

SPONSOR: **EUREKA**
Montréal, QC, Canada

Sound Absorption
RAL™-A25-071

CONDUCTED: 2025-02-14

Page 1 of 9

ON: Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, 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 Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, 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: Cirra – 4830D-24, 24 inches
Manufacturer: EUREKA

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: Lighting units
Materials: PET felt
Dimensions: 10 objects @ 610 mm (24 in.) by 610 mm (24 in.)
Depth: 114 mm (4.5 in.)
Overall Weight: 32.09 kg (70.75 lbs)

EUREKA
2025-02-14

RAL™-A25-071
Page 2 of 9

SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

Physical Measurements (per object)

Dimensions: 0.61 m (24.0 in) wide by 0.61 m (24.0 in) long

Thickness: 0.11 m (4.5 in)

Weight: 3.21 kg (7.07 lbs)

Test Environment

Room Volume: 291.98 m³

Temperature: 21.2 °C ± 0.2 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)

Relative Humidity: 59.65 % ± 1.3 % (Requirement: ≥ 40 % and ≤ 5 % change)

Barometric Pressure: 100.1 kPa (Requirement not defined)

Each sound absorbing object had an exposed surface area of 1.02 m² (11.0 ft²). The total exposed surface area of all sound-absorbing objects was 10.2 m² (110 ft²). These surface area values are based on simplification of each object geometry to that of the smallest rectangular prism fully enclosing one object.

MOUNTING METHOD

Type JH-MOD Mounting: The specimen is an array of 10 spaced sound absorbing objects suspended from cables such that the closest face is located approximately 1397 mm (55 in.) from the horizontal test surface. This approximates the mounting method of a typical ceiling baffle installation. The objects were distributed in five rows of two objects each, with rows spaced 305 mm (12 in.) apart, and objects in each row spaced 305 mm (12 in.) apart. The width of the installed object array was 1524 mm (60 in.) and the length of the installed object array was 4267 mm (168 in.). The area of extended continuous surface attributed to the object array was 8.36 m² (90.0 ft²).

EUREKA
2025-02-14

RAL™-A25-071
Page 3 of 9



Figure 1 – Specimen mounted in test chamber



Figure 2 – Specimen mounted in test chamber

EUREKA
2025-02-14

RAL™-A25-071
Page 4 of 9



Figure 3 – Individual specimen object



Figure 4 – Individual specimen object

EUREKA
2025-02-14

RAL™-A25-071
Page 5 of 9

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:

α_{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

Test Report

EUREKA
2025-02-14

RAL™-A25-071
Page 6 of 9

TEST RESULTS (continued)

1/3 Octave Center Frequency (Hz)	Total Absorption		Absorption per Object		α_{array} (Sabins/ft ²) (SA/m ²)
	(m ²)	(Sabins)	(m ² / Object)	(Sabins / Object)	
100	0.41	4.36	0.04	0.44	0.05
** 125	0.96	10.37	0.10	1.04	0.12
160	1.28	13.82	0.13	1.38	0.15
200	1.97	21.21	0.20	2.12	0.24
** 250	3.13	33.72	0.31	3.37	0.37
315	2.90	31.17	0.29	3.12	0.35
400	2.58	27.82	0.26	2.78	0.31
** 500	3.12	33.54	0.31	3.35	0.37
630	2.75	29.55	0.27	2.95	0.33
800	2.98	32.08	0.30	3.21	0.36
** 1000	3.32	35.76	0.33	3.58	0.40
1250	3.95	42.54	0.40	4.25	0.47
1600	4.49	48.28	0.45	4.83	0.54
** 2000	4.74	51.07	0.47	5.11	0.57
2500	5.37	57.76	0.54	5.78	0.64
3150	5.93	63.78	0.59	6.38	0.71
** 4000	6.23	67.05	0.62	6.71	0.75
5000	6.77	72.83	0.68	7.28	0.81

Array-NRC 0.45 over 8.36 m² of extended continuous surface area

Array-SAA 0.41 over 8.36 m² 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 m² (SA/m²), 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.



NVLAP LAB CODE 100227-0

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.

THIS REPORT SHALL NOT BE MODIFIED WITHOUT THE WRITTEN APPROVAL OF RAL. THE RESULTS REPORTED APPLY ONLY TO THE SPECIFIC SAMPLE SUBMITTED FOR TESTING; RAL ASSUMES NO RESPONSIBILITY FOR THE PERFORMANCE OF ANY OTHER SAMPLE.

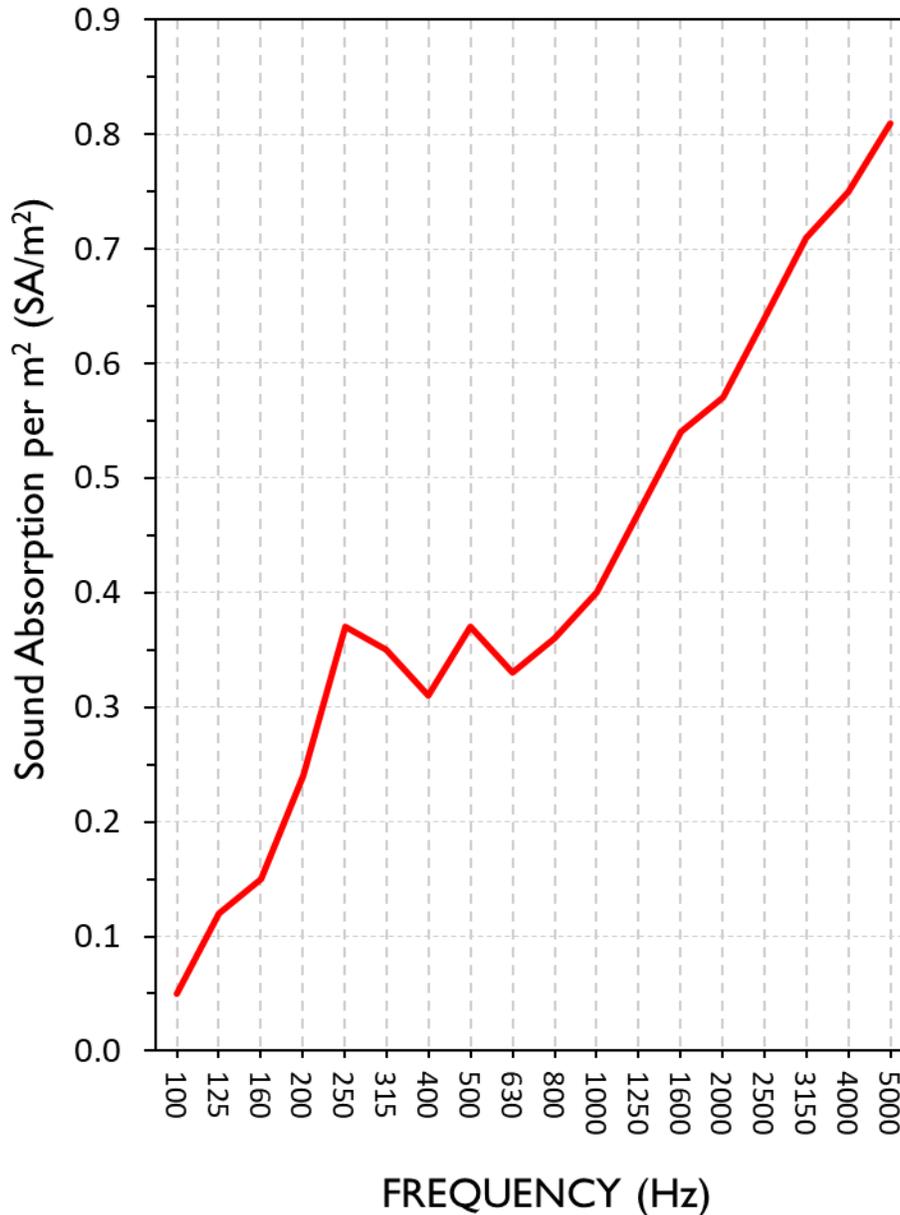
Test Report

EUREKA
2025-02-14

RAL™-A25-071
Page 7 of 9

SOUND ABSORPTION REPORT

Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, objects in each row spaced 12” apart)



Array-NRC 0.45 over 8.36 m² of extended continuous surface area

Array-SAA 0.41 over 8.36 m² of extended continuous surface area



NVLAP LAB CODE 100227-0

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.

THIS REPORT SHALL NOT BE MODIFIED WITHOUT THE WRITTEN APPROVAL OF RAL. THE RESULTS REPORTED APPLY ONLY TO THE SPECIFIC SAMPLE SUBMITTED FOR TESTING; RAL ASSUMES NO RESPONSIBILITY FOR THE PERFORMANCE OF ANY OTHER SAMPLE.

EUREKA
 2025-02-14

RAL™-A25-071
 Page 8 of 9

APPENDIX A: Extended Frequency Range Data

Specimen: Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, 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 Center Frequency (Hz)	Total Absorption		Absorption per Object		α_{array} (Sabins/ft ²) (SA/m ²)
	(m ²)	(Sabins)	(m ² / Object)	(Sabins / Object)	
31.5	1.02	11.01	0.10	1.10	0.12
40	-0.37	-4.03	-0.04	-0.40	-0.04
50	-0.57	-6.17	-0.06	-0.62	-0.07
63	0.32	3.47	0.03	0.35	0.04
80	0.08	0.87	0.01	0.09	0.01
100	0.41	4.36	0.04	0.44	0.05
125	0.96	10.37	0.10	1.04	0.12
160	1.28	13.82	0.13	1.38	0.15
200	1.97	21.21	0.20	2.12	0.24
250	3.13	33.72	0.31	3.37	0.37
315	2.90	31.17	0.29	3.12	0.35
400	2.58	27.82	0.26	2.78	0.31
500	3.12	33.54	0.31	3.35	0.37
630	2.75	29.55	0.27	2.95	0.33
800	2.98	32.08	0.30	3.21	0.36
1000	3.32	35.76	0.33	3.58	0.40
1250	3.95	42.54	0.40	4.25	0.47
1600	4.49	48.28	0.45	4.83	0.54
2000	4.74	51.07	0.47	5.11	0.57
2500	5.37	57.76	0.54	5.78	0.64
3150	5.93	63.78	0.59	6.38	0.71
4000	6.23	67.05	0.62	6.71	0.75
5000	6.77	72.83	0.68	7.28	0.81
6300	7.34	79.01	0.73	7.90	0.88
8000	8.45	90.93	0.84	9.09	1.01
10000	9.92	106.79	0.99	10.68	1.19
12500	11.73	126.30	1.17	12.63	1.40



627 RIVERBANK DRIVE
GENEVA, IL 60134
630-232-0104

Test Report

www.riverbankacoustics.com

FOUNDED 1918 BY
WALLACE CLEMENT SABINE

EUREKA
2025-02-14

RAL™-A25-071
Page 9 of 9

APPENDIX B: Instruments of Traceability

Specimen: Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, objects in each row spaced 12” apart) (See Full Report)

<u>Description</u>	<u>Model</u>	<u>Serial Number</u>	<u>Date of Certification</u>	<u>Calibration Due</u>
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: Cirra – 4830D-24, 24 inches (10 objects, 5 rows of 2 objects each, rows spaced 12” apart, objects in each row spaced 12” apart) (See Full Report)

<u>Date</u>	<u>Revision</u>
2025-03-04	Original report issued

END