The Building Test Centre
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Report Number **BTC 15450A**

AN ACOUSTIC TEST REPORT COVERING LABORATORY SOUND INSULATION TESTS TO BS EN ISO 140-3:1995 ON A BRITISH GYPSUM GYPWALL AUDIO PARTITION WITH VARYING NUMBERS OF ELECTRICAL SOCKET BOXES INSTALLED WITHIN THE PARTITION.

Test Date: 5th and 6th November 2007

www.btconline.co.uk

Customer: **Hilti Ltd**
1 Trafford Wharf Road
Old Trafford
Manchester
M17 1BY

UKAS TESTING
0296

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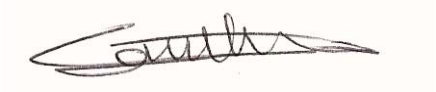
FOREWORD

This test report details sound insulation tests conducted to BS EN ISO 140-3:1995 on a sheet and stud partition system incorporating a varying number of electrical socket boxes. The test sponsor was Hilti Limited.

The test specimen was installed by Pete Rigley. The construction of the specimen took place on the 5th November 2007. The components were installed by Hilti on the 6th of November 2007.

The Building Test Centre played no role in the design or selection of the materials comprising the test specimen.

REPORT AUTHORISATION

Report Author	Authorised by
	
Christopher Mutton M.Phys. *Technologist*	**Alexandra Chambers** B.Eng. MIOA *Section Manager*

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TEST CONSTRUCTION

BTC 15450AA

A twin frame partition was built within the test aperture. Gypframe 94C50 Floor & Ceiling Channels were screw fixed at 600mm centres to the head and base of the test aperture using 25mm Gyproc Drywall screws. Gypframe 92S50 studs were positioned between the head and base channels at each end and screw fixed at 600mm centres. Studs were then positioned at 600mm centres.

A second frame was then built in the same manner as the first separated by 53mm between the channels. 100mm insulation was then placed between the frames of the partition. The outside of the frame work was then clad in 19mm Gyproc Plank (ex East Leake), attached horizontally to allow for staggered vertical joints and screw fixed around the perimeter at 300mm centres using 32mm Gyproc drywall screws. A layer of Gyproc SoundBloc (ex East Leake) was then screw fixed to the partition around the perimeter and at intermediate stud positions at 300mm centres, using 42mm Gyproc drywall screws.

All vertical joints were staggered between layers. All joints and screw heads were taped. The perimeter taped and sealed with Gyproc Sealant.

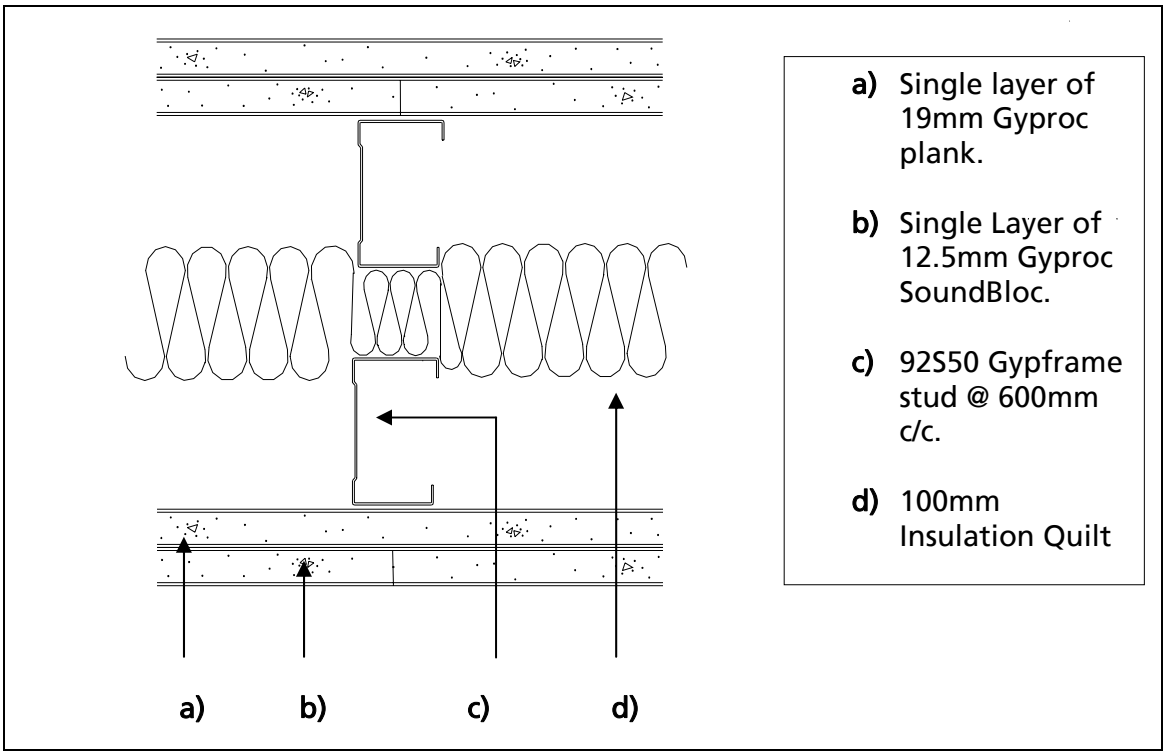

Figure 1 Cross section through partition

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BTC 154450BA

A two gang, flush fitting socket box was installed into the source room side of the partition. This box was located 1337mm from the right vertical edge of the aperture to the box centre and 463mm from the base of the aperture to the box centre. A putty pad (CP617) was inserted into the socket box, ensuring that it adheres to all surfaces of the box. The front plate was then attached to the socket box.

Photograph 1 Putty and wall box installed into the source room side of the partition.

BTC 15450CA

A two gang, flush fitting socket box was installed into the receiving room side of the partition. This box was located 1653mm from the left vertical edge of the aperture to the box centre and 461mm from the base to the box centre. This placed the two socket boxes within the same stud spacing, but staggered so they were not back to back. A putty pad (CP617) was inserted into the socket box, ensuring that it adheres to all surfaces of the box. The front plate was then attached to the socket box.

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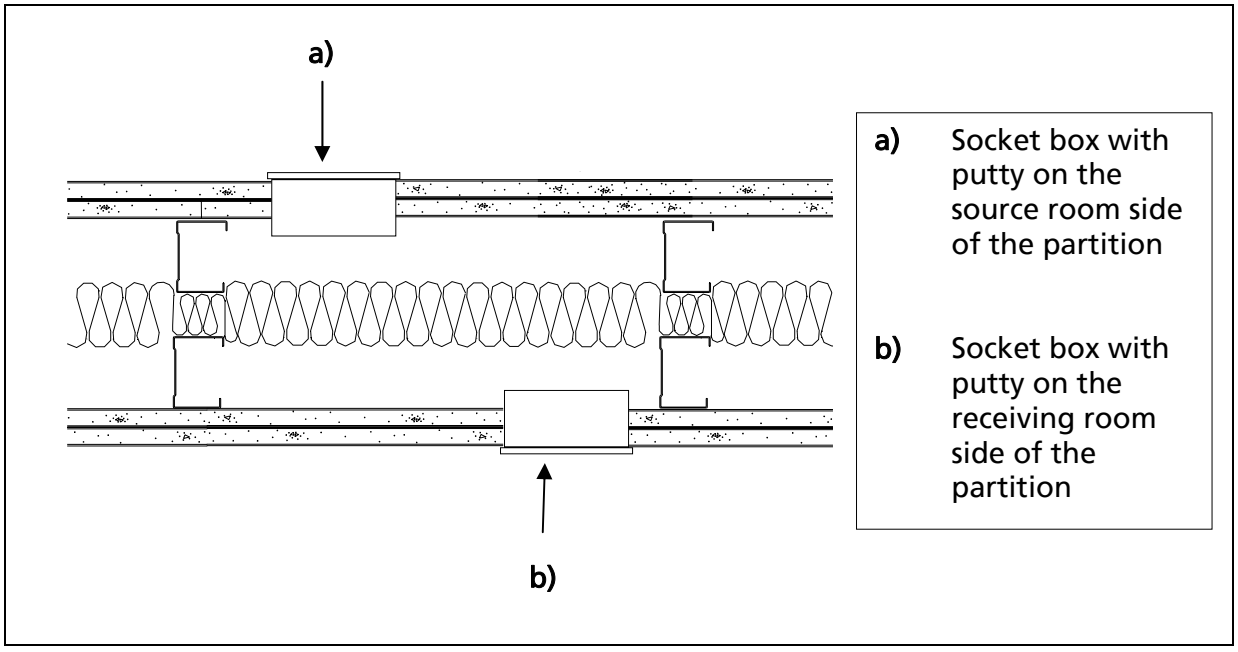

Figure 2 A view of the partition section showing two staggered socket boxes

BTC 15450DA

A two gang, flush fitting socket box was installed into the partition on the receiving room side. This box was placed 1335mm to the box centre from the left side of the aperture and 461mm from the base to the box centre. This ensured that it was opposite the previously installed box in the source side of the partition. Another box was installed into the source room side of the partition. This box was located 1653mm from the right vertical edge of the aperture to the box centre and 463mm from the base to the box centre. This ensured that it was opposite the previously installed box in the receiving room side of the partition.

This placed the four socket boxes (two each side) within the same stud spacing and also back to back. Putty pads (CP617) were inserted into the two socket boxes, ensuring that it adheres to all surfaces of each box. The front plate was then attached to each socket box.

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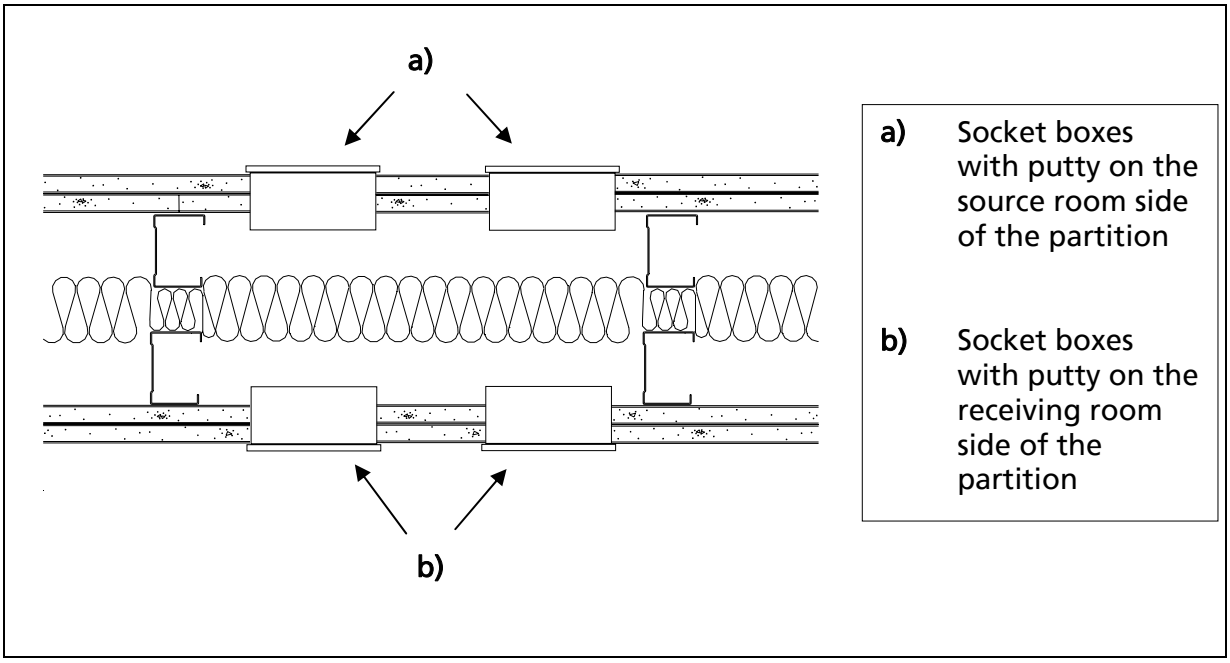
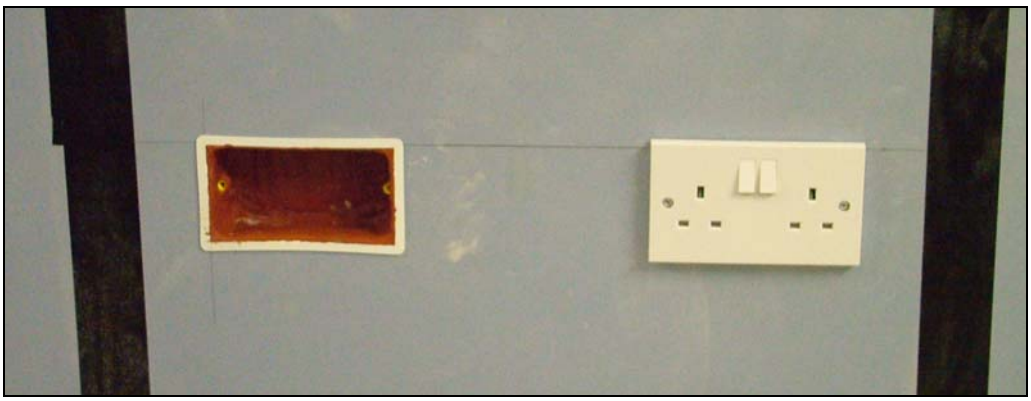


Figure 3 A view of the partition section showing four back to back socket boxes



Photograph 2 Two sockets with putty fitted back to back with the sockets on the other side

The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

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TEST MATERIALS

Insulation

Isover APR glass mineral wool insulation nominally 100mm thick manufactured by Saint-Gobain Isover UK.

Average Density:	10.00kg/m^3

Plasterboard

I) Nominally 2400mm (long) x 600mm (wide) x 19mm (thick) Gyproc Plank manufactured by British Gypsum Limited (ex. East Leake)

Surface density:	15.47kg/m^2
Average thickness:	19.23mm
Board Code:	18 268 7 12:55

II) Nominally 2400mm (long) x 1200mm (wide) x 12.5mm (thick) Gyproc SoundBloc board manufactured by British Gypsum Limited (ex. East Leake)

Surface density:	11.14kg/m^2
Average thickness:	12.71mm
Board Code:	16 282 7 13:45

All boards supplied by British Gypsum Limited.

Metal Components

I) Gypframe 94C50 metal Floor and Ceiling channel
II) Gypframe 92S50 metal studs.

All metal components are supplied by British Gypsum Limited.

Wall Socket Installation

I) Newlec NL815 2 gang flush fitting socket box
II) Newlec NL8300/2 2 gang switched socket box facing
III) Hilti CP617 putty pad

All components supplied by Hilti Limited

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Fasteners

I) 25mm Gyproc Drywall screws
II) 32mm Gyproc Drywall screws
III) 42mm Gyproc Drywall screws

All fasteners supplied by British Gypsum Limited

Miscellaneous Components

I) Gyproc Sealant supplied by British Gypsum Limited.
II) Joint tape.

Where measurements could not be taken, then weight and dimensions were provided by the customer or the manufacturer e.g. from material labelling. Material information was recorded according to procedure MAT/1.

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TEST RESULTS

Test Code	Description	Weighted Airborne Sound Reduction Index R_w (C; Ctr) dB
H15450AA	A GypWall $_{Audio}$ partition, comprising of a twin 92S50 frame, Gyproc 19mm Plank and 12.5mm Gyproc SoundBloc each side	71 (-2;-8)
H15450BA	Base wall with one socket box installed on the source room side	71 (-2;-8)
H15450CA	Base wall with one socket box installed on the source room side and a socket box on the receiving side room, staggered	71 (-2;-8)
H15450DA	Base wall with two socket boxes installed on each side of the partition so the boxes are back to back	71 (-2;-8)

For full data see pages 12 – 19.

Test conducted in accordance with BS EN ISO 140-3: 1995 except for Clause F.2 where minimum distances for measurements at frequencies under 100Hz can not be met.

Rated in accordance with BS EN ISO 717-1: 1997

TEST PROCEDURE

The test specimen (3.6 m x 2.4 m) was constructed in a wall dividing two reverberant rooms of approximately 98m^3 and 62m^3. The accuracy of the test method conforms to BS EN 20140-2:1993, the test procedure used was 140/3/B issue 1. Broad-band white noise was used to measure the level differences and broad-band pink noise was used to measure the reverberation times. Third octave band pass filters were used in real time mode. See appendix B for further information.

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LIMITATIONS

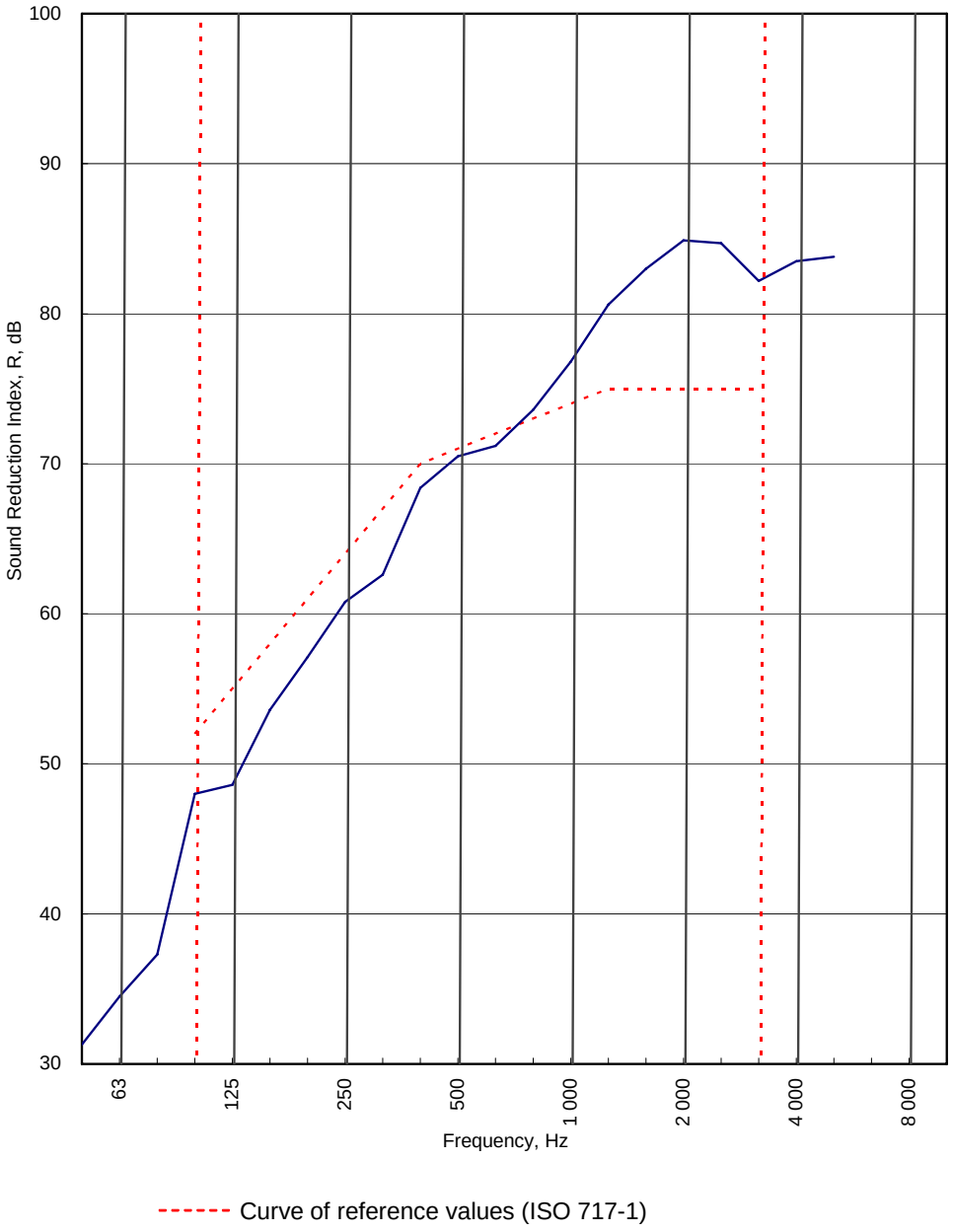
The results only relate to the behaviour of the element of construction under the particular conditions of test; they are not intended to be the sole criteria for assessing the potential acoustic performance of the element in use nor do they reflect the actual behaviour.

The specification and interpretation of test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report

APPENDIX A- TEST DATA

Test Code:
H15450AA
Test Date:
05/11/2007

Freq. Hz	R dB
50	31.3
63	34.5
80	37.3
100	48.0
125	48.6
160	53.6
200	57.1
250	60.8
315	62.6
400	68.4
500	70.5
630	71.2
800	73.6
1 000	76.8
1 250	80.6
1 600	83.0
2 000	84.9
2 500	84.7
3 150	82.2
4 000	83.5
5 000	83.8
6 300	
8 000	
10 000	



Rating according to BS EN ISO 717-1:1997	**Rw (C;Ctr) = 71 (-2;-8) dB**		
	Max dev. 6.4 dB at 125 Hz		
Evaluation based on laboratory measurement results obtained by an engineering method:	$C_{50\text{-}3150}$= **-7 dB**	$C_{50\text{-}5000}$= **-6 dB**	$C_{100\text{-}5000}$= **-1 dB**
	$C_{tr,50\text{-}3150}$= **-19 dB**	$C_{tr,50\text{-}5000}$= **-19 dB**	$C_{tr,100\text{-}5000}$= **-8 dB**

UKAS TESTING
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LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H15450AA** Test Date: **05/11/2007**

Specimen Area, S = **8.64** m^2

	Room T2	Room T1
Room Volume, m^3:	**98**	**58.37**
Temperature, deg.C:	**16.8**	**16.5**
Rel. Humidity, %RH:	**55.2**	**57.5**

	Test Room T2 to Test Room T1								
Freq Hz	Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB	**R dB**	U.Dev. dB	R 1/1Oct dB
50	59.8	26.7	18.0	**26.1**	0.62	-2.4	**31.3**		
63	63.3	26.6	12.7	**26.4**	0.62	-2.4	**34.5**		33.7
80	72.2	32.2	4.7	32.2	**0.58**	-2.7	**37.3**		
100	106.2	57.6	18.9	57.6	**0.95**	-0.6	**48.0**	4.0	
125	107.7	59.1	4.0	59.1	1.09	0.0	**48.6**	6.4	49.5
160	87.2	33.9	1.9	33.9	1.17	0.3	**53.6**	4.4	
200	92.8	36.5	16.5	36.5	1.30	0.8	**57.1**	3.9	
250	94.8	35.4	4.8	35.4	1.50	1.4	**60.8**	3.2	59.5
315	94.3	33.0	12.8	33.0	1.45	1.3	**62.6**	4.4	
400	115.7	48.6	22.0	48.6	1.46	1.3	**68.4**	1.6	
500	112.5	43.2	9.7	43.2	1.43	1.2	**70.5**	0.5	69.9
630	110.6	40.6	6.7	40.6	1.44	1.2	**71.2**	0.8	
800	109.9	37.8	5.5	37.8	1.52	1.5	**73.6**		
1 000	108.4	33.2	4.4	33.2	1.55	1.6	**76.8**		76.1
1 250	107.4	28.6	9.4	28.6	1.65	1.8	**80.6**		
1 600	110.1	28.8	4.5	28.8	1.60	1.7	**83.0**		
2 000	111.2	28.0	3.1	28.0	1.61	1.7	**84.9**		84.1
2 500	108.9	25.4	3.0	25.4	1.42	1.2	**84.7**		
3 150	107.4	26.0	4.0	26.0	1.30	0.8	**82.2**		
4 000	106.8	24.1	4.8	24.1	1.30	0.8	**83.5**		83.1
5 000	106.0	22.8	7.3	22.8	1.23	0.6	**83.8**		
6 300									
8 000									
10 000									

Single Figure Ratings	**Rw**	**C**	**Ctr**	**Total U. Dev., dB**	**29.2**
BS EN ISO 717-1: 1997	**dB**	**dB**	**dB**		
	71	**-2**	**-8**		
	(100-5000)	**-1**	**-8**		
Background Corrected					
	(50-3150)	**-7**	**-19**		
RT's > factor 1.5 apart				Procedure: ISO140/3/B - issue 1	
	(50-5000)	**-6**	**-19**	Worksheet: 140_3_1.XLS	

UKAS TESTING
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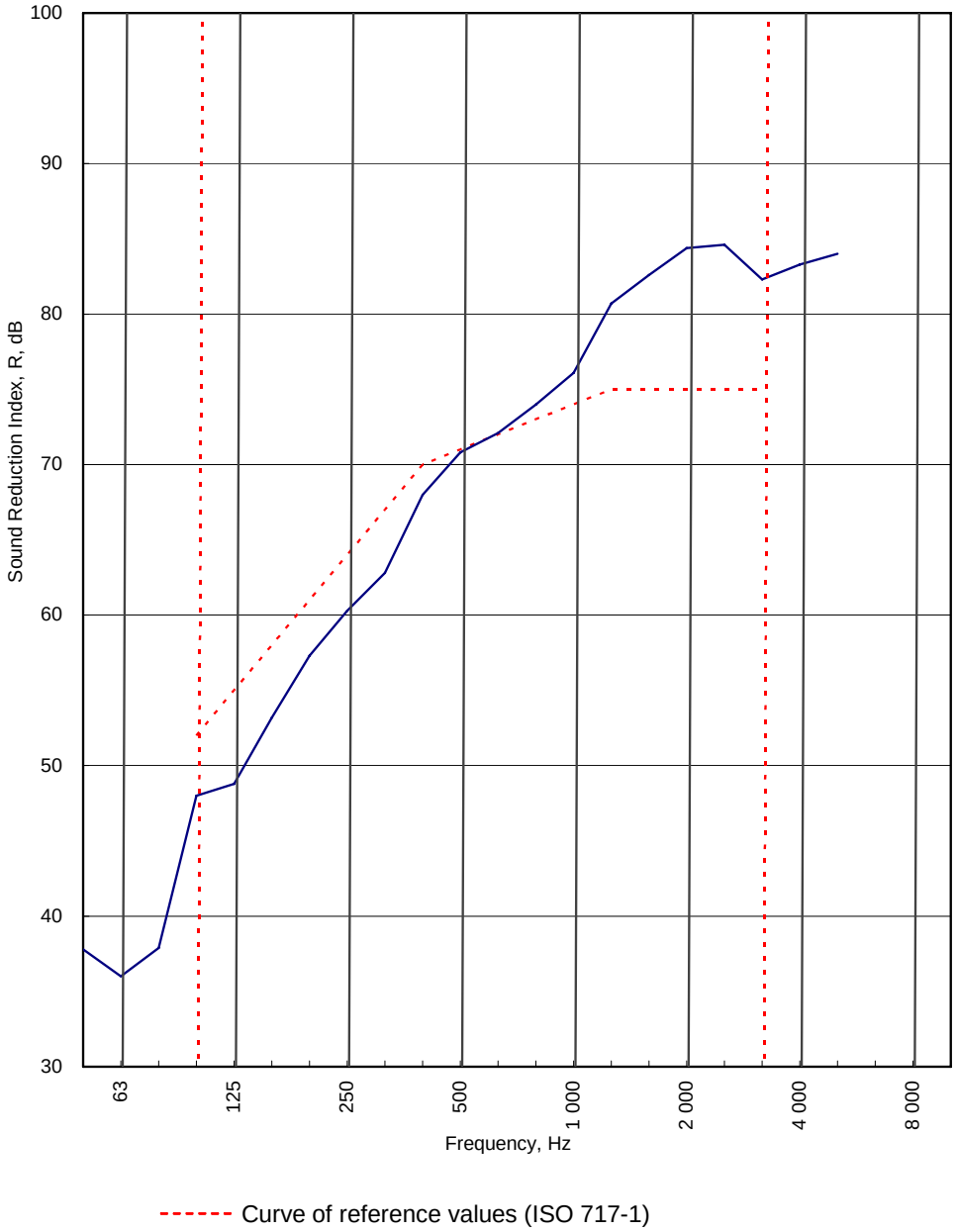
Test Code:
H15450BA
Test Date:
06/11/2007

Freq. Hz	R dB
50	37.8
63	36.0
80	37.9
100	48.0
125	48.8
160	53.2
200	57.3
250	60.3
315	62.8
400	68.0
500	70.8
630	72.1
800	74.0
1 000	76.1
1 250	80.7
1 600	82.6
2 000	84.4
2 500	84.6
3 150	82.3
4 000	83.3
5 000	84.0
6 300	
8 000	
10 000	



Rating according to BS EN ISO 717-1:1997

Rw (C;Ctr) = 71 (-2;-8) dB

Max dev. 6.2 dB at 125 Hz

Evaluation based on laboratory measurement results obtained by an engineering method:

$C_{50\text{-}3150}$= **-6 dB** $C_{50\text{-}5000}$= **-5 dB** $C_{100\text{-}5000}$= **-1 dB**

$C_{tr,50\text{-}3150}$= **-17 dB** $C_{tr,50\text{-}5000}$= **-17 dB** $C_{tr,100\text{-}5000}$= **-8 dB**

UKAS TESTING
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Customer: **Hilti Ltd**

LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H15450BA** Test Date: **06/11/2007**

Specimen Area, S = **8.64** m^2

	Room T2	Room T1
Room Volume, m^3:	**98**	**58.37**
Temperature, deg.C:	**17**	**17.1**
Rel. Humidity, %RH:	**50.1**	**49.2**

Freq Hz	Test Room T2 to Test Room T1 Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB	**R dB**	U.Dev. dB	R 1/1Oct dB
50	61.0	22.9	17.6	**21.6**	0.74	-1.6	**37.8**		
63	65.0	27.6	13.5	**27.4**	0.74	-1.6	**36.0**		37.1
80	71.0	30.6	8.9	30.6	0.61	-2.5	**37.9**		
100	105.8	57.0	17.2	57.0	0.90	-0.8	**48.0**	4.0	
125	107.4	58.4	5.3	58.4	1.03	-0.2	**48.8**	6.2	49.5
160	86.6	33.9	8.0	33.9	1.20	0.5	**53.2**	4.8	
200	92.4	35.6	16.4	35.6	1.21	0.5	**57.3**	3.7	
250	94.7	35.5	6.6	35.5	1.39	1.1	**60.3**	3.7	59.6
315	94.4	32.7	15.2	32.7	1.38	1.1	**62.8**	4.2	
400	115.7	48.6	20.7	48.6	1.33	0.9	**68.0**	2.0	
500	112.5	42.8	7.6	42.8	1.39	1.1	**70.8**	0.2	70.0
630	110.8	40.0	7.0	40.0	1.47	1.3	**72.1**		
800	109.9	37.6	6.1	37.6	1.61	1.7	**74.0**		
1 000	108.5	34.0	5.0	34.0	1.58	1.6	**76.1**		76.1
1 250	107.7	28.8	7.6	28.8	1.62	1.8	**80.7**		
1 600	110.1	29.3	3.6	29.3	1.63	1.8	**82.6**		
2 000	111.2	28.4	2.6	28.4	1.56	1.6	**84.4**		83.8
2 500	108.9	25.3	2.8	25.3	1.37	1.0	**84.6**		
3 150	107.4	26.0	3.7	26.0	1.33	0.9	**82.3**		
4 000	106.7	24.2	4.4	24.2	1.29	0.8	**83.3**		83.1
5 000	106.0	22.4	6.7	22.4	1.19	0.4	**84.0**		
6 300									
8 000									
10 000									

Single Figure Ratings	**Rw**	**C**	**Ctr**	**Total U. Dev., dB**	**28.8**
BS EN ISO 717-1: 1997	**dB**	**dB**	**dB**		
	71	**-2**	**-8**		
	(100-5000)	**-1**	**-8**		
Background Corrected					
	(50-3150)	**-6**	**-17**		
	(50-5000)	**-5**	**-17**		

Procedure: ISO140/3/B - issue 1

Worksheet: 140_3_1.XLS

Customer: **Hilti Ltd**

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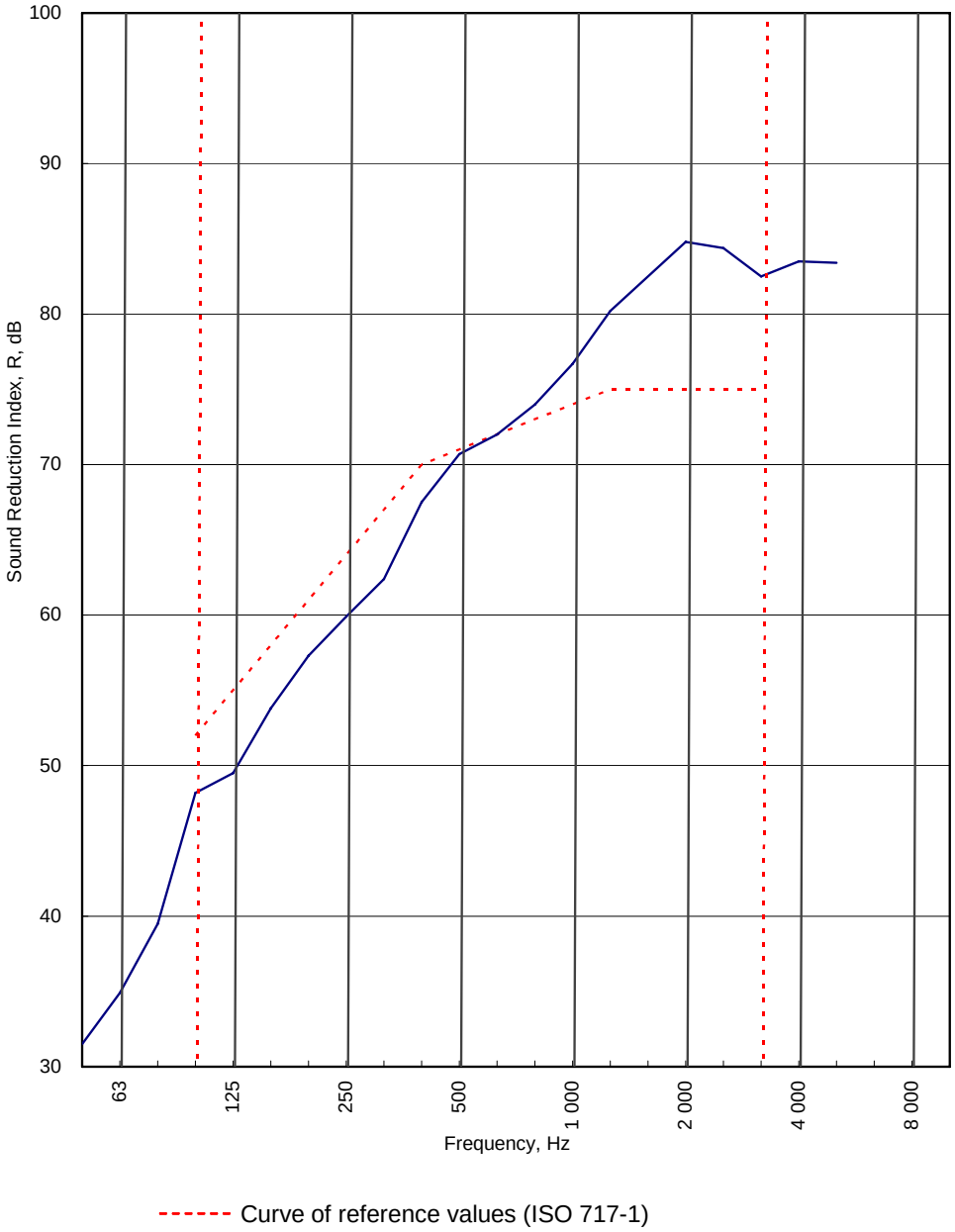
Test Code:
H15450CA
Test Date:
06/11/2007

Freq. Hz	R dB
50	31.5
63	34.9
80	39.5
100	48.2
125	49.5
160	53.8
200	57.3
250	59.9
315	62.4
400	67.5
500	70.7
630	72.0
800	74.0
1 000	76.7
1 250	80.2
1 600	82.5
2 000	84.8
2 500	84.4
3 150	82.5
4 000	83.5
5 000	83.4
6 300	
8 000	
10 000	



Rating according to BS EN ISO 717-1:1997

Rw (C;Ctr) = 71 (-2;-8) dB

Max dev. 5.5 dB at 125 Hz

Evaluation based on laboratory measurement results obtained by an engineering method:

$C_{50\text{-}3150}$= **-6 dB** $C_{50\text{-}5000}$= **-5 dB** $C_{100\text{-}5000}$= **-1 dB**

$C_{tr,50\text{-}3150}$= **-18 dB** $C_{tr,50\text{-}5000}$= **-18 dB** $C_{tr,100\text{-}5000}$= **-8 dB**

UKAS TESTING
0296

Customer: **Hilti Ltd**

LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H15450CA** Test Date: **06/11/2007**

Specimen Area, S = **8.64** m^2

	Room T2	Room T1
Room Volume, m^3:	**98**	**58.37**
Temperature, deg.C:	**17.1**	**17.4**
Rel. Humidity, %RH:	**49**	**48.8**

Freq Hz	Test Room T2 to Test Room T1: Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB	**R dB**	U.Dev. dB	R 1/1Oct dB
50	59.1	26.2	16.3	**25.7**	0.70	-1.9	**31.5**		
63	63.7	27.4	13.3	**27.2**	0.75	-1.6	**34.9**		34.2
80	73.9	32.4	8.0	32.4	0.68	-2.0	**39.5**		
100	106.2	57.3	15.4	57.3	0.93	-0.7	**48.2**	3.8	
125	108.0	58.8	4.9	58.8	1.16	0.3	**49.5**	5.5	49.9
160	87.3	33.9	7.5	33.9	1.19	0.4	**53.8**	4.2	
200	92.8	35.9	13.3	35.9	1.19	0.4	**57.3**	3.7	
250	94.8	35.9	6.6	35.9	1.37	1.0	**59.9**	4.1	59.4
315	94.6	33.4	13.2	33.4	1.41	1.2	**62.4**	4.6	
400	115.3	48.6	19.7	48.6	1.29	0.8	**67.5**	2.5	
500	112.4	42.7	7.8	42.7	1.36	1.0	**70.7**	0.3	69.6
630	110.6	40.0	7.5	40.0	1.48	1.4	**72.0**		
800	109.8	37.6	6.7	37.6	1.64	1.8	**74.0**		
1 000	108.4	33.5	5.0	33.5	1.62	1.8	**76.7**		76.3
1 250	107.6	29.2	6.5	29.2	1.62	1.8	**80.2**		
1 600	110.0	29.3	3.6	29.3	1.64	1.8	**82.5**		
2 000	111.1	27.9	2.6	27.9	1.56	1.6	**84.8**		83.8
2 500	109.0	25.8	2.8	25.8	1.41	1.2	**84.4**		
3 150	107.3	25.6	3.8	25.6	1.29	0.8	**82.5**		
4 000	106.6	23.8	4.5	23.8	1.27	0.7	**83.5**		83.1
5 000	105.9	23.0	6.8	23.0	1.21	0.5	**83.4**		
6 300									
8 000									
10 000									

Single Figure Ratings	**Rw**	**C**	**Ctr**	**Total U. Dev., dB**	**28.7**
BS EN ISO 717-1: 1997	**dB**	**dB**	**dB**		
	71	**-2**	**-8**		
	(100-5000)	**-1**	**-8**		
Background Corrected					
	(50-3150)	**-6**	**-18**		
	(50-5000)	**-5**	**-18**		

Procedure: ISO140/3/B - issue 1

Worksheet: 140_3_1.XLS

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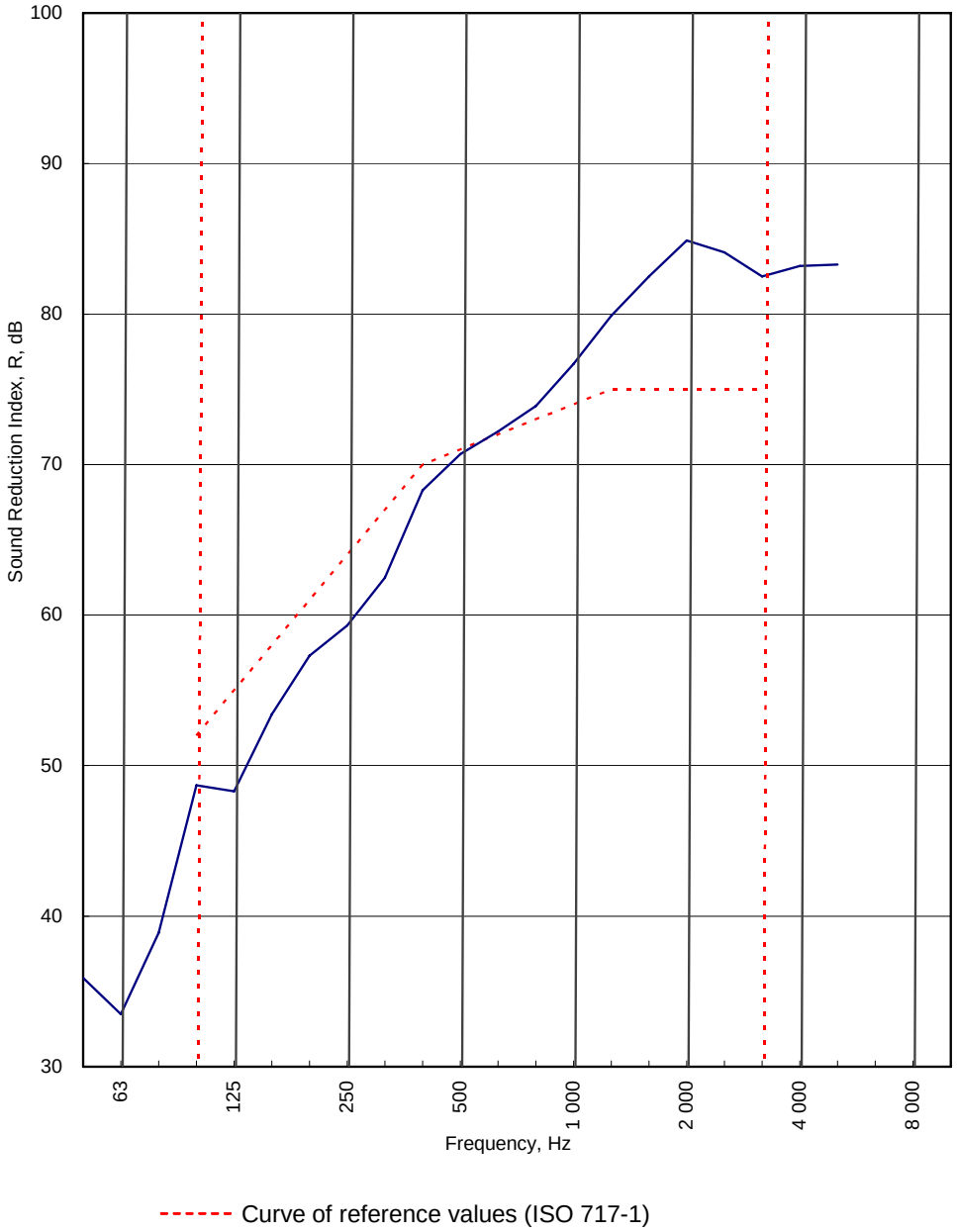
Test Code:
H15450DA
Test Date:
06/11/2007

Freq. Hz	R dB
50	35.9
63	33.5
80	38.9
100	48.7
125	48.3
160	53.4
200	57.3
250	59.3
315	62.5
400	68.3
500	70.7
630	72.2
800	73.9
1 000	76.7
1 250	79.9
1 600	82.5
2 000	84.9
2 500	84.1
3 150	82.5
4 000	83.2
5 000	83.3
6 300	
8 000	
10 000	



Rating according to
BS EN ISO 717-1:1997

Rw (C;Ctr) = 71 (-2;-8) dB

Max dev. 6.7 dB at 125 Hz

Evaluation based on laboratory measurement results obtained by an engineering method:

$C_{50\text{-}3150}$= **-6 dB** $C_{50\text{-}5000}$= **-5 dB** $C_{100\text{-}5000}$= **-1 dB**

$C_{tr,50\text{-}3150}$= **-18 dB** $C_{tr,50\text{-}5000}$= **-18 dB** $C_{tr,100\text{-}5000}$= **-8 dB**

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Customer: **Hilti Ltd**

LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H15450DA** Test Date: **06/11/2007**

Specimen Area, S = **8.64** m^2

	Room T2	Room T1
Room Volume, m^3:	**98**	**58.37**
Temperature, deg.C:	**17.4**	**17.5**
Rel. Humidity, %RH:	**49.2**	**47.9**

	Test Room T2 to Test Room T1								
Freq Hz	Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB	**R dB**	U.Dev. dB	R 1/1Oct dB
50	59.1	22.2	26.4	**20.9**	0.64	-2.3	**35.9**		
63	62.7	27.6	13.0	**27.4**	0.71	-1.8	**33.5**		35.6
80	72.4	31.2	7.1	31.2	0.64	-2.3	**38.9**		
100	105.8	56.5	15.8	56.5	0.95	-0.6	**48.7**	3.3	
125	107.4	59.1	6.4	59.1	1.09	0.0	**48.3**	6.7	49.6
160	87.3	34.3	6.4	34.3	1.18	0.4	**53.4**	4.6	
200	92.6	35.7	14.0	35.7	1.19	0.4	**57.3**	3.7	
250	94.6	36.0	5.6	36.0	1.28	0.7	**59.3**	4.7	59.2
315	94.3	33.2	12.4	33.2	1.49	1.4	**62.5**	4.5	
400	115.3	48.2	22.9	48.2	1.43	1.2	**68.3**	1.7	
500	112.5	43.1	9.3	43.1	1.45	1.3	**70.7**	0.3	70.1
630	110.4	39.5	7.8	39.5	1.45	1.3	**72.2**		
800	109.7	37.4	6.6	37.4	1.55	1.6	**73.9**		
1 000	108.3	33.2	5.2	33.2	1.58	1.6	**76.7**		76.2
1 250	107.3	29.1	9.3	29.1	1.61	1.7	**79.9**		
1 600	109.8	29.2	3.8	29.2	1.67	1.9	**82.5**		
2 000	111.0	27.8	2.7	27.8	1.59	1.7	**84.9**		83.7
2 500	108.8	25.7	2.7	25.7	1.35	1.0	**84.1**		
3 150	107.2	25.5	3.7	25.5	1.31	0.8	**82.5**		
4 000	106.4	23.8	4.4	23.8	1.24	0.6	**83.2**		83.0
5 000	105.7	22.9	6.8	22.9	1.20	0.5	**83.3**		
6 300									
8 000									
10 000									

Single Figure Ratings	**Rw**	**C**	**Ctr**	**Total U. Dev., dB**	**29.5**
BS EN ISO 717-1: 1997	**dB**	**dB**	**dB**		
	71	**-2**	**-8**		
	(100-5000)	**-1**	**-8**		
Background Corrected					
	(50-3150)	**-6**	**-18**		
	(50-5000)	**-5**	**-18**		

Procedure: ISO140/3/B - issue 1

Worksheet: 140_3_1.XLS

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APPENDIX B - TEST METHOD AND CONDITIONS

The source room (T2) was treated with six perspex diffusers of approximately 900mm x 1220mm. An omni-directional loudspeaker sound source is placed near a back corner of the source room (T2), rotating at 1 rpm and at least 0.7m from any room boundary to satisfy Annex C of BS EN ISO 140-3: 1995. A stationary loudspeaker sound source is placed in the corner of the receiving room (T1) opposite the test specimen.

The average sound pressure level in each 1/3 octave band is measured using a rotating microphone boom, positioned such that the minimum distance between microphone and sound source is 1m and between microphone and room boundaries is 0.7m. The rotating microphone has a sweep radius of at least 1m and is inclined in relation to the boundaries at an angle of at least 30° to the horizontal. The microphone has a traverse time of 32 seconds, and the sound pressure levels are averaged over 64 seconds which is equivalent to two complete sweeps of the microphone boom.

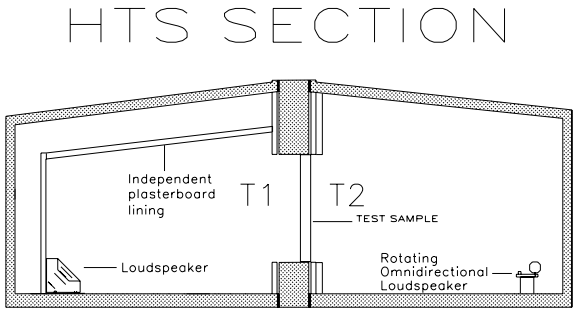
The equivalent absorption area of the receiving room is determined by producing the arithmetic average of twelve reverberation times and applying this to the Sabine formula.

The test specimen is installed in the aperture so that it finishes flush with the first independent timber in room T2 side to eliminate indirect transmission between rooms. The specimen is not installed so that the aperture depth ratio 2:1 is met as recommended in section 5.2.1 of BS EN ISO 140-3:1995. Laboratory tests have been carried out to prove the insignificance of this installation position on the test results.

The laboratory limit for measurement due to flanking is (combined BTC 11709A, BTC13562EA and BTC 15398A)

Freq Hz	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
R'max	45.0	46.9	58.5	62.4	62.9	67.7	71.2	77.2	84.2	92.0	97.7	101.5	103.8	97.6	102.4	104.8	101.8	102.9	98.7	93.9	94.3

The figure below shows flanking and isolation treatments in the test chamber.



Chamber layout

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