627 RIVERBANK DRIVE
GENEVA, IL 60134

630-232-0104

# Test Report

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SPONSOR: **ClarkDietrich**
West Chester, OH

**Sound Transmission Loss**
**RAL™-TL25-578**

CONDUCTED: 2025-12-16



ON: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side

## 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 E413-22: "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 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side. 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: | SilentXpress™, Type CWSC |
| Manufacturer: | ClarkDietrich |

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SPECIMEN MEASUREMENTS & TEST CONDITIONS

The building contractor (Seth Priser) and RAL staff compiled a detailed construction specification as follows:

**Tracks (Top & Bottom)**

| | |
|---|---|
| Material: | ProTRAK20 (18 mil) |
| Manufacturer: | ClarkDietrich |
| Dimensions: | 2 tracks @ 2438 mm (96 in.) long by 32 mm (1.25 in.) high, each |
| Depth: | 92 mm (3.625 in.) |
| Metal Thickness: | 18 mil - 0.49 mm (0.01915 in.) |
| Installation: | Friction fit over sill sealer |
| Overall Weight: | 2.83 kg (6.25 lbs) |
| Mass per Unit Length: | 0.58 kg/m (0.39 lbs/ft) |

**SilentXpress™ Stud-Packs**

| | |
|---|---|
| Material: | ProSTUD 20 (18 mil) |
| Dimensions: | 7 stud-packs, in pairs of 41 mm (1.625 in) deep by 2743 mm (108 in.) tall studs. |
| Depth: | 92 mm (3.625 in.) Studs-pack consisting of 41 mm (1.625 in.) each, installed as described below |
| Steel Thickness: | 18 mil - 0.49 mm (0.0193 in.) |
| Stud Spacing: | SilentXpress™ Stud-Pack spaced 406 mm (16 in.) on center |
| Installation: | Studs installed in pairs with approx. 10 mm (0.375 in.) space in between each, and connected by SilentXpress™ Sound Clips (Type CWSC)<br>Stud-packs fastened to tracks, 1 screw at track flange to stud flange intersection as required by UL design.<br>End wall stud-pack oriented with the web of the studs to the edge of test frame and fastened to test frame at midpoint with 1 screw |
| Fasteners: | #8 Wafer head studs screws |
| Overall Weight: | 16.22 kg (35.75 lbs) |
| Mass per Unit Length: | 0.42 kg/m (0.28 lbs/ft) |

*Note: A bead of acoustical sealant was used to seal the source side of the specimen where framing members met the test frame (0.91 kg (2 lbs) total).*

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SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

**SilentXpress™ Sound Clips (Type CWSC)**

| | |
|---|---|
| Materials: | 33 mil – 0.88 mm (0.0346 in.) steel clip with isolating rubber grommets |
| Dimensions: | 15 clips @ 25 mm (1 in.) wide by 51 mm (2 in.) high |
| Depth: | 76 mm (3 in.) |
| Installation: | 15 SilentXpress™ clips were installed, fastened to stud-packs with fasteners, 1 fastener at each clip-to-stud isolation grommet, clips were spaced 178 mm (7 in.) from bottom track, 178 mm (7 in.) from top track, and a midpoint of stud-pack. 1372mm (54 in.) |
| Fasteners: | Type S bugle head drywall screws, 41 mm (1.625 in.) long |
| Overall Weight: | 1.13 kg (2.5 lbs) |

**Source Room Side**

**Base Layer**

| | |
|---|---|
| Material: | Type X gypsum board |
| Dimensions: | 2 panels @ 1219 mm (48 in.) wide by 2743 mm (108 in.) high |
| Thickness: | 16 mm (0.625 in.) |
| Installation: | Panels installed with long dimension vertically and fastened to studs with screws |
| Fasteners: | Type S bugle head drywall screws, 32 mm (1.25 in.) long |
| Fastener Spacing: | 406 mm (16 in.) on center, at board edges and field. |
| Overall Weight: | 73.6 kg (162.25 lbs) |
| Mass Per Unit Area: | 11.00 kg/m$^2$ (2.25 lbs/ft$^2$) |

**Face Layer**

| | |
|---|---|
| Material: | Type X gypsum board |
| Dimensions: | 1 panel @ 1219 mm (48 in.) wide by 2743 mm (108 in.) high<br>1 panel @ 813 mm (32 in.) wide by 2743 mm (108 in.) high<br>1 panel @ 406 mm (16 in.) wide by 2743 mm (108 in.) high |
| Thickness: | 16 mm (0.625 in.) |
| Installation: | Panels installed vertically, fastened to studs through base layer with screws<br>Panel joints staggered from source side base layer panel joints |
| Fasteners: | Type S bugle head drywall screws, 41 mm (1.625 in.) long |
| Fastener Spacing: | 406 mm (16 in.) on center, at board edges and field, and offset 203 mm (8 in.) from base layer |
| Overall Weight: | 73.48 kg (162 lbs) |
| Mass Per Unit Area: | 10.99 kg/m$^2$ (2.25 lbs/ft$^2$) |

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SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

**Receive Room Side**

**Base Layer**

| | |
|---|---|
| Material: | Type X gypsum board |
| Dimensions: | 1 panel @ 1219 mm (48 in.) wide by 2743 mm (108 in.) high<br>1 panel @ 813 mm (32 in.) wide by 2743 mm (108 in.) high<br>1 panel @ 406 mm (16 in.) wide by 2743 mm (108 in.) high |
| Thickness: | 16 mm (0.625 in.) |
| Installation: | Panels installed with long dimension vertically, and fastened to studs with screws<br>Panel joints staggered one stud cavity from source side's base layer panel joints |
| Fasteners: | Type S bugle head drywall screws, @ 32 mm (1.25 in.) long |
| Fastener Spacing: | 406 mm (16 in.) on center , at board edges and field. |
| Overall Weight: | 73.37 kg (161.75 lbs) |
| Mass Per Unit Area: | 10.97 kg/m$^2$ (2.25 lbs/ft$^2$) |

**Face Layer**

| | |
|---|---|
| Material: | Type X gypsum board |
| Dimensions: | 2 panels @ 1219 mm (48 in.) wide by 2743 mm (108 in.) high |
| Thickness: | 16 mm (0.625 in.) |
| Installation: | Panels installed vertically, fastened through base layer to studs with screws<br>Panel joints staggered from receive side base layer panel joints |
| Fasteners: | Type S bugle head drywall screws, @ 41 mm (1.625 in.) long |
| Fastener Spacing: | 406 mm (16 in.) on center, at board edges and field, and offset 203 mm (8 in.) from base layer |
| Overall Weight: | 73.48 kg (162 lbs) |
| Mass Per Unit Area: | 10.99 kg/m$^2$ (2.25 lbs/ft$^2$) |

*Note: Joints between gypsum board panels, and screw heads on both sides of the partition were treated with a thin bead of acoustical sealant and metal tape (0.45 kg (1 lbs) total).*

**Insulation**

| | |
|---|---|
| Materials: | Fire and Sound Guard Plus |
| Manufacturer: | Owens Corning/Thermafiber |
| Dimensions: | 12 pieces @ 381 mm (15 in.) wide by 1219 mm (48 in.) high<br>6 pieces @ 381 mm (15 in.) wide by 305 mm (12 in.) high |
| Depth: | 89 mm (3.5 in.) |
| Installation: | Pieces friction fit in cavities between stud-packs |
| Overall Weight: | 26.54 kg (58.5 lbs) |
| Mass per Unit Volume: | 47.6 kg/m$^3$ (2.97 lbs/ft$^3$) as installed |

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SPECIMEN MEASUREMENTS & TEST CONDITIONS (continued)

**Overall Specimen Measurements**

| | |
|---|---|
| Dimensions: | 2.44 m (96.0 in) wide by 2.74 m (108.0 in) high |
| Thickness: | 0.16 m (6.125 in) |
| Weight: | 342.01 kg (754.0 lbs) |
| Overall Area: | 6.689 m² (72. ft²) |
| Mass per Unit Area: | 51.13 kg/m² (10.47 lbs/ft²) |

**Test Aperture**

| | |
|---|---|
| Opening Size: | 2.74 m (9.0 ft.) by 4.27 m (14.0 ft.) |
| Filler Wall: | Yes |
| Aperture Size: | 2.44 m (96.0 in) wide by 2.74 m (108.0 in) high |
| Transmission Area: | 6.689 m² (72. ft²) |
| Sealed: | Entire periphery (both sides) with dense mastic |

**Test Environment**

Source Room

| | |
|---|---|
| Volume: | 177.11 m³ |
| Temperature: | 22.2 °C ± 0.0 °C |
| Relative Humidity: | 53.5 % ± 0.5 % |

Receive Room

| | |
|---|---|
| Volume: | 178.33 m³ |
| Temperature: | 21.9 °C ± 0.3 °C |
| Relative Humidity: | 54.5 % ± 1.5 % |

Requirements

| | |
|---|---|
| Temperature: | 22º 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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Figure 1 – Specimen mounted in test aperture, as viewed from source room

Figure 2 – Specimen mounted in test aperture, as viewed from receive room

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Figure 3 – Tracks, studs, and clips installed, base layer gypsum partially installed on source room side

Figure 4 – Face layer gypsum partially installed on source room side

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Figure 5 – Insulation installed in stud cavities

Figure 6 – Base layer gypsum installed on receive room side

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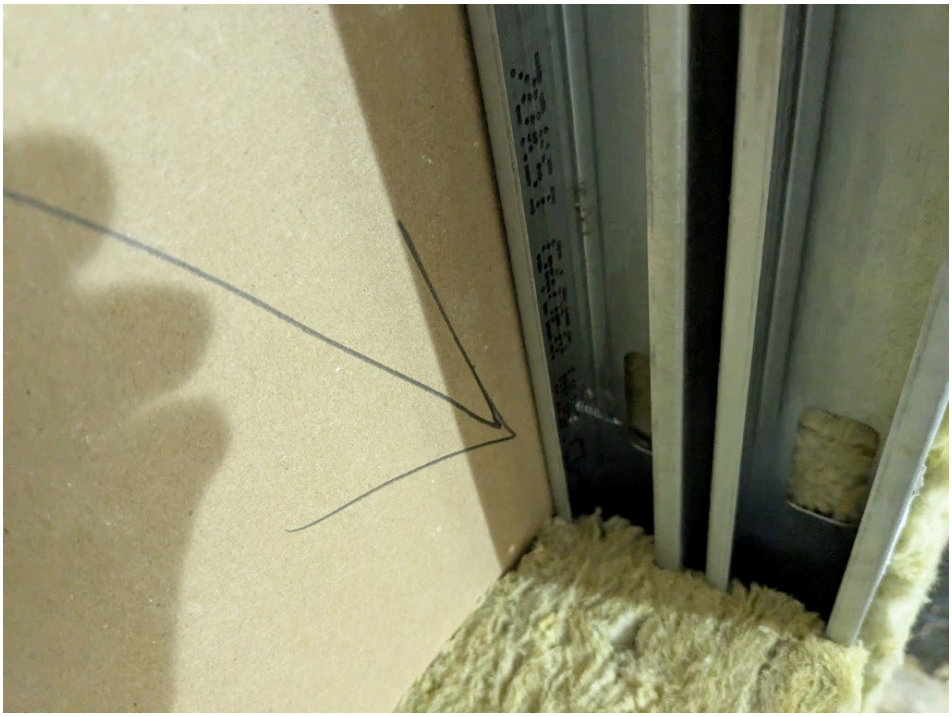

Figure 7 – Detail showing unfilled studs in wall cavity

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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.

| FREQ. | TL | ΔTL | DEF. | FREQ. | TL | ΔTL | DEF. |
|---|---|---|---|---|---|---|---|
| 100 | 33 | 0.83 | 0 | 800 | 61 | 0.29 | 0 |
| 125 | 40 | 0.57 | 3 | 1000 | 63 | 0.14 | 0 |
| 160 | 43 | 0.48 | 3 | 1250 | 65 | 0.17 | 0 |
| 200 | 46 | 0.54 | 3 | 1600 | 64 | 0.10 | 0 |
| 250 | 51 | 0.51 | 1 | 2000 | 55 | 0.09 | 8 |
| 315 | 55 | 0.21 | 0 | 2500 | 55 | 0.14 | 8 |
| 400 | 57 | 0.19 | 1 | 3150 | 61 | 0.12 | 2 |
| 500 | 58 | 0.20 | 1 | 4000 | 66 | 0.11 | 0 |
| 630 | 58 | 0.22 | 2 | 5000 | 69 | 0.14 | 0 |

STC=59

ABBREVIATION INDEX

FREQ. = 1/3 OCTAVE BAND CENTER FREQUENCY, Hz
TL = TRANSMISSION LOSS, dB
ΔTL = 95% CONFIDENCE INTERVAL OVER DURATION OF THIS TEST, dB
DEF. = DEFICIENCIES, dB BELOW SHIFTED STC CONTOUR (SUM OF DEF = 32)
STC = SOUND TRANSMISSION CLASS

Tested by _____
Marc Sciaky
*Senior Experimentalist*

Report by _____
Keith Kimberling
*Test Engineer*

Approved by _____
Eric P. Wolfram
*Laboratory Manager*

Digitally signed by Eric P Wolfram
Date: 2026.02.05 08:43:04 -06'00'

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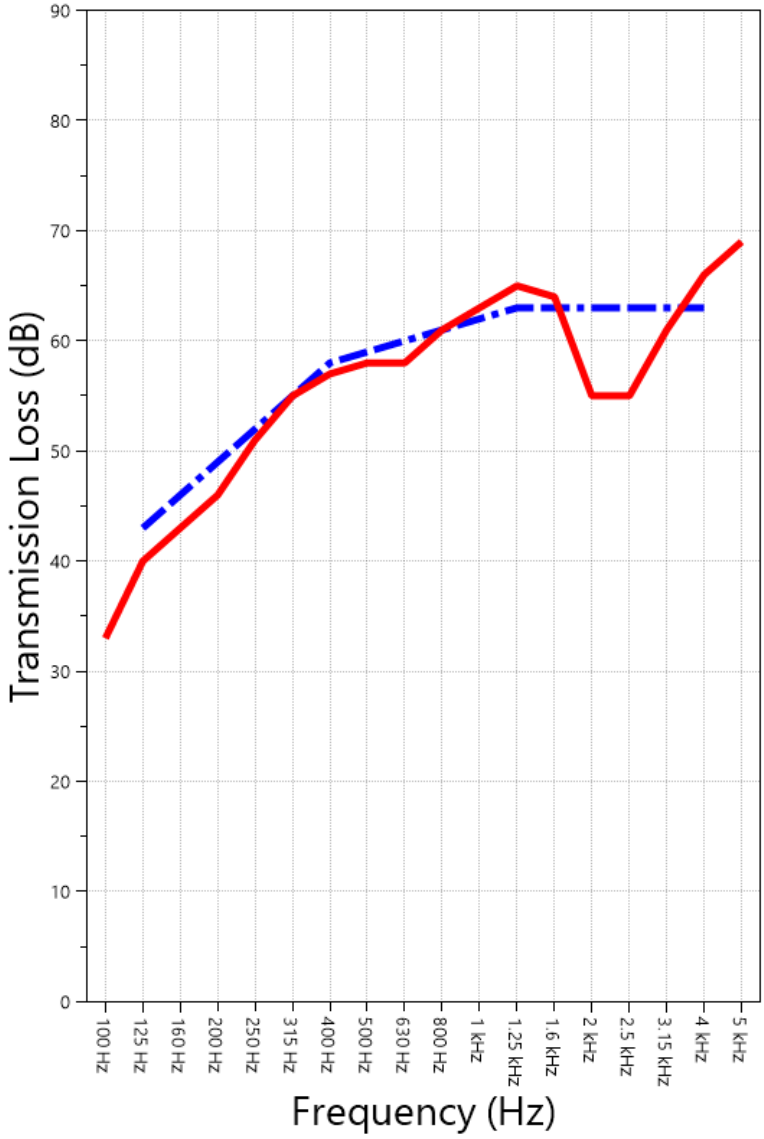
**ClarkDietrich**
2025-12-16

**RAL™-TL25-578**



# SOUND TRANSMISSION REPORT

3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side




**STC=59**
**OITC=43**

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

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## APPENDIX A: Extended Frequency Range Data

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (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 | 25 | *ZZ F* | 1.07 | 1.01 |
| 40 | 20 | *Z F* | 0.72 | 2.26 |
| 50 | 15 | | 0.87 | 1.52 |
| 63 | 15 | | 0.69 | 1.47 |
| 80 | 26 | | 0.55 | 0.60 |
| 100 | 33 | *Z F* | 0.83 | 0.67 |
| 125 | 40 | *Z F* | 0.57 | 0.71 |
| 160 | 43 | *Z F* | 0.48 | 0.35 |
| 200 | 46 | *Z F* | 0.54 | 0.33 |
| 250 | 51 | *Z F* | 0.51 | 0.42 |
| 315 | 55 | *Z F* | 0.21 | 0.41 |
| 400 | 57 | *Z* | 0.19 | 0.46 |
| 500 | 58 | | 0.20 | 0.18 |
| 630 | 58 | | 0.22 | 0.26 |
| 800 | 61 | | 0.29 | 0.24 |
| 1000 | 63 | | 0.14 | 0.27 |
| 1250 | 65 | *Z* | 0.17 | 0.15 |
| 1600 | 64 | *Z* | 0.10 | 0.12 |
| 2000 | 55 | | 0.09 | 0.13 |
| 2500 | 55 | | 0.14 | 0.19 |
| 3150 | 61 | | 0.12 | 0.14 |
| 4000 | 66 | | 0.11 | 0.17 |
| 5000 | 69 | *Z* | 0.14 | 0.17 |
| 6300 | 70 | *Z F* | 0.16 | 0.21 |
| 8000 | 68 | *Z F* | 0.10 | 0.50 |
| 10000 | 60 | *Z* | 0.15 | 1.21 |
| 12500 | 54 | *Z* | 0.18 | 1.74 |

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## APPENDIX B: Glossary of Standardized Corrections and Adjustments

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (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 (-∞) 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 (∞). |

## APPENDIX C: Glossary of Variability Metrics

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (See Full Report)

**ΔTL**, 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 2020-02-13. The tests were performed on a specimen composed of 24 gauge steel paneling, 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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**APPENDIX D: Determination of Outdoor Indoor Transmission Class (OITC)**

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (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 E1332-22 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 | 26 |
| 100 | 102 | 33 |
| 125 | 101 | 40 |
| 160 | 98 | 43 |
| 200 | 97 | 46 |
| 250 | 95 | 51 |
| 315 | 94 | 55 |
| 400 | 93 | 57 |
| 500 | 93 | 58 |
| 630 | 91 | 58 |
| 800 | 90 | 61 |
| 1000 | 89 | 63 |
| 1250 | 89 | 65 |
| 1600 | 88 | 64 |
| 2000 | 88 | 55 |
| 2500 | 87 | 55 |
| 3150 | 85 | 61 |
| 4000 | 84 | 66 |

*OITC = 43*

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## APPENDIX E: Instruments of Traceability

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (See Full Report)

| Description | Model | Serial Number | Date of Certification | Calibration Due |
|---|---|---|---|---|
| System 2 | 3160-A-042 | 3160-106974 | 2025-08-20 | 2026-08-20 |
| Bruel & Kjaer Mic And Preamp C | Type 4943-B-001 | 2311439 | 2025-04-11 | 2026-04-11 |
| Bruel & Kjaer Pistonphone | Type 4228 | 2781248 | 2025-07-21 | 2026-07-21 |
| EXTECH Hygro 959 | SD700 | A.099959 | 2025-04-17 | 2026-04-17 |
| EXTECH Hygro 6015 | SD700 | A.116015 | 2025-06-17 | 2026-06-17 |

## APPENDIX F: Revisions to Original Test Report

Specimen: 3-5/8 in (92mm) SilentXpress™ Sound Wall – Stud pack [1-5/8 in (41 mm). dbl. stud bridged with type CWSC Clip] spaced at 16 in. (406mm) o.c. – 2 Layers 5/8in. (16 mm) Type-X, Source Side - (3.625 in. (92 mm) R-15 Insulation, stud web not filled) - 2 Layers 5/8 in. (16 mm) Type-X, Receive Side (See Full Report)

| Date | Revision |
|---|---|
| 2026-02-03 | Original report issued |
| 2026-02-05 | Page 9: Added Figure 7 per sponsor's request. -EPW |

END

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