

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

SPONSOR: **Kirei**  
Solana Beach, CA

Sound Absorption  
**RAL™-A19-154**

CONDUCTED: 2019-04-09

Page 1 of 8

ON: Barcode Tile

### 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 17025:2005 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 Barcode Tile. 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: Barcode Tile  
Manufacturer: Kirei

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### Test Specimen

Materials: Felt tiles  
Dimensions: 72 @ 393.7 mm (15.5 in.) x 196.85 mm (7.75 in.)  
12 @ 196.85 mm (7.75 in.) x 381 mm (15 in.)  
6 @ 76.2 mm (3 in.) x 393.7 mm (15.5 in.)  
1 @ 76.2 mm (3 in.) x 381 mm (15 in.)  
Thickness: Minimum @ 12 mm (0.472 in.)  
Maximum @ 24 mm (0.94 in.)  
Irregularly spaced ridges, stepped depth profile  
Overall Weight: 24.04 kg (53 lbs)

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

**Kirei**  
2019-04-09

**RAL™-A19-154**  
Page 2 of 8

### Overall Specimen Properties

Size: 2.74 m (108.0 in) wide by 2.44 m (96.0 in) long  
Thickness: 0.02 m (0.94 in)  
Weight: 24.04 kg (53.0 lbs)  
Mass per Unit Area: 3.59 kg/m<sup>2</sup> (0.74 lbs/ft<sup>2</sup>)  
Calculation Area: 6.689 m<sup>2</sup> (72 ft<sup>2</sup>)

### Test Environment

Room Volume: 291.98 m<sup>3</sup>  
Temperature: 21.5 °C ± 0.1 °C (Requirement: ≥ 10 °C and ≤ 5 °C change)  
Relative Humidity: 66.85 % ± 0.1 % (Requirement: ≥ 40 % and ≤ 5 % change)  
Barometric Pressure: 98.3 kPa (Requirement not defined)

### MOUNTING METHOD

Type A Mounting: The test specimen was laid directly against the test surface. Perimeter edges were sealed with metal framing.

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)  
FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

**Test Report**

**Kirei**  
2019-04-09

**RAL™-A19-154**  
Page 3 of 8



Figure 1 – Specimen mounted in test chamber



Figure 2 – Detail of individual tile

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
 WALLACE CLEMENT SABINE

## Test Report

**Kirei**  
 2019-04-09

**RAL™-A19-154**  
 Page 4 of 8

### 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 Frequency (Hz)	Total Absorption (m <sup>2</sup> )	Total Absorption (Sabins)	Absorption Coefficient
100	0.49	5.23	0.07
** 125	0.11	1.20	0.02
160	0.21	2.30	0.03
200	0.49	5.30	0.07
** 250	0.62	6.69	0.09
315	1.17	12.58	0.17
400	1.60	17.23	0.24
** 500	2.76	29.66	0.41
630	3.67	39.47	0.55
800	4.70	50.56	0.70
** 1000	5.53	59.52	0.83
1250	5.98	64.41	0.89
1600	6.26	67.33	0.94
** 2000	6.55	70.47	0.98
2500	6.80	73.22	1.02
3150	6.74	72.53	1.01
** 4000	7.05	75.92	1.05
5000	7.21	77.64	1.08

**SAA = 0.57**  
**NRC = 0.60**

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

**Kirei**  
2019-04-09


**RAL™-A19-154**  
Page 5 of 8

### 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.

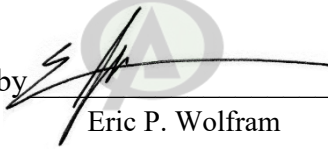
Tested by

  
Dean Victor  
Lead Experimentalist

Report by

  
Malcolm Kelly  
Acoustical Test Engineer

Approved by

  
Eric P. Wolfram  
Laboratory Manager

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

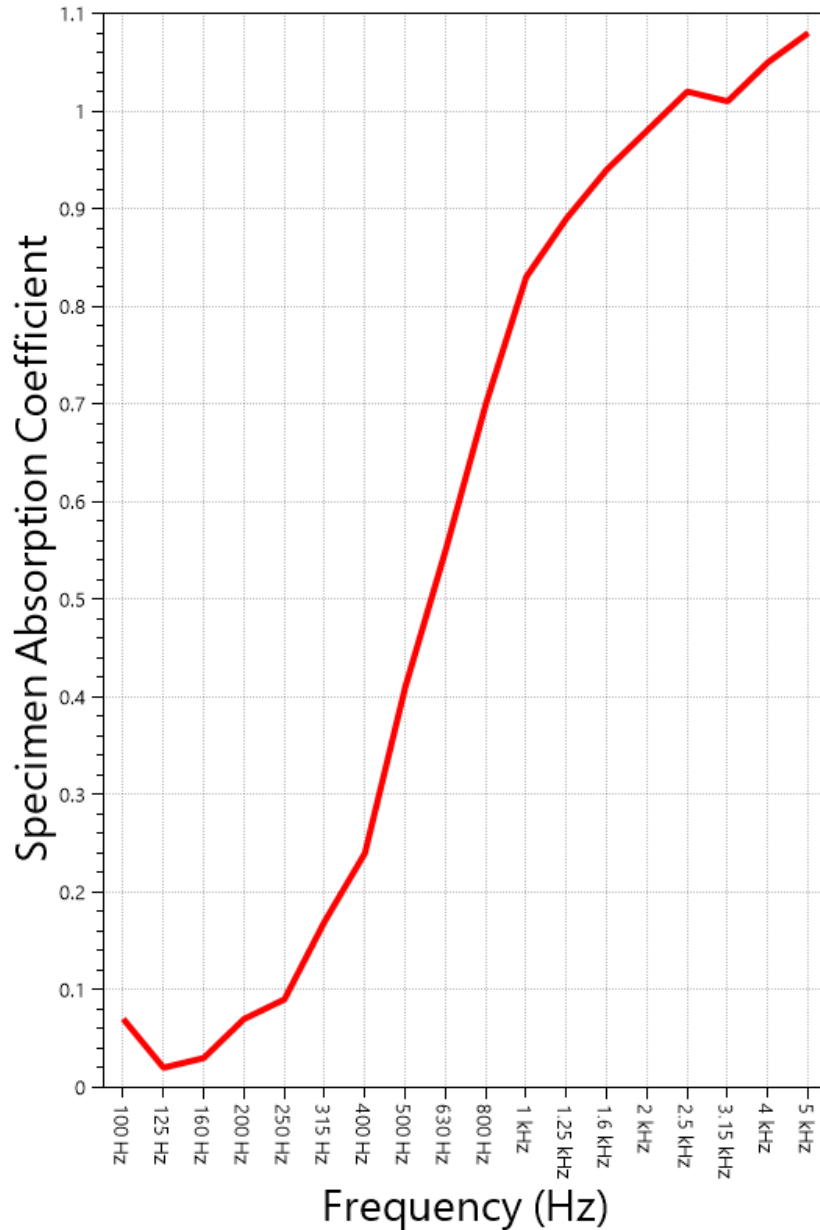
FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

Test Report

Kirei  
2019-04-09

RAL™-A19-154  
Page 6 of 8

SOUND ABSORPTION REPORT  
Barcode Tile



**SAA = 0.57**  
**NRC = 0.60**



RIVERBANK ACOUSTICAL LABORATORIES IS ACCREDITED BY NVLAP (LAB CODE 100227-0) FOR ACOUSTICAL TESTING SERVICES IN ACCORDANCE WITH ISO/IEC 17025:2005 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.

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
 WALLACE CLEMENT SABINE

## Test Report

**Kirei**  
 2019-04-09

**RAL™-A19-154**  
 Page 7 of 8

### APPENDIX A: Extended Frequency Range Data

Specimen: Barcode Tile (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 Center Frequency (Hz)	Total Absorption (Sabins)	Absorption Coefficient
31.5	1.53	0.02
40	4.24	0.06
50	3.66	0.05
63	-2.20	-0.03
80	2.71	0.04
<hr/>		
100	5.23	0.07
125	1.20	0.02
160	2.30	0.03
200	5.30	0.07
250	6.69	0.09
315	12.58	0.17
400	17.23	0.24
500	29.66	0.41
630	39.47	0.55
800	50.56	0.70
1000	59.52	0.83
1250	64.41	0.89
1600	67.33	0.94
2000	70.47	0.98
2500	73.22	1.02
3150	72.53	1.01
4000	75.92	1.05
5000	77.64	1.08
<hr/>		
6300	80.71	1.12
8000	81.50	1.13
10000	81.26	1.13
12500	86.73	1.20

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

[www.riverbankacoustics.com](http://www.riverbankacoustics.com)

FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

**Kirei**  
2019-04-09

**RAL™-A19-154**  
Page 8 of 8

### APPENDIX B: Instruments of Traceability

Specimen: Barcode Tile (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	3160-106968	2018-08-09	2019-08-09
Bruel & Kjaer Mic And Preamp A	Type 4943-B-001	2311428	2018-09-28	2019-09-28
Bruel & Kjaer Pistonphone	Type 4228	2781248	2018-08-06	2019-08-06
EXTECH Hygro 662	SD700	A083662	2018-11-29	2019-11-29

### APPENDIX C: Revisions to Original Test Report

Specimen: Barcode Tile (See Full Report)

<u>Date</u>	<u>Revision</u>
2019-04-18	Original report issued
2026-01-21	All Pages: Product designation changed to Barcode Tile (formerly EchoPanel Barcode Topo Tiles) to facilitate sponsor's revised product identification. -EPW

---

END