

RSIC-1 ACOUSTIC ASSEMBLY

FLOOR/CEILING ASSEMBLY

DIRECT FIX TO SOLID WOOD JOIST

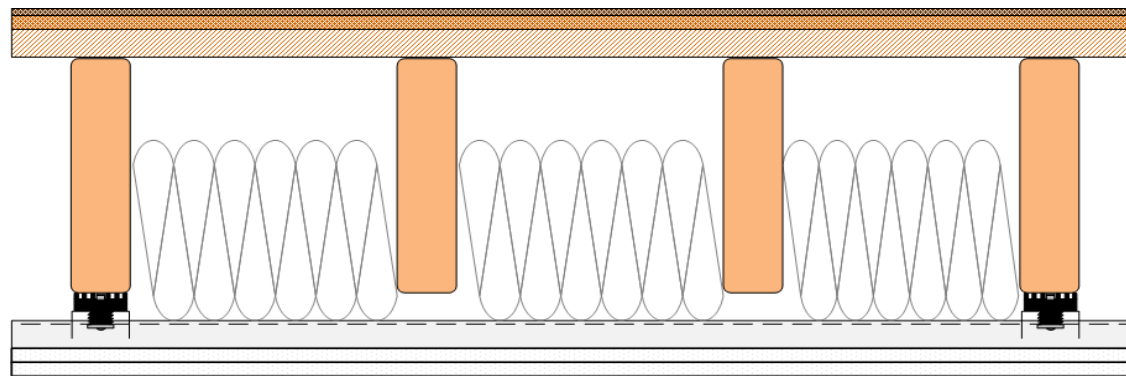


PAC INTERNATIONAL INC.

TOLL FREE 866-RSIC-100

WWW.PAC-INTL.COM

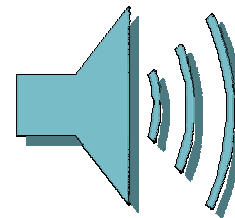
FCSNGC RAL IN08-015



CONSTRUCTION

- * Laminate Flooring
- * Vapor Barrier
- * 1/2" Plywood Underlayment
- * 3/4" T&G Plywood Structural Panel
- * 2"x10" Solid Wood Joist @ 16" oc.
- * R-19 Fiberglass Batt Insulation (nom 6")
- * RSIC-1 installed 48" oc.
- * 7/8" Drywall Furring Channel 24" oc.
- * 2 Layers 5/8" Gypsum Drywall

Riverbank Acoustical Laboratories (RAL)



**SOUND TRANSMISSION
CLASS**

**RAL TL08-194
STC 57**



Fire Resistance Ratings

Designs: L502

L513, L514 L516, L523

L532, L569, L590, L593

**IMPACT ISOLATION
CLASS**

**RAL IN08-015
IIC 52**

TEST REPORT

FOR: PAC International, Inc.
7340 Smoke Ranch Rd., Suite A, Las Vegas, NV
89128

Impact Sound Transmission Test
RAL™-IN08-015

Page 1 of 5

ON: Laminate Flooring over Subfloor on 2 x 10 Solid
Wood Joist with Insulated Cavities with Resilient
Sound Isolation Clips (RSIC-1) and Double Layer of
5/8 Inch Gypsum Board Ceiling

REVISION: 26 November 2008

CONDUCTED: 8 July 2008

TEST METHOD

The measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E492-04 and E989-06, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as laminate flooring over subfloor on 2 x 10 solid wood joist with insulated cavities with Resilient Sound Isolation Clips (RSIC-1) and double layer of 5/8 inch gypsum board ceiling. The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 6.10 m (240 in.) high and 347 mm (13.7 in.) thick. The specimen was constructed directly in the laboratory's 4.27 m (14 ft) by 6.10 m (20 ft) test opening and was sealed on the periphery (both sides) with dense mastic.

The description of the specimen was as follows: From the top down, the floor consisted of laminate flooring over 1/2" plywood on 23/32" span rated OSB board attached to 235 mm (9.5 in.) deep solid wood joist with a fiberglass insulated cavity, a double layer of 5/8" Type X gypsum board ceiling attached using Resilient Sound Isolation Clips (RSIC-1) and hat track. A more detailed description of the test assembly appears in the following sections.

Prefinished Laminate Floor and Underlayment

The finished floor consisted of 6 mm (0.25 in.) thick prefinished laminate flooring, provided as nominal 216 mm (8.5 in.) wide by 1.22 m (48 in.) long planks with tongue and groove edging. Weight of the wood floor was 147 kg (324 lbs). Prior to installing the finished floor, an

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NVLAP Lab Code 100227-0

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TEST REPORT

PAC International, Inc.

RAL™-IN08-015

8 July 2008

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REVISION: 26 November 2008

underlayment of 2 mm (0.075 in.) thick polyurethane foam was loose laid on the floor with all joints taped. Total weight of the underlayment as measured was 17.2 kg (38 lbs.).

Wood Subfloor and Support Assembly

The base floor consisted of 12.7 mm (1/2 in.) thick BC plywood fastened at 305 mm (12 in.) on center with 51 mm (2 in.) long Type W screws over 18 mm (23/32 in.) tongue and groove OSB board fastened to two-by-ten solid wood floor joists and box sill using 8d nails on 203 mm (8 in.) centers. The two-by-ten solid wood joists horizontally installed on joist hangers spanned the width of the test opening. The joists were spaced on 406 mm (16 in.) centers, starting 203 mm (8 in.) either side of the centerline. Total weight of the subfloor and support assembly was 639 kg (1,410 lbs).

Insulation

The cavities between the joists contained a layer of 159 mm (6.25 in.) thick by 381 mm (15 in.) wide unfaced fiberglass batt insulation. The fiberglass batts were placed against the underside of the floor deck and held in place using steel "lightning rod" clips. The weight of the insulation was 26.5 kg (58.5 lbs).

Ceiling Assembly

The ceiling assembly consisted of 25 gauge roll-formed drywall furring channel (aka hat track) which measured 22 mm (0.875 in.) deep by 65 mm (2.56 in.) wide. Eight (8) full runs of drywall furring channel track were mounted to the RSIC-1 clips spaced at 24 in. x 48 in. center to center. Runs of drywall furring channels extending the full length of the test specimen included splices which were overlapped 152 mm (6 in.) and double wire tied with 18 gauge tie wire as necessary. Six runs of track 1.52 m (60 in.) long and four at 1.22 m (48 in.) long were installed parallel to the main runs as necessary to provide for independent suspension of each gypsum board at the butt joints. Total weight of the channels as measured was 23.8 kg (52.5 lbs). The hat track was attached to the PAC International's Resilient Sound Isolation Clips (RSIC-1), each fastened to the joists with a 63 mm (2.5 in.) long #8 coarse thread drywall screw. The RSIC-1 clips were installed to accommodate installation of the hat track perpendicular to the solid wood joists and spaced on 610 mm (24 in.) centers. At the continuous run of hat track the RSIC-1 clips were installed on the joist on 1.22 m (48 in.) centers. For short independent sections of hat track the

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PAC International, Inc.

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REVISION: 26 November 2008

clips were installed near each end. A total of 68 clips were used and weighed 4.5 kg (10 lbs). The ceiling consisted of a base layer of 16 mm (0.625 in.) thick, USG Firecode "C" Type X gypsum board attached to the hat track with 25 mm (1 in.) Type S screws at 305 mm (12 in.) centers in the field and at 203 mm (8 in.) center at the butt joints. A face layer of 16 mm (0.625 in.) thick USG Firecode "C" Type X gypsum board was attached with 41 mm (1.625 in.) Type S screws at 305 mm (12 in.) centers in the field and at 203 mm (8 in.) center at the butt joints. The total weight of the gypsum board was 572 kg (1,262 lbs). Joints were treated with paper tape embedded in all-purpose joint compound and screw heads were covered with compound. Total weight of the ceiling assembly was 661 kg (1,457 lbs). The perimeter of the completed test assembly was sealed with dense mastic.

The weight of the entire specimen as calculated was 1,665 kg (3,672 lbs.), an average of 64 kg/m² (13.1 lbs/ft²). The area of the specimen was 26 m² (280 ft²). The source and receiving room temperatures at the time of the test were 26±2°C (78±2°F) and 53±2% relative humidity. The source and receive reverberation room volumes were 136 m³ (4,789 ft³) and 86 m³ (3,049 ft³), respectively.

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RIVERBANK ACOUSTICAL LABORATORIES

1512 S. BATAVIA AVENUE
GENEVA, ILLINOIS 60134

Alion Science and Technology

630/232-0104
FOUNDED 1918 BY
WALLACE CLEMENT SABINE

TEST REPORT

PAC International, Inc.

RAL™-IN08-015

8 July 2008

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REVISION: 26 November 2008

TEST RESULTS

Sound pressure levels at 1/3 octave intervals, normalized to 10 square meters, are given in tabular form. The impact insulation class, IIC, was computed in accordance with ASTM E989-89 and ASTM E492-04.

<u>FREQ.</u>	<u>Ln</u>	<u>C.L.</u>	<u>DEV</u>	<u>FREQ.</u>	<u>Ln</u>	<u>C.L.</u>	<u>DEV</u>
100	68	0.45	8	800	40	0.17	
125	61	0.74	1	1000	38	0.23	
160	62	0.45	2	1250	33	0.21	
200	57	0.58		1600	25	0.21	
250	55	0.44		2000	24	0.18	
315	52	0.56		2500	27	0.12	
400	53	0.31		3150	21	0.19	
500	48	0.26		4000	15*	0.73	
630	44	0.25		5000	11*	0.92	

IIC=52

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)

Ln = NORMALIZED IMPACT SOUND PRESSURE LEVEL, dB

C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT

DEV. = DEVIATION, dB > IIC CONTOUR (SUM OF DEV = 11)

IIC = IMPACT INSULATION CLASS

* = CORRECTION APPLIED FOR BACKGROUND NOISE LEVEL

Tested by Marc Sciaky Approved by David L. Moyer
Marc Sciaky
Experimentalist
David L. Moyer
Laboratory Manager

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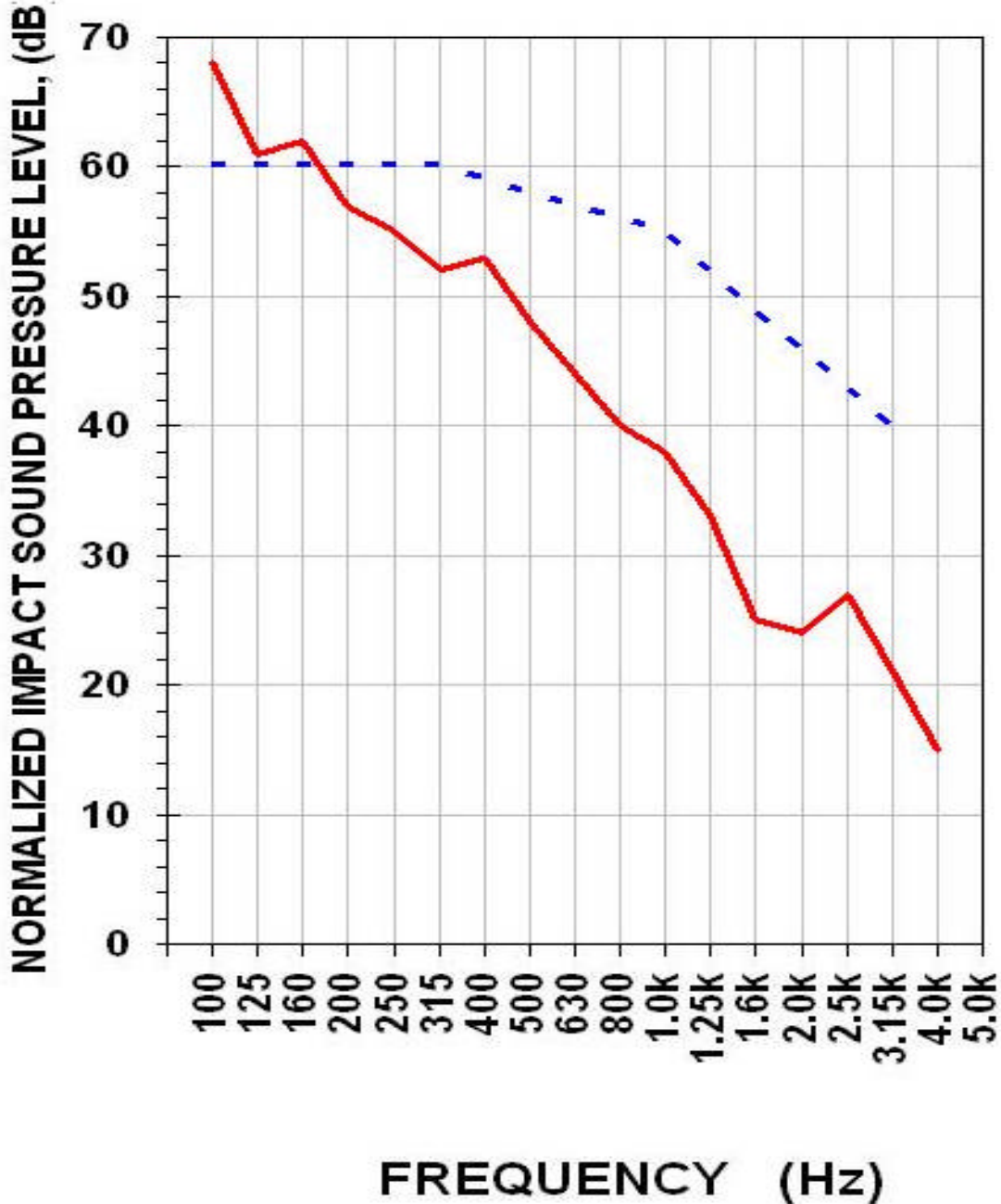


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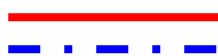
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TEST REPORT

**IMPACT SOUND TRANSMISSION REPORT
RAL - IN08-015**



IIC= 52



IMPACT SOUND PRESSURE LEVEL
IMPACT INSULATION CLASS CONTOUR

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TEST REPORT

FOR: PAC International, Inc.
7340 Smoke Ranch Rd., Suite A, Las Vegas, NV 89128

Sound Transmission Loss Test
RAL™-TL08-194

ON: Sheet Vinyl over Subfloor on 2 x 10 Solid Wood Joist
with Insulated Cavities with Resilient Sound Isolation
Clips (RSIC-1) and Double Layer of 5/8 Inch Gypsum
Board Ceiling

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CONDUCTED: 9 July 2008

TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-04 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as sheet vinyl over subfloor on 2 x 10 solid wood joist with insulated cavities with Resilient Sound Isolation Clips (RSIC-1) and double layer of 5/8 inch gypsum board ceiling. The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 6.10 m (240 in.) high and 338 mm (13.3 in.) thick. The specimen was constructed directly in the laboratory's 4.27 m (14 ft) by 6.10 m (20 ft) test opening and was sealed on the periphery (both sides) with dense mastic.

The description of the specimen was as follows: From the top down, the floor consisted of sheet vinyl over 1/2" plywood on 23/32" span rated OSB board attached to 235 mm (9.5 in.) deep solid wood joist with a fiberglass insulated cavity, a double layer of 5/8" Type X gypsum board ceiling attached using Resilient Sound Isolation Clips (RSIC-1) and hat track. A more detailed description of the test assembly appears in the following sections.

Vinyl Floor

The floor covering sheet vinyl measured 2 mm (0.08 in.) thick. Total weight of the vinyl was 65 kg (143.5 lbs).

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TEST REPORT

PAC International, Inc.

RAL™-TL08-194

9 July 2008

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Wood Subfloor and Support Assembly

The base floor consisted of 12.7 mm (1/2 in.) thick BC plywood fastened at 305 mm (12 in.) on center with 51 mm (2 in.) long Type W screws over 18 mm (23/32 in.) tongue and groove OSB board fastened to two-by-ten solid wood floor joists and box sill using 8d nails on 203 mm (8 in.) centers. The two-by-ten solid wood joists horizontally installed on joist hangers spanned the width of the test opening. The joists were spaced on 406 mm (16 in.) centers, starting 203 mm (8 in.) either side of the centerline. Total weight of the subfloor and support assembly was 639 kg (1,410 lbs).

Insulation

The cavities between the joists contained a layer of 159 mm (6.25 in.) thick by 381 mm (15 in.) wide unfaced fiberglass batt insulation. The fiberglass batts were placed against the underside of the floor deck and held in place using steel "lightning rod" clips. The weight of the insulation was 26.5 kg (58.5 lbs).

Ceiling Assembly

The ceiling assembly consisted of 25 gauge roll-formed drywall furring channel (aka hat track) which measured 22 mm (0.875 in.) deep by 65 mm (2.56 in.) wide. Eight (8) full runs of drywall furring channels track were mounted to the RSIC-1 clips spaced at 24 in. x 48 in. center to center. Runs of drywall furring channels extending the full length of the test specimen included splices which were overlapped 152 mm (6 in.) and double wire tied with 18 gauge tie wire as necessary. Six runs of track 1.52 m (60 in.) long and four at 1.22 m (48 in.) long were installed parallel to the main runs as necessary to provide for independent suspension of each gypsum board at the butt joints. Total weight of the channels as measured was 23.8 kg (52.5 lbs). The hat track was attached to the PAC International's Resilient Sound Isolation Clips (RSIC-1), each fastened to the joists with a 63 mm (2.5 in.) long #8 coarse thread drywall screw. The RSIC-1 clips were installed to accommodate installation of the hat track perpendicular to the solid wood joists and spaced on 610 mm (24 in.) centers. At the continuous run of hat track the RSIC-1 clips were installed on the solid wood joist on 1.22 m (48 in.) centers. For short independent sections of hat track the RSIC-1 clips were installed near each end. A total of 68 clips were used and weighed 4.5 kg (10 lbs). The ceiling consisted of a base layer of 16 mm (0.625 in.) thick, USG Firecode "C" Type X gypsum board attached to the hat track with 25 mm (1 in.) Type S screws at 305 mm (12 in.) centers in the field and at 203 mm (8 in.) center at the butt joints. A face layer of 16 mm

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TEST REPORT

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(0.625 in.) thick USG Firecode "C" Type X gypsum board was attached with 41 mm (1.625 in.) Type S screws at 305 mm (12 in.) centers in the field and at 203 mm (8 in.) center at the butt joints. The total weight of the gypsum board was 572 kg (1,262 lbs). Joints were treated with paper tape embedded in all-purpose joint compound and screw heads were covered with compound. Total weight of the ceiling assembly was 661 kg (1,457 lbs). The perimeter of the completed test assembly was sealed with dense mastic.

The weight of the specimen as measured was 1,566 kg (3,453 lbs.), an average of 60.2 kg/m² (12.3 lbs/ft²). The transmission area used in the calculations was 26 m² (280 ft²). The source and receiving room temperatures at the time of the test were 26±2°C (78±2°F) and 52±1% relative humidity. The source and receive reverberation room volumes were 136 m³ (4,789 ft³) and 86 m³ (3,049 ft³), respectively.

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TEST REPORT

PAC International, Inc.

RAL™-TL08-194

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TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-04.

<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>
100	33	0.79		800	58	0.20	1
125	38	0.89	3	1000	61	0.18	
160	39	0.54	5	1250	65	0.17	
200	42	0.63	5	1600	69	0.17	
250	45	0.57	5	2000	71	0.14	
315	48	0.51	5	2500	71	0.12	
400	53	0.45	3	3150	77	0.07	
500	54	0.30	3	4000	83	0.08	
630	56	0.27	2	5000	85	0.09	

STC=57

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)

T.L. = TRANSMISSION LOSS, dB

C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT

DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 32)

STC = SOUND TRANSMISSION CLASS

Tested by


Marc Sciaky

Experimentalist

Approved by



David L. Moyer

Laboratory Manager

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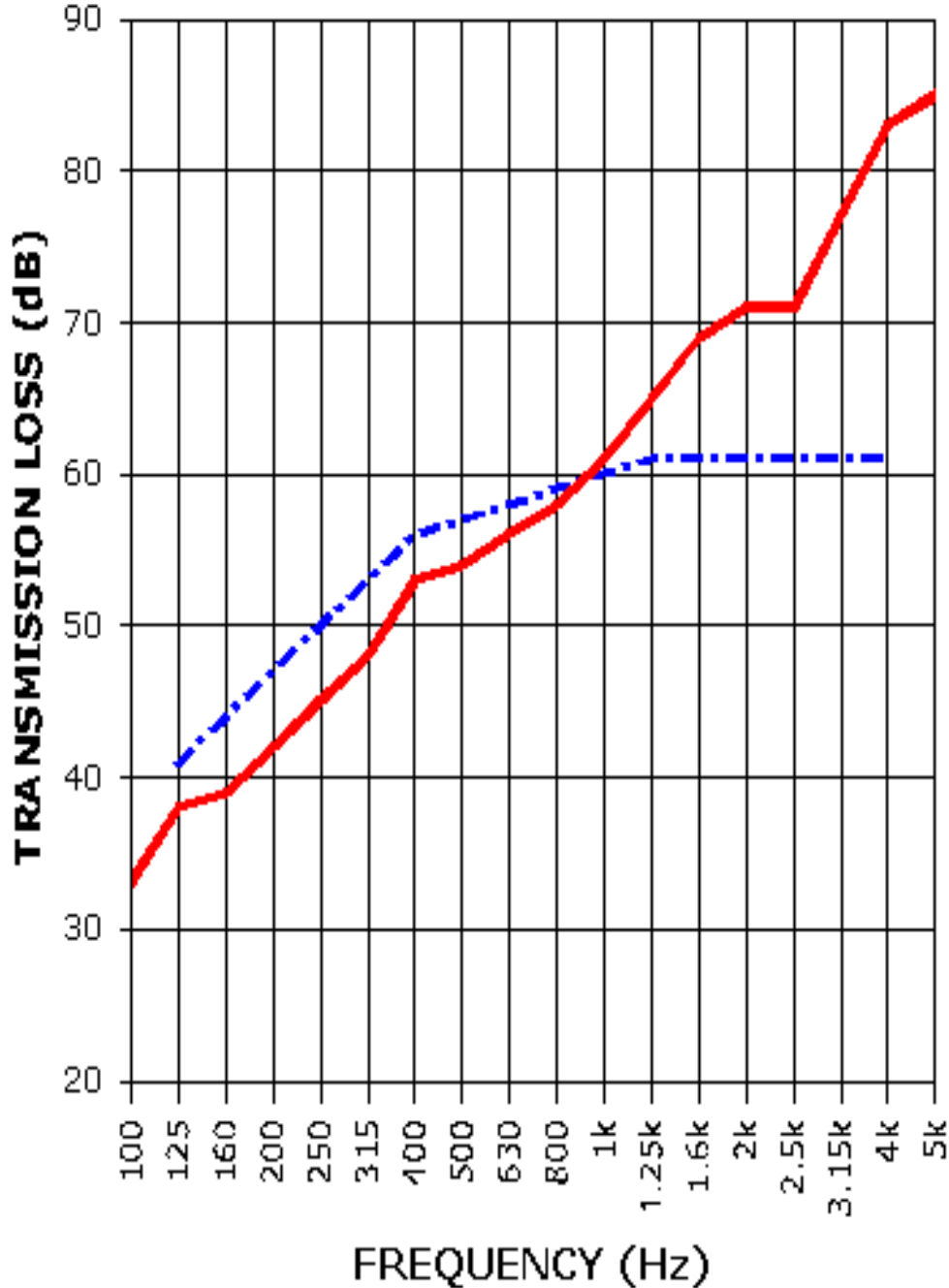
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TEST REPORT
SOUND TRANSMISSION REPORT
RAL - TL08-194



STC= 57

— TRANSMISSION LOSS
- - - SOUND TRANSMISSION LOSS CONTOUR

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