

RSIC ACOUSTIC ASSEMBLY

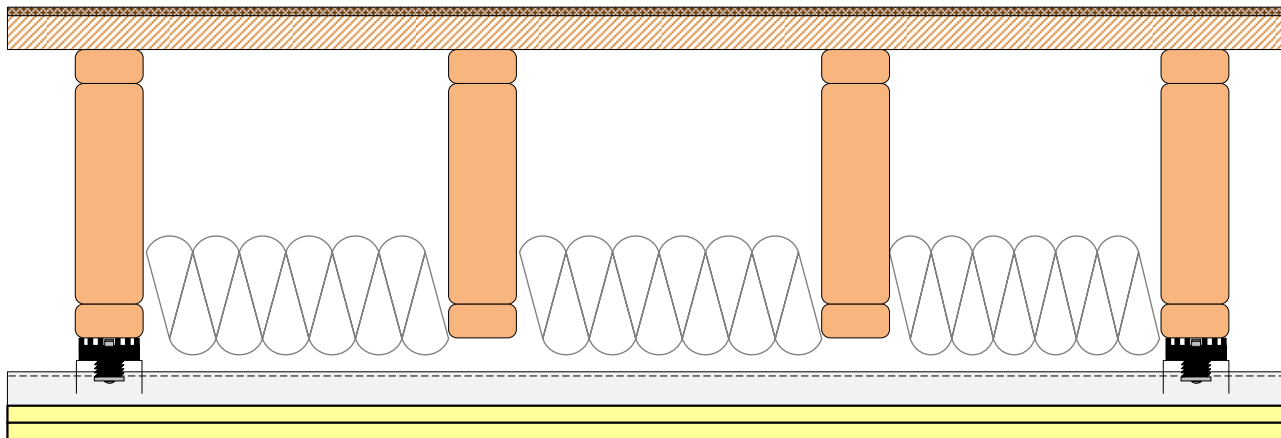
FLOOR CEILING ASSEMBLY

DIRECT FIX TO WOOD OPEN WEB TRUSS



Toll Free 866-774-2100 • Telephone 503-649-7700

TFCSW RAL IN09-044 STC 54 IIC 52



Fire Resistance Ratings

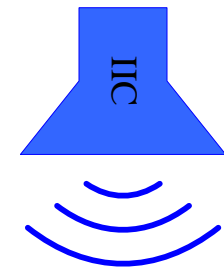
Designs:
L528, L534, L542, L546,
L562, ITS TSC60-01

CONSTRUCTION

- HARDWOOD FLOORING
- 1/16" FOAM UNDERLAYMENT
- 3/4" T&G OSB SUBFLOOR
- 11-1/4" DEEP OPEN WEB TRUSS @ 24" OC
- R-11 FIBERGLASS BATT INSULATION (NOM 3.5")
- RSIC-1 INSTALLED @ 48" OC
- 7/8" DRYWALL FURRING CHANNEL @ 24" OC
- 2 LAYERS 5/8" FIRE CODE GYPSUM BOARD



STC 54



IIC 52

RAL TEST IN09-044 & TL09-243

TEST REPORT

FOR: PAC International, Inc.
Las Vegas, NV

Impact Sound Transmission Test
RAL™-IN09-044

ON: Engineered Flooring and Foam Underlayment over
Parallel Chord Truss with Insulated Cavities with
Resilient Sound Isolation Clips (RSIC-1) and Double
Layer of 5/8 Inch Gypsum Board Ceiling

Page 1 of 5

CONDUCTED: 27 August 2009

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 as engineered flooring and foam underlayment over parallel chord truss 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 finished floor system were nominally 6.1 m (60 in.) wide by 6.1 m (60 in.) long. The overall dimensions of the substrate and ceiling system were nominally 4.27 m (14 ft) by 6.10 m (20 ft). The thickness of the finished floor system and substrate and ceiling system was 400 mm (15.75 in.) thick. The specimen was constructed directly in the laboratory's 4.27 m (14 ft) by 6.10 m (20 ft) test opening which was sealed on the periphery (both sides) with dense mastic.

The weight of the entire specimen as calculated was 1,308 kg (2,884.5 lbs.), an average of 50.3 kg/m² (10.3 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°C (78°F) and 51±1% relative humidity. The source and receive reverberation room volumes were 134.3 m³ (4,742 ft³) and 86 m³ (3,020 ft³), respectively.

The description of the specimen was as follows: From the top down, the floor consisted of engineered wood floor, underlayment over 23/32" span rated OSB board attached to 305 mm (12 in.) deep parallel chord truss with a fiberglass insulated cavity, and a double layer of 5/8" Firecode "C" 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.

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TEST REPORT

PAC International, Inc.

RAL™-IN09-044

27 August 2009

Page 2 of 5

Engineered Wood Floor and Underlayment

The finished floor consisted of 9.5 mm (0.375 in.) thick prefinished engineered flooring provided as nominal 108 mm (4.25 in.) wide by 1.22 m (48 in.) long planks with tongue and groove edging. Weight of the wood floor was 14.1 kg (31 lbs). Prior to installing the finished floor, an underlayment of 2.4 mm (0.095 in.) thick foam was loose laid on the floor with joints taped. Total weight of the underlayment as measured was 0.2 kg (0.5 lbs).

Truss Joist Subfloor Assembly

The isolation was installed over a layer of 18 mm (0.72 in.) thick 23/32" tongue and groove OSB board attached using 51 mm (2 in.) 6d ringed shank nails on 305 mm (12 in.) centers to parallel chord two-by-four lumber trusses. The parallel chord trusses, lumber oriented horizontally, measured 286 mm (11.25 in.) deep by 4.22 m (166 in.) long and 89 mm (3.5 in.) thick and were spaced on 610 mm (24 in.) centers with two-by-four "ribbons" attached to the top of the trusses at each end. A two-by-six strong back was inserted through the trusses and attached to the vertical members of each truss with two 16d nails. Total weight of the subfloor assembly was 619 kg (1,364 lbs).

Insulation

The cavities between the joists contained a friction fit layer of 89 mm (3.5 in.) thick by 610 mm (24 in.) wide unfaced R-11 fiberglass insulation. The weight of the insulation was 19.1 kg (42 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 were mounted to the RSIC-1 clips, spaced at 24 in. by 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. Four 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 25.4 kg (56 lbs). The hat track was attached to the PAC International's Resilient Sound Isolation Clips (RSIC-1), each fastened to the

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TEST REPORT

PAC International, Inc.

RAL™-IN09-044

27 August 2009

Page 3 of 5

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 parallel chord trusses and spaced on 610 mm (24 in.) centers. For 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 RSIC-1 clips were installed near each end. A total of 52 clips were used and weighed 4.3 kg (9.5 lbs). The ceiling base layer consisted of 16 mm (0.625 in.) thick, USG Firecode "C" 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. The ceiling face layer consisted of 16 mm (0.625 in.) thick, USG Firecode "C" gypsum board 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 570 kg (1,256 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 with insulation was 641 kg (1,413 lbs). The perimeter of the completed test assembly was sealed with dense mastic.

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NVLAP Lab Code 100227-0

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TEST REPORT

PAC International, Inc.

RAL™-IN09-044

27 August 2009

Page 4 of 5

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 E989-06 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	2.29	8	800	45	0.32	
125	66	0.90	6	1000	41	0.32	
160	66	0.68	6	1250	35	0.20	
200	63	0.80	3	1600	30	0.23	
250	62	0.60	2	2000	29	0.38	
315	59	0.47		2500	27	0.39	
400	57	0.55		3150	21	1.43	
500	50	0.31		4000	16	4.47	
630	50	0.39		5000	13	7.34	

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 = 25)

IIC = IMPACT INSULATION CLASS

* = INDICATES A CORRECTION HAS BEEN APPLIED TO DATA
DUE TO BACKGROUND NOISE LEVELS

Tested by

Marc Sciaky

Marc Sciaky
Experimentalist

Approved by

David L. Moyer

David L. Moyer
Laboratory Manager

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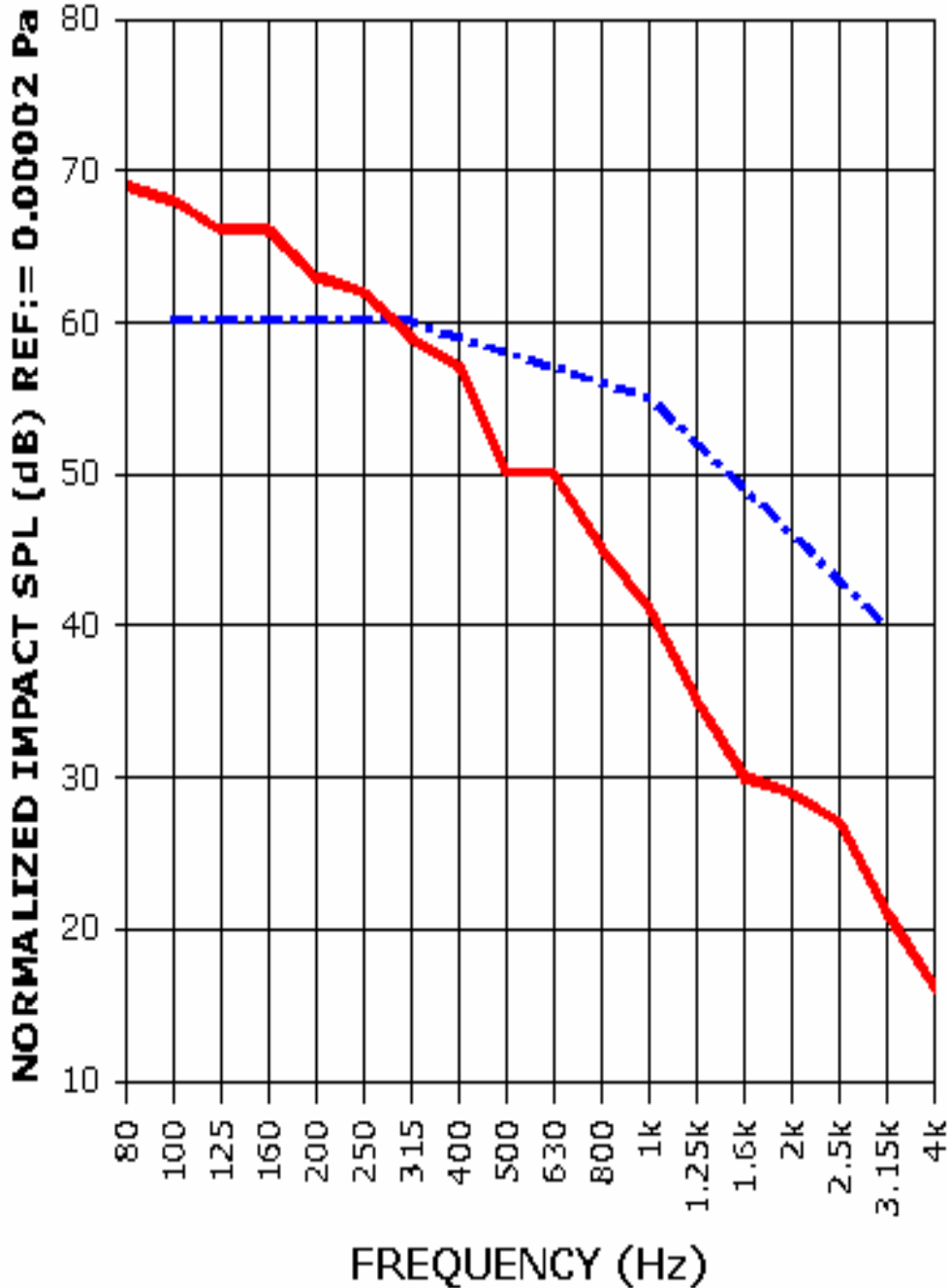


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TEST REPORT

**IMPACT SOUND TRANSMISSION REPORT
RAL - IN09-044**



IIC= 52



IMPACT SOUND PRESSURE LEVEL
IMPACT INSULATION CLASS CONTOUR

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TEST REPORT

FOR: PAC International, Inc.
Las Vegas, NV

Sound Transmission Loss Test
RAL™-TL09-243

ON: Linoleum over Parallel Chord Truss with Insulated
Cavities with Resilient Sound Isolation Clips (RSIC-1)
and Double Layer of 5/8 Inch Gypsum Board Ceiling

Page 1 of 5

CONDUCTED: 27 August 2009

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 client as linoleum over parallel chord truss 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 384 mm (15.12 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 weight of the specimen as measured was 1,367 kg (3,015 lbs.), an average of 52.6 kg/m² (10.8 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 25°C (78±1°F) and 53±1% relative humidity. The source and receive reverberation room volumes were 134 m³ (4,742 ft³) and 86 m³ (3,020 ft³), respectively.

The description of the specimen was as follows: From the top down, the floor consisted of linoleum flooring over 23/32" span rated OSB board attached to 305 mm (12 in.) deep parallel chord truss with a fiberglass insulated cavity, and a double layer of 5/8" Firecode "C" 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.

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TEST REPORT

PAC International, Inc.

RAL™-TL09-243

27 August 2009

Page 2 of 5

Linoleum Finished Floor

The floor covering sheet linoleum measured 3.5 mm (0.138 in.) thick. Total weight of the linoleum was 73.3 kg (161.5 lbs).

Truss Joist Subfloor Assembly

The isolation was installed over a layer of 18 mm (0.72 in.) thick 23/32" tongue and groove OSB board attached using 51 mm (2 in.) 6d ringed shank nails on 305 mm (12 in.) centers to parallel chord two-by-four lumber trusses. The parallel chord trusses, lumber oriented horizontally, measured 286 mm (11.25 in.) deep by 4.22 m (166 in.) long and 89 mm (3.5 in.) thick and were spaced on 610 mm (24 in.) centers with two-by-four "ribbons" attached to the top of the trusses at each end. A two-by-six strong back was inserted through the trusses and attached to the vertical members of each truss with two 16d nails. Total weight of the subfloor assembly was 619 kg (1,364 lbs).

Insulation

The cavities between the joists contained a friction fit layer of 89 mm (3.5 in.) thick by 610 mm (24 in.) wide unfaced R-11 fiberglass insulation. The weight of the insulation was 19.1 kg (42 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 were mounted to the RSIC-1 clips, spaced at 24 in. by 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. Four 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 25.4 kg (56 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 parallel chord trusses and spaced on 610 mm (24 in.) centers. For continuous run of hat track the RSIC-1 clips were

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TEST REPORT

PAC International, Inc.

RAL™-TL09-243

27 August 2009

Page 3 of 5

installed on the 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 52 clips were used and weighed 4.3 kg (9.5 lbs). The ceiling base layer consisted of 16 mm (0.625 in.) thick, USG Firecode "C" 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. The ceiling face layer consisted of 16 mm (0.625 in.) thick, USG Firecode "C" gypsum board 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 570 kg (1,256 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 with insulation was 641 kg (1,413 lbs). The perimeter of the completed test assembly was sealed with dense mastic.

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TEST REPORT

PAC International, Inc.

RAL™-TL09-243

27 August 2009

Page 4 of 5

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	32	0.56		800	58	0.24	
125	30	0.52	8	1000	61	0.15	
160	39	0.50	2	1250	65	0.15	
200	44	0.74		1600	69	0.13	
250	45	0.47	2	2000	71	0.09	
315	48	0.41	2	2500	74	0.09	
400	51	0.49	2	3150	79	0.08	
500	54	0.25		4000	83	0.13	
630	56	0.27		5000	85	0.29	

STC=54

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 = 16)

STC = SOUND TRANSMISSION CLASS

Tested by

Marc Sciaky

Marc Sciaky
Experimentalist

Approved by

David L. Moyer

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Laboratory Manager

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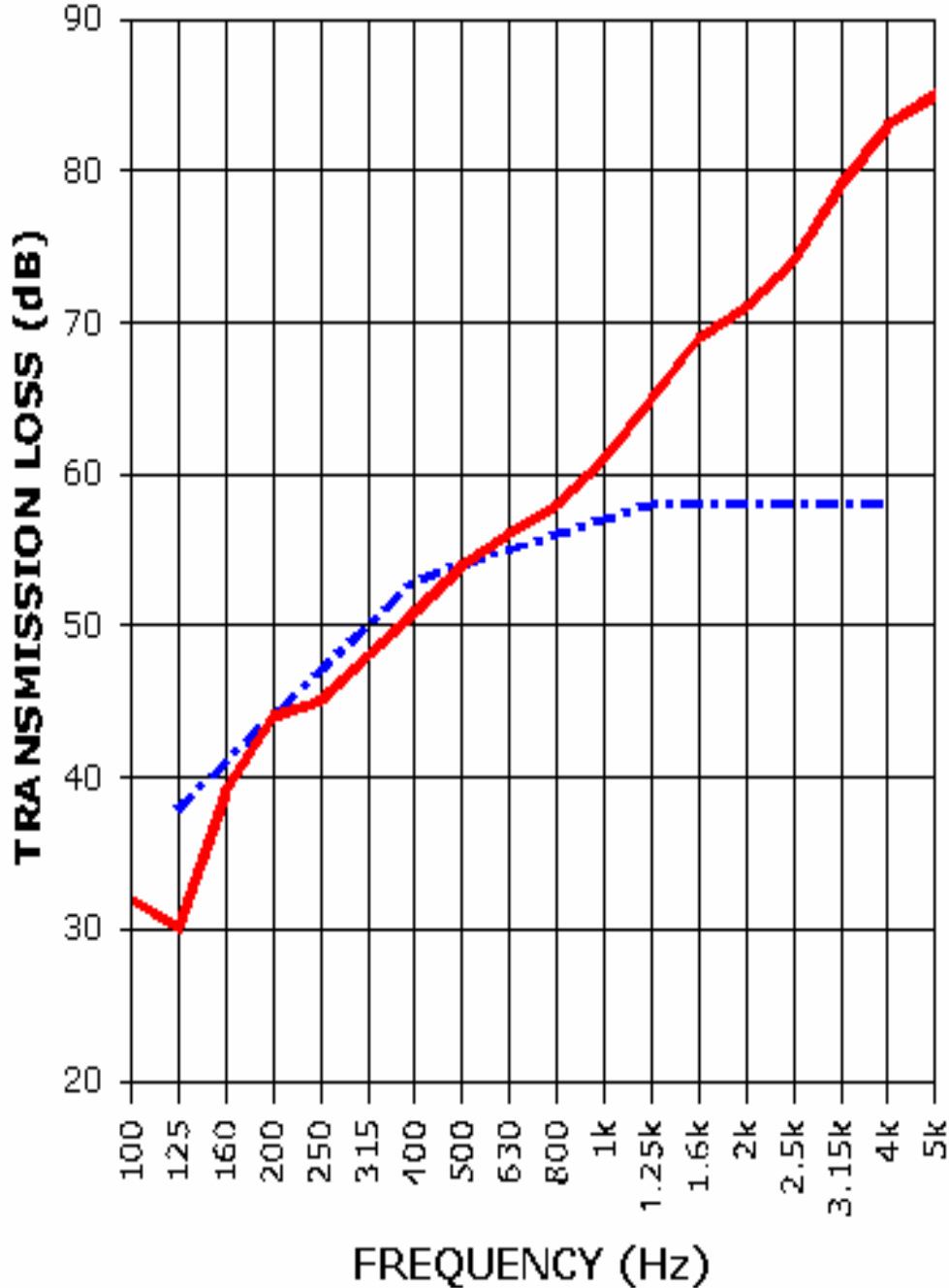


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TEST REPORT

**SOUND TRANSMISSION REPORT
RAL - TL09-243**



STC= 54



TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR

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