

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

An  ALION Technical Center

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FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## Test Report

SPONSOR: **Vocal Booth To Go**  
Frederick, MD

**Sound Transmission Loss**  
**RAL™-TL20-315**

CONDUCTED: 2020-10-30

Page 1 of 9

ON: Acoustical Felt Panels with SoundBlock (2.5 inch panel)

### 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 E90-09 (2016): "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements." The single number rating of the specimen was calculated according to ASTM E413-16: "Classification for Rating Sound Insulation." A description of the measurement procedure and room specifications is available upon request. The transmission loss values are for a single direction of measurement. 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 Acoustical Felt Panels with SoundBlock (2.5 inch panel). 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: Acoustical Felt Panels with Soundblock  
Manufacturer: Vocal Booth To Go

### SPECIMEN MEASUREMENTS & TEST CONDITIONS

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

#### Test Specimen

Materials: Compressible fibrous insulation core  
Mass loaded vinyl sheet adhered to one face of core  
Quilted textile adhered to exterior face of mass loaded vinyl sheet  
Tape seals at panel joints spaced approximately 609.6 mm (24 in.) on center

Dimensions: 1219.2 mm (48 in.) x 2438.4 mm (96 in.)  
Thickness: Mass loaded vinyl sheet @ 3.18 mm (0.125 in.)  
Overall @ approximately 63.5 mm (2.5 in.)

Overall Weight: 24.04 kg (53 lbs)  
Installation: Face with mass loaded vinyl oriented toward receive room

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## Test Report

Vocal Booth To Go  
2020-10-30

**RAL™-TL20-315**

Page 2 of 9

### Overall Specimen Measurements

Dimensions: 1.22 m (48.0 in) wide by 2.44 m (96.0 in) high  
Thickness: 0.06 m (2.5 in)  
Weight: 47.63 kg (105.0 lbs)  
Transmission Area: 2.973 m<sup>2</sup> (32 ft<sup>2</sup>)  
Mass per Unit Area: 16.02 kg/m<sup>2</sup> (3.28 lbs/ft<sup>2</sup>)

### Test Aperture

Size: 1.22 m (4.0 ft.) by 2.44 m (8.0 ft.)  
Filler Wall: None  
Sealed: Entire periphery (both sides) with dense mastic

### Test Environment

#### Source Room

Volume: 178.33 m<sup>3</sup>  
Temperature: 21.4 °C ± 0.6 °C  
Relative Humidity: 45.5 % ± 1.0 %

#### Receive Room

Volume: 131.5 m<sup>3</sup>  
Temperature: 21.7 °C ± 0.0 °C  
Relative Humidity: 45.0 % ± 0.0 %

#### Requirements

Temperature: 22° C +/- 2° C, not more than 3° C change over all tests.  
Relative Humidity: ≥ 30%, not more than +/- 3% change over all tests.

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## Test Report

**RAL™-TL20-315**

Page 3 of 9

**Vocal Booth To Go**

2020-10-30



Figure 1 – Specimen mounted in test opening, as viewed from source room (left) and receive room (right)



Figure 2 – Detail of test specimen materials

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**Test Report**

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**RAL™-TL20-315**

Page 4 of 9

**Vocal Booth To Go**

2020-10-30

TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequency bands. A graphic presentation of the data and additional information appear on the following pages. The precision of the transmission loss test data is within the limits set by the ASTM Standard E90-09 (2016). See Appendix A for identification of corrections applied to the reported data.


<u>FREQ.</u>	<u>TL</u>	<u>ΔTL</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>TL</u>	<u>ΔTL</u>	<u>DEF.</u>
100	18	0.79	0	800	30	0.18	3
125	17	0.77	0	1000	32	0.13	2
160	18	0.48	0	1250	35	0.15	0
200	20	0.50	1	1600	38	0.13	0
250	21	0.27	3	2000	40	0.14	0
315	23	0.25	4	2500	42	0.14	0
400	24	0.21	6	3150	44	0.16	0
500	25	0.17	6	4000	47	0.14	0
630	28	0.17	4	5000	49	0.21	0

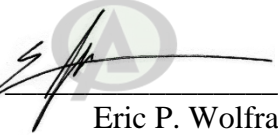
STC=31

ABBREVIATION INDEX

- FREQ. = 1/3 OCTAVE BAND CENTER FREQUENCY, Hz
- TL = TRANSMISSION LOSS, dB
- ΔTL = 95% CONFIDENCE INTERVAL FOR TL MEASUREMENTS, dB
- DEF. = DEFICIENCIES, dB BELOW SHIFTED STC CONTOUR (SUM OF DEF = 29)
- STC = SOUND TRANSMISSION CLASS

Tested by   
 Dean Victor  
 Lead Experimentalist

Report by   
 Malcolm Kelly  
 Test Engineer, Acoustician

Approved by   
 Eric P. Wolfram  
 Laboratory Manager



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**Test Report**

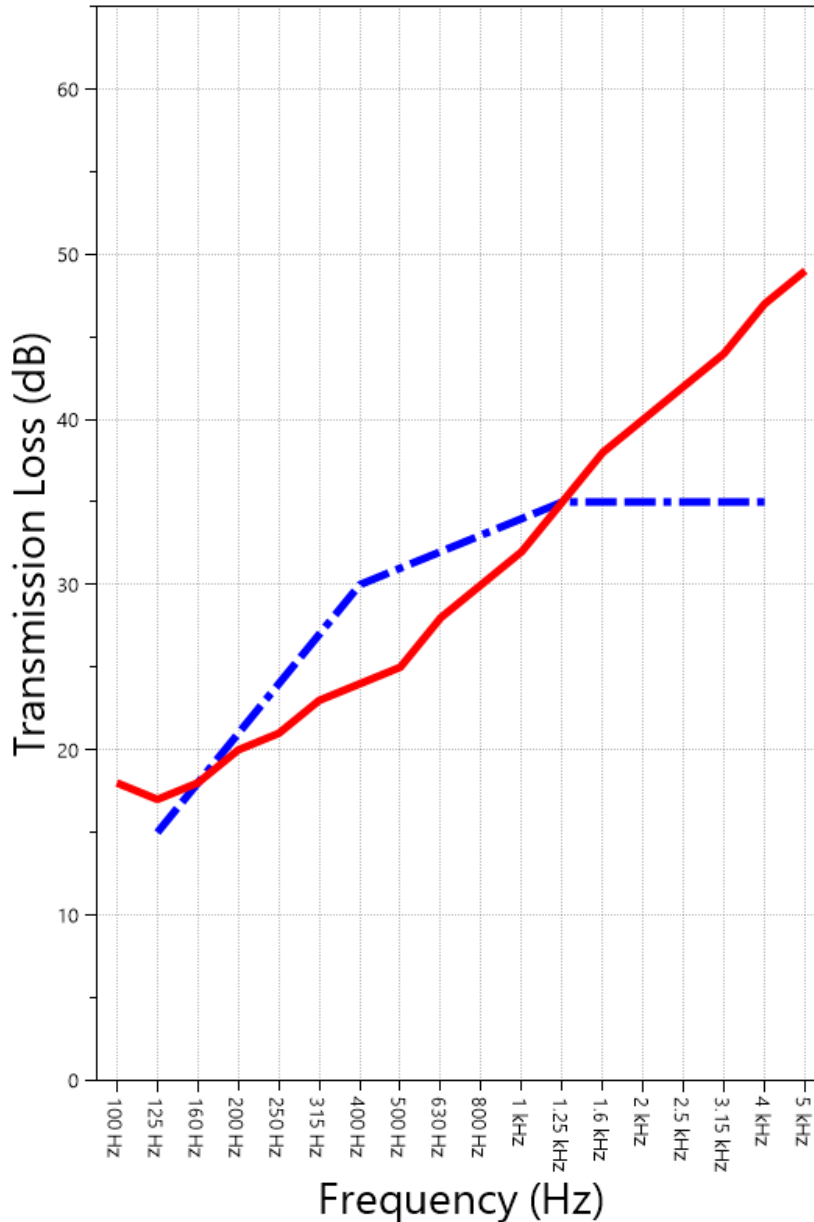
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**RAL™-TL20-315**

Page 5 of 9

**Vocal Booth To Go**  
 2020-10-30

**SOUND TRANSMISSION REPORT**  
 Acoustical Felt Panels with SoundBlock (2.5 inch panel)



**STC=31**  
**OITC=24**



**TRANSMISSION LOSS**  
**SOUND TRANSMISSION CLASS CONTOUR**



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## Test Report

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**RAL™-TL20-315**

Page 6 of 9

**Vocal Booth To Go**  
2020-10-30

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

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (See Full Report)

*The following non-accredited data were obtained in accordance with ASTM E90-09 (2016) 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. Sampling precision observed during this procedure is reported below. Corrections are detailed in Appendix B.*

1/3 Octave Band Center Frequency (Hz)	Sound Transmission Loss (dB)	Applicable Corrections	ΔTL (Eq. A2.5) (dB)	Repeatability (dB)
31.5	8		0.84	1.24
40	13		0.80	1.44
50	11		1.20	0.98
63	7		1.42	2.33
80	9		0.72	1.46
100	18		0.79	0.77
125	17		0.77	1.28
160	18		0.48	1.18
200	20		0.50	0.74
250	21		0.27	0.53
315	23		0.25	0.46
400	24		0.21	0.41
500	25		0.17	0.41
630	28		0.17	0.32
800	30		0.18	0.30
1000	32		0.13	0.29
1250	35		0.15	0.15
1600	38		0.13	0.18
2000	40		0.14	0.12
2500	42		0.14	0.28
3150	44		0.16	0.23
4000	47		0.14	0.18
5000	49		0.21	0.26
6300	52		0.21	0.28
8000	54		0.24	0.67
10000	52	A F	0.17	0.93
12500	43	F	0.19	1.93



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## Test Report

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**Vocal Booth To Go**  
2020-10-30

**RAL™-TL20-315**

Page 7 of 9

### **APPENDIX B: Glossary of Standardized Corrections and Adjustments**

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (See Full Report)

#### **Mark**    **Interpretation**

- A**    Measured sound pressure levels in the receive room are within 10 dB of the ambient noise level at the marked frequency band. Receive room levels used to calculate Transmission Loss are corrected according to ASTM E90 Section 10.3.
- AA**    Measured sound pressure levels in the receive room are within 5 dB of the ambient noise level at the marked frequency band. Receive room levels used to calculate Transmission Loss are corrected according to ASTM E90 Section 10.3.1. Transmission Loss values calculated from levels corrected this way will be less than or equal to Transmission Loss values from a hypothetical test using the same specimen and a receive room with idealized ambient sound levels of  $(-\infty)$  dB.
- F**    The reported Transmission Loss is within 10 dB of the laboratory flanking limit at the marked frequency band. The measured performance of the specimen may be limited by the performance of the laboratory building structure at this frequency band.
- Z**    The reported Transmission Loss at the marked frequency band has been corrected according to ASTM E90 Section A3.2.7 to account for possible sound transmission through the filler assembly.
- ZZ**    The reported Transmission Loss at the marked frequency band has been corrected according to ASTM E90 Section A3.2.8 to account for possible sound transmission through the filler assembly. Transmission Loss values corrected this way will be less than or equal to Transmission Loss values from a hypothetical test using the same specimen and an idealized filler assembly with a Sound Transmission Class rating of  $(\infty)$ .

### **APPENDIX C: Glossary of Variability Metrics**

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (See Full Report)

$\Delta$ TL, the 95% confidence interval for reported transmission loss values, is calculated from the standard deviation of the sets of measurements for source room sound pressure level, receive room sound pressure level, and receive room sound absorption. This metric is calculated in an effort to quantify the combined influences of room geometry, microphone positioning, and other varying environmental conditions on reported results.

**Repeatability**, expressed as a 95% confidence interval, is calculated from the standard deviation of transmission loss as obtained from a set of six (6) consecutive tests conducted according to this test method by RAL on 2020-02-24. The tests were performed on a specimen composed of welded aluminum tubing, using the same test opening as used in this report. This metric provides an estimate of the variation in results that might be observed if the test were repeated with no change to the installed specimen. Note that repeatability will vary with the construction type.

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**RAL™-TL20-315**

Page 8 of 9

**Vocal Booth To Go**

2020-10-30

**APPENDIX D: Determination of Outdoor Indoor Transmission Class (OITC)**

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (See Full Report)

The determination of the Outdoor Indoor Transmission Class (OITC) as reported below was made with explicit conformity to the procedures described in the ASTM E1332-16 test standard. Test Method ASTM E90-09 (2016) was used to obtain the sound transmission loss data. This rating is based on an average transportation noise source spectrum and an A-weighted sound level reduction, either of which may be inappropriate for some applications.

One-third Octave Band Center Frequency, Hz	Reference Sound Spectrum, dB	Test Specimen Transmission Loss, dB
80	103	9
100	102	18
125	101	17
160	98	18
200	97	20
250	95	21
315	94	23
400	93	24
500	93	25
630	91	28
800	90	30
1000	89	32
1250	89	35
1600	88	38
2000	88	40
2500	87	42
3150	85	44
4000	84	47

*OITC = 24*



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## Test Report

**RAL™-TL20-315**

Page 9 of 9

**Vocal Booth To Go**

2020-10-30

### **APPENDIX E: Instruments of Traceability**

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (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 2	Type 3160-A-042	3160-106974	2020-08-13	2021-08-13
Bruel & Kjaer Mic And Preamp C	Type 4943-B-001	2311439	2020-04-07	2021-04-07
Bruel & Kjaer Pistonphone	Type 4228	2781248	2020-08-12	2021-08-12
EXTECH Hygro 662	SD700	A083662	2019-12-04	2020-12-04
EXTECH Hygro 663	SD700	A083663	2019-12-04	2020-12-04

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

Specimen: Acoustical Felt Panels with SoundBlock (2.5 inch panel) (See Full Report)

<b><u>Date</u></b>	<b><u>Revision</u></b>
2020-11-04	Original report issued

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