIX A: Extended Frequency Range Data**

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM C423-23, 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  |          | Absorption per Object     |                   | $\alpha_{array}$<br>(Sabins/ft <sup>2</sup> ) |
|---|-------------------|----------|---------------------------|-------------------|---|
|   | (m <sup>2</sup> ) | (Sabins) | (m <sup>2</sup> / Object) | (Sabins / Object) | (SA/m <sup>2</sup> )                          |
| 31.5  | 0.40              | 4.36     | 0.05                      | 0.54              | 0.03  |
| 40  | -0.38             | -4.10    | -0.05                     | -0.51             | -0.02   |
| 50  | -1.80             | -19.35   | -0.22                     | -2.42             | -0.11   |
| 63  | -0.22             | -2.37    | -0.03                     | -0.30             | -0.01   |
| 80  | 1.05              | 11.31    | 0.13                      | 1.41              | 0.07  |
| 100   | 0.57              | 6.11     | 0.07                      | 0.76              | 0.04  |
| 125   | 0.93              | 10.04    | 0.12                      | 1.26              | 0.06  |
| 160   | 1.62              | 17.39    | 0.20                      | 2.17              | 0.10  |
| 200   | 2.24              | 24.15    | 0.28                      | 3.02              | 0.14  |
| 250   | 3.26              | 35.11    | 0.41                      | 4.39              | 0.20  |
| 315   | 4.40              | 47.37    | 0.55                      | 5.92              | 0.28  |
| 400   | 4.86              | 52.33    | 0.61                      | 6.54              | 0.30  |
| 500   | 7.45              | 80.14    | 0.93                      | 10.02             | 0.47  |
| 630   | 10.05             | 108.22   | 1.26                      | 13.53             | 0.63  |
| 800   | 10.38             | 111.74   | 1.30                      | 13.97             | 0.65  |
| 1000  | 10.32             | 111.06   | 1.29                      | 13.88             | 0.64  |
| 1250  | 10.42             | 112.12   | 1.30                      | 14.01             | 0.65  |
| 1600  | 10.39             | 111.88   | 1.30                      | 13.99             | 0.65  |
| 2000  | 10.30             | 110.88   | 1.29                      | 13.86             | 0.64  |
| 2500  | 9.97              | 107.34   | 1.25                      | 13.42             | 0.62  |
| 3150  | 9.68              | 104.24   | 1.21                      | 13.03             | 0.61  |
| 4000  | 9.52              | 102.46   | 1.19                      | 12.81             | 0.60  |
| 5000  | 9.40              | 101.20   | 1.18                      | 12.65             | 0.59  |
| 6300  | 9.25              | 99.57    | 1.16                      | 12.45             | 0.58  |
| 8000  | 9.02              | 97.08    | 1.13                      | 12.14             | 0.56  |
| 10000                                       | 8.95              | 96.31    | 1.12                      | 12.04             | 0.56  |
| 12500                                       | 8.67              | 93.37    | 1.08                      | 11.67             | 0.54  |



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

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (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     | 3160-106974                 | 2024-08-15                          | 2025-08-15                    |
| Bruel & Kjaer Mic And Preamp G | Type 4943-B-001     | 2525858                     | 2024-05-07                          | 2025-05-07                    |
| Bruel & Kjaer Pistonphone      | Type 4228           | 2781248                     | 2024-07-19                          | 2025-07-19                    |
| EXTECH Hygro 959               | SD700               | A099959                     | 2024-03-29                          | 2025-03-29                    |

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

Specimen: Primacoustic - Saturna Baffles Paintable Finish (8 objects, 4 rows of 2 objects per row, rows spaced 48" o.c., objects in each row spaced 15" apart) (See Full Report)

| <b><u>Date</u></b> | <b><u>Revision</u></b> |
|--------------------|------------------------|
| 2025-01-28         | Original report issued |

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