Absorption Coefficient Testing

For

Kirei Design

Conducted by

RNS ACOUSTICS

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Prepared For: Kirei
Analysis Performed: Absorption Test

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I. Equipment Information

The microphone(s) used for this measurement was calibrated before and after the measurements were taken to ensure measurement quality and accuracy. Table 1-1 shows the equipment and calibration information.

Measuring Equipment (ANSI and IEC Class I)	Serial Number	Calibration Level	Calibration Date
UMIK-1	705-3103	94dB	January 2020
Aco Pacific 521 Calibrator (94dB @1kHz)	85110	94dB	February 2019

Table 1-1. Equipment and calibration information.

II. Definition of Terms and Limits

1/3 Octave Bands – Displays the frequency spectrum content of a signal divided into 3 bands per-octave. The 1/3 Octave Bands are more useful for data interpretation and practical applications.

Reverberation Time – The amount of time it takes for sound energy in a space to dissipate by a certain amount.

RT60 – The amount of time it takes for a sound in a space to decay by 60dB. This is the typical metric in determining the acoustical performance of a space with respect to reverberation.

III. Project Scope

Kirei Design requested a test be performed on the Echo Panel H-Baffle to determine the approximate absorption of the baffle. The complete test data is included in Appendix A of this report. The client provided the test specimens.

This test only provides relative performance data for the test specimens, and is not intended to be considered comparable to a full laboratory test conducted at a certified laboratory. The relative performance data from the test should be used to consider whether the test specimens should be officially tested, or if the specimens need to be modified to meet performance expectations before an official test is performed.

IV. Test Procedure

All measurements were performed in a test chamber at UCSD, San Diego, CA. The volume of the test chamber used is 16,822.5 cu. ft. The room is irregularly shaped, and all walls are constructed of cement including the floor. There are several pieces of electrical machinery dispersed throughout the room, all contained in thick metal housings. The microphone was tested and calibrated before any measurements were conducted. Ambient noise levels were captured. Room RT60 measurements were taken before and after the specimens were installed.

Two source positions were selected for the tests. Each source position used up to four receiver positions. Three measurements were taken for each receiver position. Figure 4-1 shows the general room configuration, the test specimen area, and the source/receiver locations.

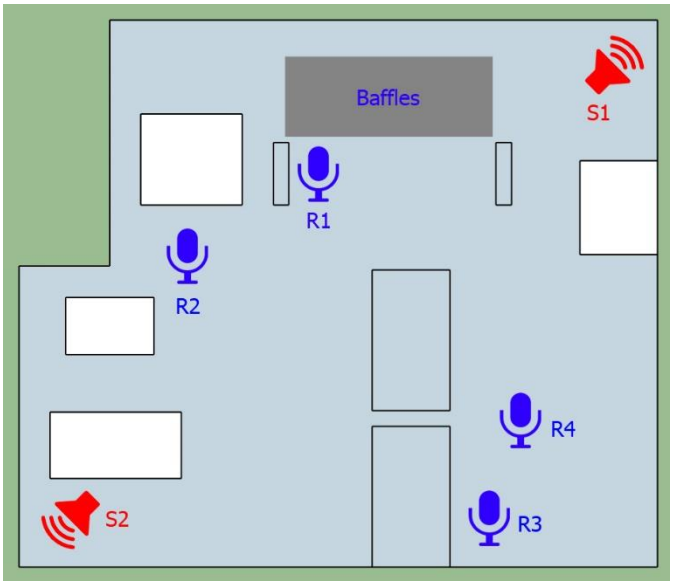

Figure 4-1. Test room configuration with test specimen area, source and receiver locations.

The test specimens were mounted approximately 2ft 6in off the ground resting on 2x4” beams. The specimens were spaced 1ft apart, center to center. Figure 5-1 shows the test specimen setup and apparatus.

Figure 5-1. Test apparatus with test specimens mounted on it.

Test specimens were the Echopanel Systems H-Baffle. Eleven test specimens were used for this test. Table 5-1 shows the test specimen dimensions and weight.

Test Specimen Description				
	Length	Width	Height	Weight
H-Baffle	72"	3.3"	9"	8lbs

Table 5-1. Test specimen dimensions and weight.

The NRC and SAA ratings are not calculated for Type J mountings. Only the sound absorption units (english sabin ft^2/unit) are reported. The sound absorption units (sabins) are calculated by taking the difference between the empty room absorption, and the room absorption with the test specimens. Table 6-1 shows the calculated absorption units. Figure 6-1 shows the results from Table 6-1 in graphical form.

Test Calculations						
	RT60 (Empty Room)	Sabins (Empty Room)	RT60 (w/ Test Specimens)	Sabins (w/ Test Specimens)	Additional Absorption	Sabins/Unit
100	1.79	459.89	1.68	491.22	31.33	2.85
125	2.06	399.49	1.91	430.57	31.08	2.83
160	2.14	385.91	1.95	422.82	36.91	3.36
200	2.16	382.09	2.02	407.56	25.47	2.32
250	1.99	413.52	1.90	434.85	21.33	1.94
315	2.09	394.29	1.93	428.19	33.90	3.08
400	2.16	381.92	1.97	418.83	36.92	3.36
500	2.19	375.57	1.91	431.65	56.07	5.10
630	2.16	382.20	1.86	442.35	60.15	5.47
800	2.09	393.80	1.80	458.15	64.36	5.85
1000	2.03	407.01	1.72	478.44	71.43	6.49
1250	1.96	420.37	1.69	487.57	67.20	6.11
1600	1.93	426.73	1.66	497.05	70.32	6.39
2000	1.84	448.33	1.59	517.25	68.92	6.27
2500	1.76	468.96	1.55	533.40	64.44	5.86
3150	1.66	495.52	1.47	562.12	66.59	6.05
4000	1.48	558.72	1.32	624.31	65.59	5.96
5000	1.29	640.82	1.18	699.66	58.85	5.35
6300	1.11	744.25	1.03	800.63	56.37	5.12
8000	0.89	923.07	0.84	979.76	56.69	5.15

Table 6-1. Absorption measurements and calculation results.

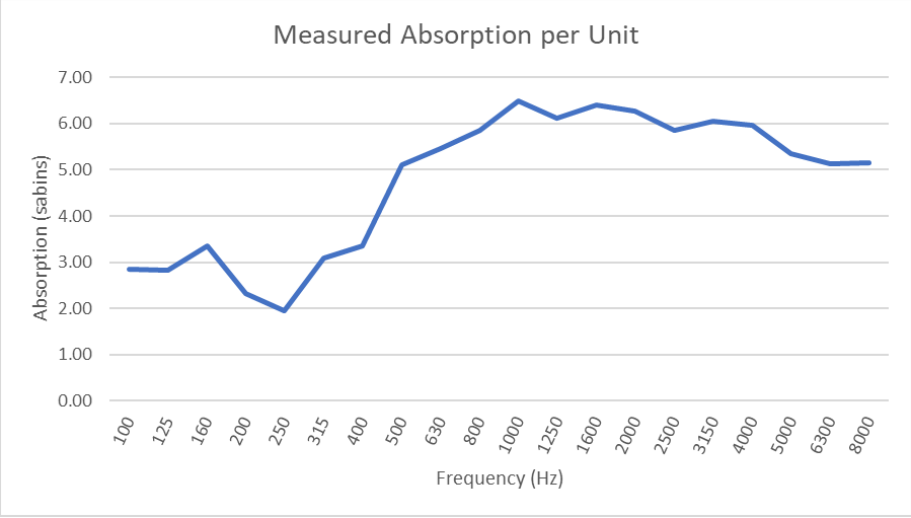

Figure 6-1. Measured absorption per unit.

VII. Additional Information

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound and impact transmission, and RNS Acoustics has no control over the construction, workmanship or materials, RNS Acoustics is specifically not liable for finalresults of any recommendations or implementation of the recommendations.