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BRE Test Report

Glazpart Ltd

Laboratory Airborne Sound Insulation of slot ventilators tested in accordance with BS EN ISO 10140-1 and BS EN ISO 10140-2

Prepared for:	**Glazpart Ltd**
Date:	**31st March 2023**
Report Number:	**P123184-1001-Issue 5**

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1 Introduction

BRE Acoustics was commissioned by Glazpart Ltd to carry out airborne sound insulation measurements in the BRE Horizontal Transmission Suite (Building 14, Hall D), BRE, Garston, Watford, Hertfordshire, WD25 9XX.

This report details the testing outlined in BRE proposal P123184.

2 Testing details

2.1 Test dates and personnel

The measurements detailed in this report were made on 29th July and the 8th, 9th & 11th August 2022 by Mr M Coleman of BRE Acoustics.

2.2 Test methods and applicable standards

Measurement of airborne sound insulation was made in accordance with BS EN ISO 10140-1:2021 Annex E and BS EN ISO 10140-2:2021.

Single number quantities were calculated in accordance with BS EN ISO 717-1:2020.

BRE Acoustics holds UKAS accreditation for the measurement of sound insulation in the field and in the laboratory. The measurements were conducted using the procedures accredited by UKAS.

2.3 Test element installation

The wall construction was installed by BRE; the slot ventilators were installed by BRE.

Test results relate only to the specimens as received and tested.

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2.4 Instrumentation

The equipment used to conduct the tests is identified below, in **Table 1**.

BRE Instrument Number	Equipment description	Manufacturer	Type	SN	Calibrate date
3110	Calibrator	B&K	4231	2175848	01/2023
5165	Microphone	GRAS	40AE	37071 & 117036	11/2022
5167/5168	Microphone Preamplifier	GRAS	26CA	13085 & 13142	11/2022
5165	Real Time Analyser	NOR	850	8501142	11/2022
6206/6207	Loudspeaker (Source)	B&K	4292	008003	N/A
3214/3216	Loudspeaker (Receive)	NOR	270H	26257 & 26258	N/A
3225	Rotating Boom (Source)	NOR	212NA	10417	N/A
5169	Rotating Boom (Receive)	NOR	265	29412	N/A

Table 1 Equipment list

The gain of the real time analyser was adjusted to give a reading 113.9 dB at 1 kHz using the Bruel & Kjaer Type 4321 calibrator.

All equipment is calibrated in accordance with BRE procedures, using reference equipment calibrated by a UKAS accredited laboratory.

2.5 Test Numbers

Test numbers and corresponding test elements can be seen in **Table 2** below:

Test number	Test element	Source room volume (m^3)	Receive room volume (m^3)	Common area (m^2)
L122-012	Wall construction	111.8	71.7	10.8
L322-014 & 015	Block 1 Slot Ventilator			
L322-016 & 017	Block 2 Slot Ventilator			
L322-020 & 021	Block 3 Slot Ventilator			
L322-018 & 019	Block 4 Slot Ventilator			
L322-022 & 023	Block 5 Slot Ventilator			
L322-024 & 025	Block 6 Slot Ventilator			

Table 2 Test numbers with corresponding tested elements

Construction details for each test element can be found in the following section (**Table 3**) by referring to the corresponding test number.

2.6 Construction details, test numbers and sound insulation test results

The construction details and single number quantities for the sound insulation tests are shown below in **Table 3**.

Test element	Test number	Construction details	$D_{n,e,w}$ (C;C_{tr}) (dB)
Filler wall	L122-012	2x 15 mm Knauf Soundshield Plus on both sides of 70 mm Knauf 'C' stud at 300 mm centres with 50 mm Acoustic Roll between studs, taped and jointed. Wall reduced to accommodate ventilator aperture (by use of auxiliary transition panels*)	59 (-1;-5)
Block 1	L322-014	204 mm x 10 mm - 2500EA - open	35 (-1; 1)
	L322-015	204 mm x 10 mm - 2500EA - closed	40 (0;0)
Block 2	L322-016	204 mm x 13 mm - 2500EA - open	34 (-1; 1)
	L322-017	204 mm x 13 mm – 2500EA - closed	46 (-1;-1)
Block 3	L322-020	2x 204 mm x 10 mm – 5000EA - open	32 (-1; 1)
	L322-021	2x 204 mm x 10 mm – 5000EA – closed	37 (0; 0)
Block 4	L322-018	2x 204 mm x 13 mm - 5000EA - open	31 (-1; 1)
	L322-019	2x 204 mm x 13 mm – 5000EA - closed	42 (0; 0)
Block 5	L322-022	2 x 167 mm x 13 mm – 4000EA - open	32 (-1; 1)
	L322-023	2 x 167 mm x 13 mm – 4000EA - closed	41 (0; 0)
Block 6	L322-024	132 mm x 19 mm – 2000EA - open	33 (0; 1)
	L322-025	132 mm x 19 mm – 2000EA - closed	48 (-1; -2)

Table 3 Construction details

**As described in BS EN ISO 10140-1:2021 (page 16)*

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3 Installation Details

3.1 Technical element position

The position of the slot ventilators in the wall construction, with necessary transitioning from full depth wall to ventilator in the transmission suite aperture is indicated in **Figure 1**.

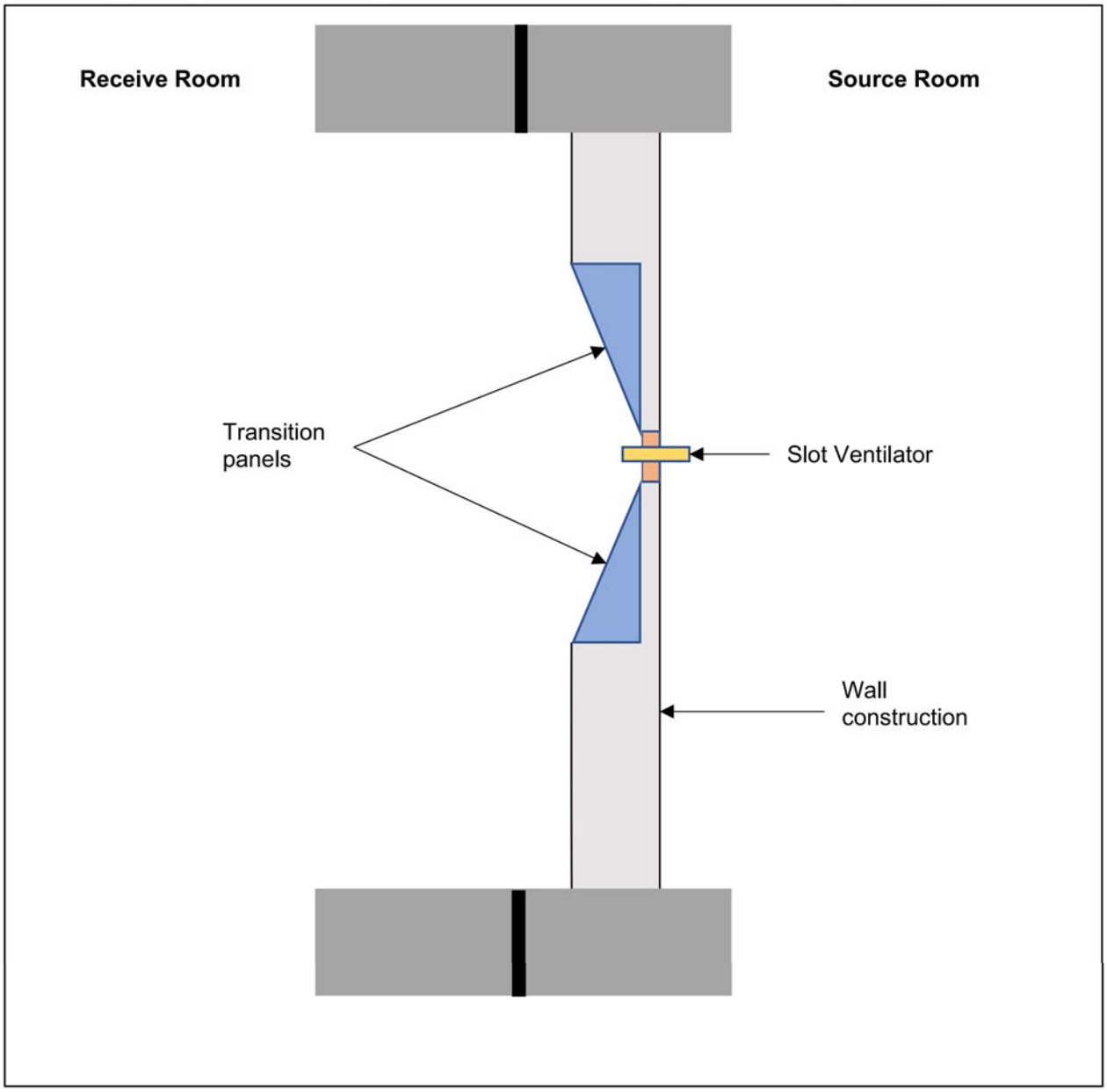


Figure 1 Section through elevation showing the position of the slot ventilator in the wall in the transmission suite aperture

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3.2 Photographs



Photograph 1: L322-014 & 015 – Block 1 - Source room



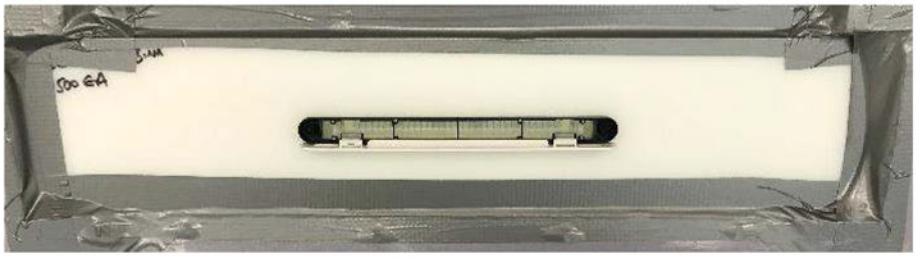
Photograph 2: L322-014 – Block 1 - Receive room: open



Photograph 3: L322-015 – Block 1 - receive room: closed



Photograph 4: L322-016 & 017 – Block 2 - Source room



Photograph 5: L322-016 – Block 2 - Receive room: open



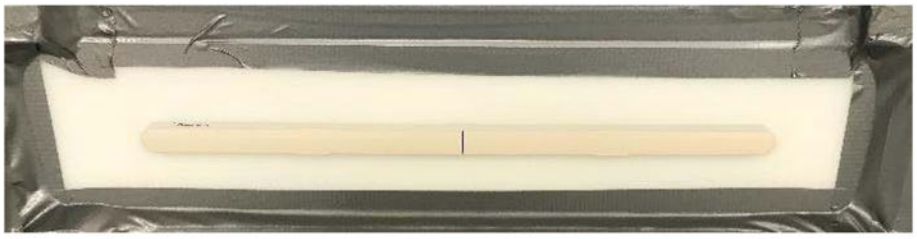
Photograph 6: L322-017 – Block 2 - Receive room: closed



Photograph 7: L322-020 & 021 – Block 3 - Source room



Photograph 8: L322-020 – Block 3 - Receive room: open

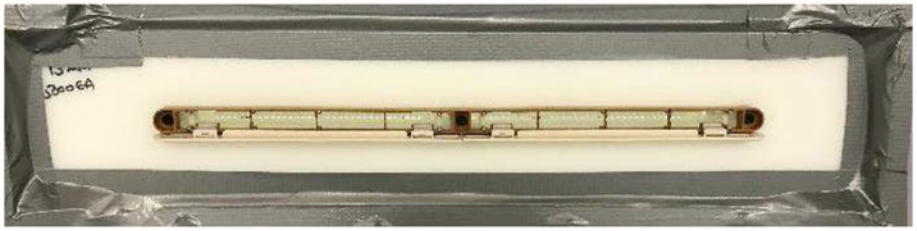


Photograph 9: L322-021 – Block 3 - Receive room: closed



Photograph 10: L322-018 & 019 – Block 4 - Source room

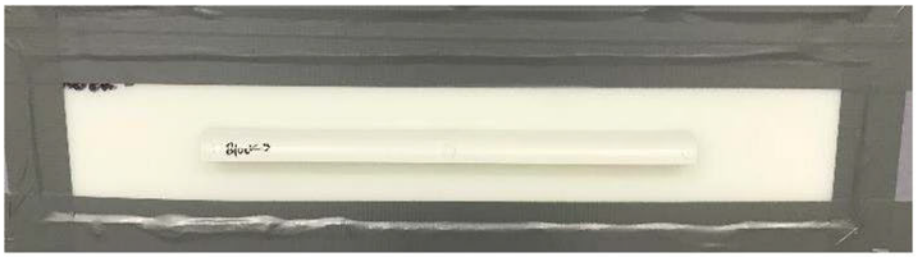
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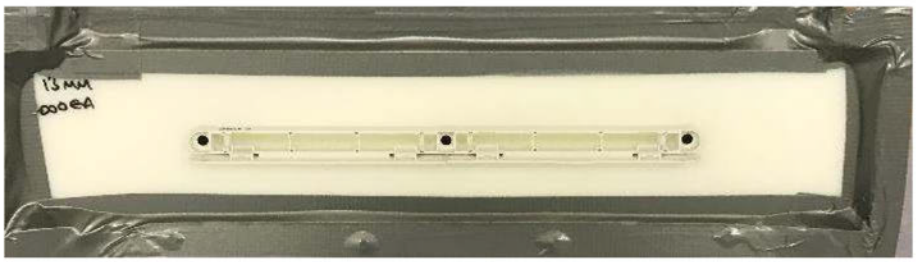
Photograph 2: L322-018 – Block 4 - Receive room: open



Photograph 3: L322-019 – Block 4 - receive room: closed



Photograph 4: L322-022 & 023 – Block 5 - Source room



Photograph 5: L322-022 – Block 5 - Receive room: open

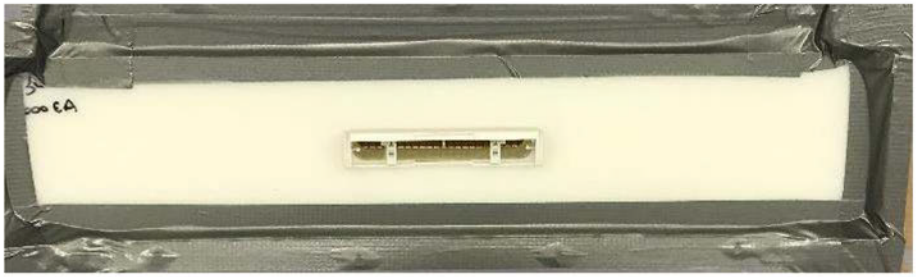


Photograph 6: L322-023 – Block 5 - Receive room: closed

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Photograph 7: L322-024 & 025 – Block 6 - Source room



Photograph 8: L322-024 – Block 6 - Receive room: open



Photograph 9: L322-025 – Block 6 - Receive room: closed

4 Appendices

4.1 UKAS test results sheets

Page Number	Test Number	Description
12	L122-012	Filler wall
13	L322-014	Block 1
14	L322-015	Block 1
15	L322-016	Block 2
16	L322-017	Block 2
17	L322-018	Block 4
18	L322-019	Block 4
19	L322-020	Block 3
20	L322-021	Block 3
21	L322-022	Block 5
22	L322-023	Block 5
23	L322-024	Block 6
24	L322-025	Block 6

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 29/07/2022 **Test Number:** L122-012

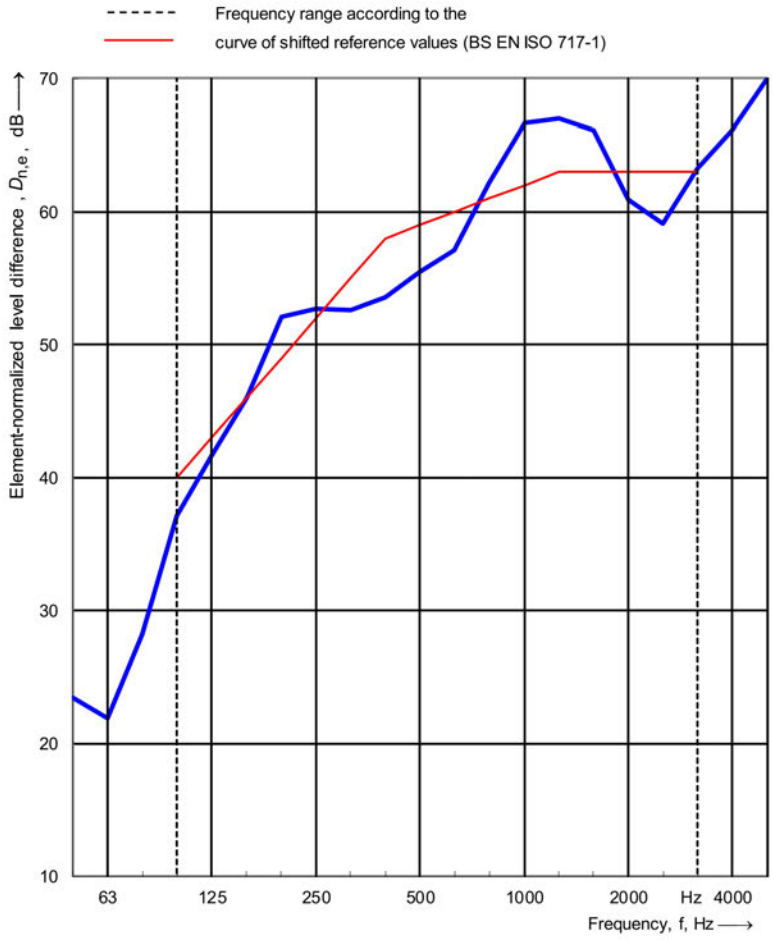
Test specimen mounted by: BRE
Product identification: Drywall partition

Description of the specimen: Two layers 15 mm Sound reducing board on both sides of 70 mm C-stud with source side fixed to resilient bars and 50 mm Insulation Acoustic Roll between studs. Taped and jointed

Static pressure: 100.3 kPa
Air temperature: 26.0 °C
Relative air humidity: 39.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	23.4
63	21.9
80	28.2
100	37.1
125	41.6
160	46.0
200	52.1
250	52.7
315	52.6
400	53.6
500	55.5
630	57.1
800	62.1
1000	66.6
1250	67.0
1600	66.1
2000	60.9
2500	59.1
3150	63.3
4000	66.1
5000	70.0



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 59 (-1 ; -5) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = -5 dB $C_{50\text{-}5000}$ = -5 dB $C_{100\text{-}5000}$ = 0 dB
$C_{tr,50\text{-}3150}$ = -17 dB $C_{tr,50\text{-}5000}$ = -17 dB $C_{tr,100\text{-}5000}$ = -5 dB

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 08/08/2022 **Test Number:** L322-014

Test specimen mounted by: BRE
Product identification: Slot Ventilator

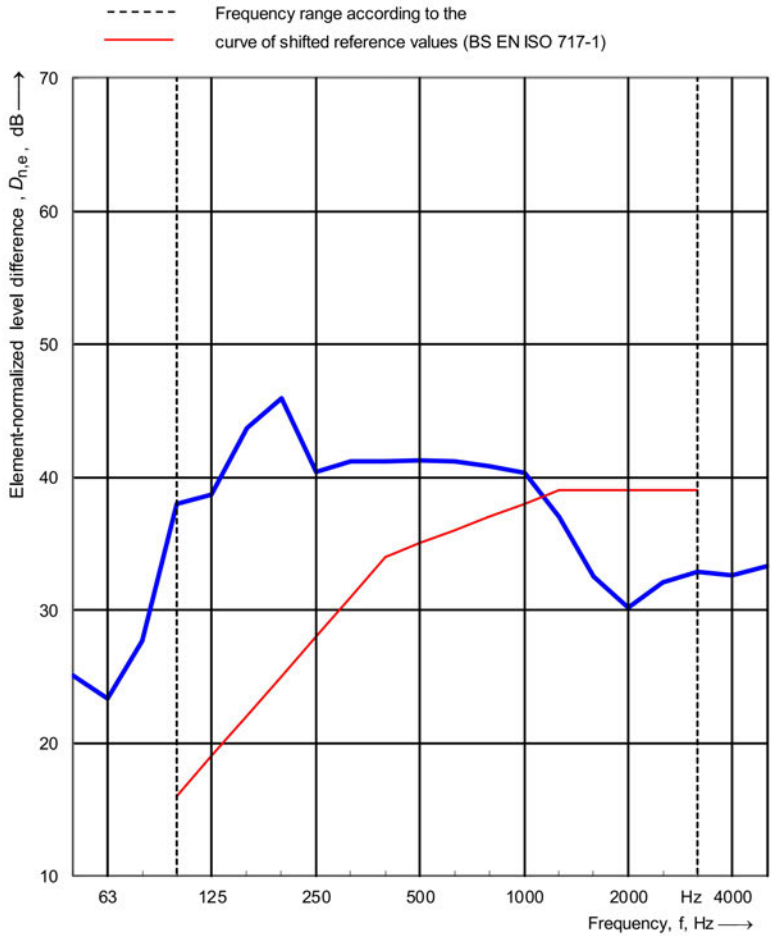
Description of the specimen: Single slot - 204 mm x 10 mm - Block 1 - 2500EA - open

Static pressure: 100.1 kPa
Air temperature: 23.5 °C
Relative air humidity: 51.2 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	25.1 [2]
63	23.3 [2]
80	27.7 [2]
100	38.0 [2]
125	38.7 [2]
160	43.7 [2]
200	45.9
250	40.4
315	41.2
400	41.2
500	41.3
630	41.2
800	40.8
1000	40.3
1250	37.0
1600	32.5
2000	30.2
2500	32.1
3150	32.9
4000	32.6
5000	33.3

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 35 (-1 ; 1) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB
$C_{tr,50\text{-}3150}$ = 0 dB $C_{tr,50\text{-}5000}$ = 0 dB $C_{tr,100\text{-}5000}$ = 1 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 08/08/2022 **Test Number:** L322-015

Test specimen mounted by: BRE
Product identification: Slot ventilator

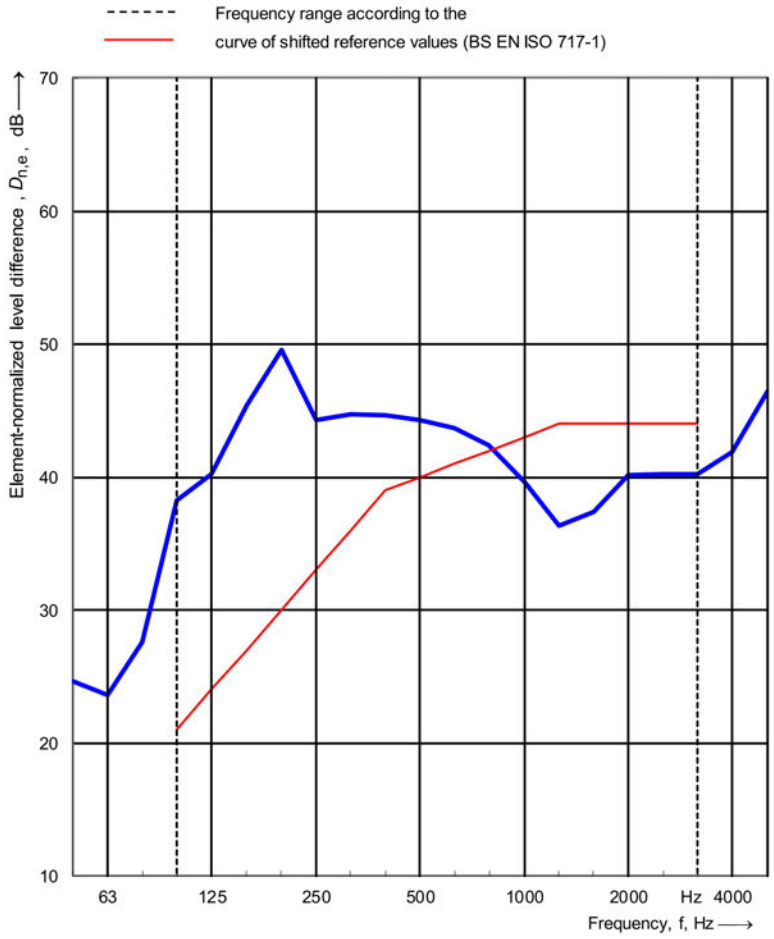
Description of the specimen: Single slot - 204 mm x 10 mm - Block 1 - 2500EA - closed

Static pressure: 100.1 kPa
Air temperature: 23.5 °C
Relative air humidity: 51.2 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	24.6	2
63	23.6	2
80	27.6	2
100	38.2	2
125	40.2	2
160	45.4	2
200	49.6	2
250	44.3	
315	44.7	
400	44.6	
500	44.3	
630	43.7	
800	42.4	
1000	39.6	
1250	36.3	
1600	37.4	
2000	40.1	
2500	40.2	
3150	40.2	
4000	41.9	
5000	46.5	

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 40 (0 ; 0) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = 0 dB $C_{100\text{-}5000}$ = 0 dB
$C_{tr,50\text{-}3150}$ = -2 dB $C_{tr,50\text{-}5000}$ = -2 dB $C_{tr,100\text{-}5000}$ = 0 dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 08/08/2022 **Test Number:** L322-016

Test specimen mounted by: BRE
Product identification: Slot ventilator

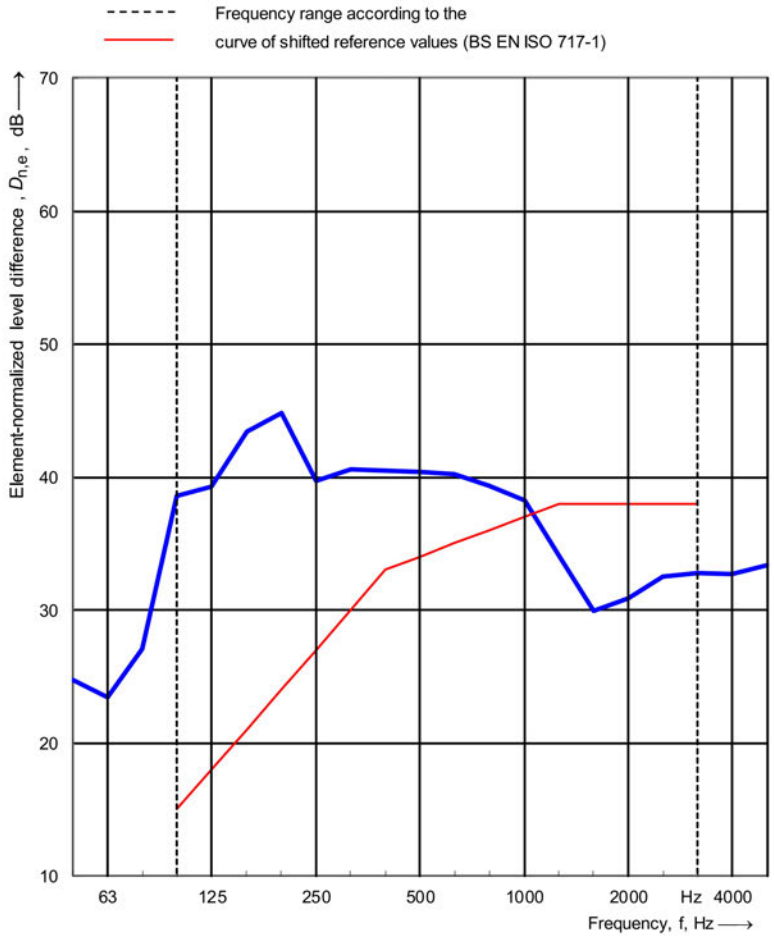
Description of the specimen: Single slot - 204 mm x 13 mm - Block 2 - 2500EA - open

Static pressure: 100.1 kPa
Air temperature: 23.5 °C
Relative air humidity: 51.2 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	24.7 [2]
63	23.4 [2]
80	27.1 [2]
100	38.6 [2]
125	39.3 [2]
160	43.4 [2]
200	44.8
250	39.7
315	40.6
400	40.5
500	40.4
630	40.2
800	39.4
1000	38.2
1250	34.1
1600	29.9
2000	30.9
2500	32.5
3150	32.8
4000	32.7
5000	33.4

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 34 (-1 ; 1) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB
$C_{tr,50\text{-}3150}$ = 0 dB $C_{tr,50\text{-}5000}$ = 0 dB $C_{tr,100\text{-}5000}$ = 1 dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)

Client: Glazpart

Manufacturer:

Date of test: 08/08/2022 **Test Number:** L322-017

Test specimen mounted by: BRE

Product identification: Slot ventilator

Description of the specimen: Single slot - 204 mm x 13 mm - Block 2 - 2500EA - closed

Static pressure: 100.1 kPa

Air temperature: 23.5 °C

Relative air humidity: 51.2 %

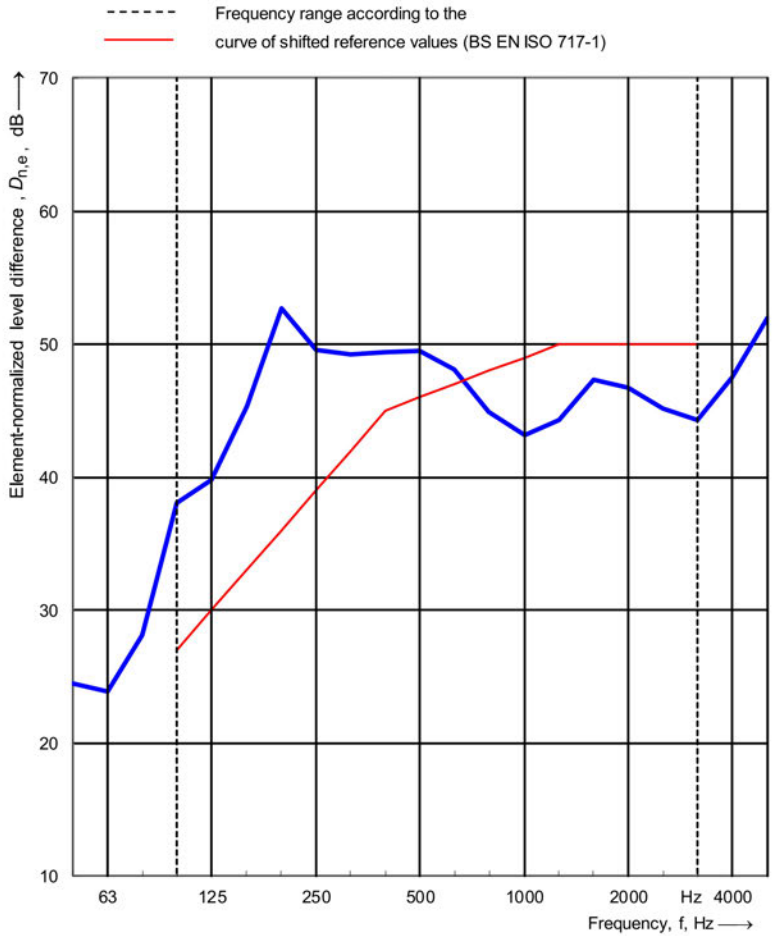
Area, S, of test element: 10.80 m²

Source room volume: 112 m³

Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	24.5	2
63	23.9	2
80	28.1	2
100	38.1	2
125	39.8	2
160	45.3	2
200	52.7	2
250	49.6	2
315	49.2	2
400	49.4	2
500	49.5	
630	48.1	
800	44.9	
1000	43.2	
1250	44.3	
1600	47.3	
2000	46.7	
2500	45.2	
3150	44.3	
4000	47.5	
5000	52.0	

[2] Minimum values



Rating according to ISO 717-1

$D_{n,e,w}$ $(C;C_{tr})$ = 46 (-1 ; -1) dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = 0 dB $C_{100\text{-}5000}$ = 0 dB

$C_{tr,50\text{-}3150}$ = -5 dB $C_{tr,50\text{-}5000}$ = -5 dB $C_{tr,100\text{-}5000}$ = -1 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-018

Test specimen mounted by: BRE
Product identification: Slot ventilator

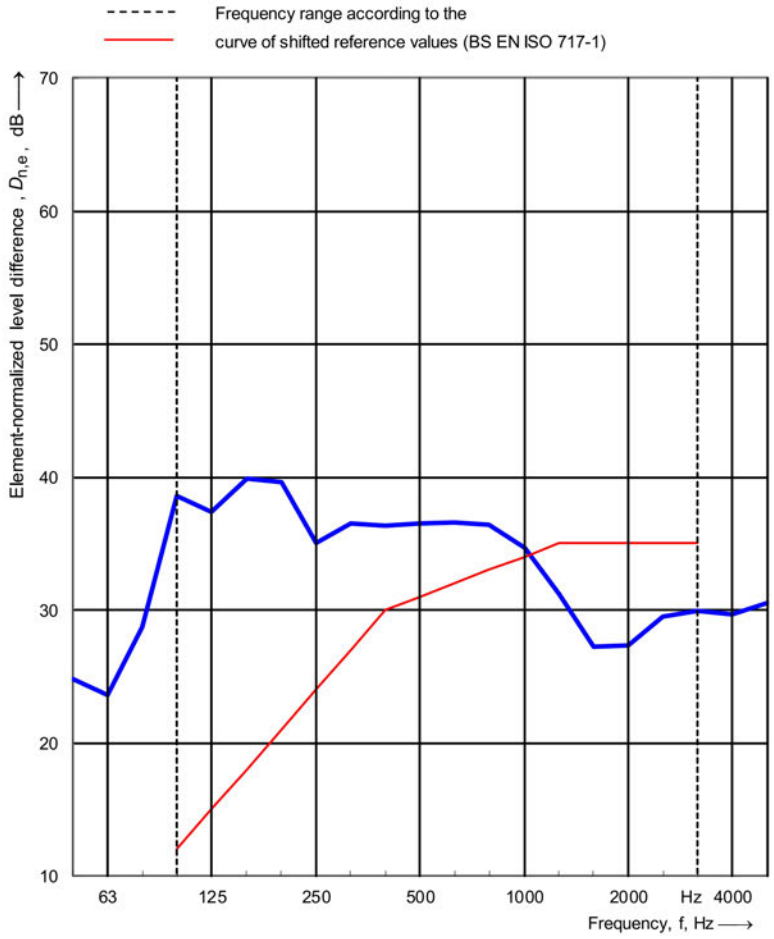
Description of the specimen: Double slot - 2x 204 mm x 13 mm - Block 4 - 5000EA - open

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	24.8 [2]
63	23.6 [2]
80	28.7 [2]
100	38.6 [2]
125	37.4 [2]
160	39.9
200	39.6
250	35.0
315	36.5
400	36.3
500	36.5
630	36.6
800	36.4
1000	34.7
1250	31.2
1600	27.2
2000	27.3
2500	29.5
3150	29.9
4000	29.7
5000	30.5

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 31 (-1 ; 1) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB
$C_{tr,50\text{-}3150}$ = 0 dB $C_{tr,50\text{-}5000}$ = 0 dB $C_{tr,100\text{-}5000}$ = 0 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-019

Test specimen mounted by: BRE
Product identification: Slot ventilator

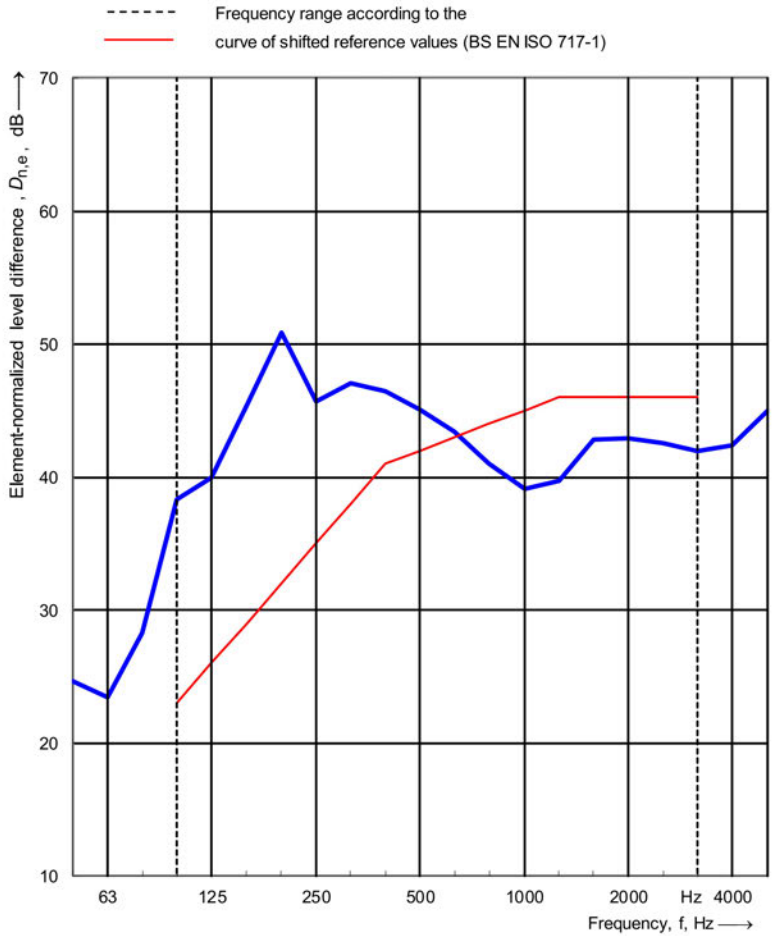
Description of the specimen: Double slot - 2x 204 mm x 13 mm - Block 4 - 5000EA - closed

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	24.6	2
63	23.4	2
80	28.3	2
100	38.3	2
125	40.0	2
160	45.4	2
200	50.9	2
250	45.7	
315	47.1	
400	46.5	
500	45.1	
630	43.4	
800	41.0	
1000	39.1	
1250	39.7	
1600	42.8	
2000	42.9	
2500	42.6	
3150	42.0	
4000	42.4	
5000	45.0	

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 42 (0 ; 0) dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = 0 dB $C_{50\text{-}5000}$ = 0 dB $C_{100\text{-}5000}$ = 0 dB
$C_{tr,50\text{-}3150}$ = -3 dB $C_{tr,50\text{-}5000}$ = -3 dB $C_{tr,100\text{-}5000}$ = 0 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 11/08/2022 **Test Number:** L322-020

Test specimen mounted by: BRE
Product identification: Slot ventilator

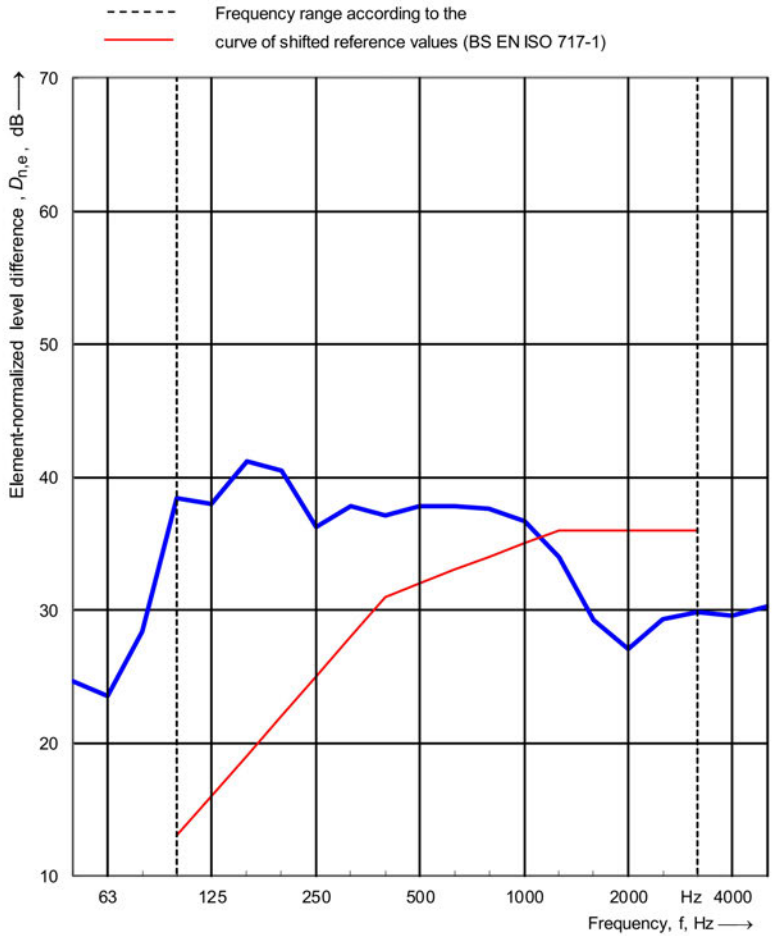
Description of the specimen: Double slot - 2x 204 mm x 10 mm - Block 3 - 5000EA - open

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	24.6	2
63	23.5	2
80	28.4	2
100	38.4	2
125	38.0	2
160	41.2	
200	40.5	
250	36.2	
315	37.8	
400	37.1	
500	37.8	
630	37.8	
800	37.6	
1000	36.7	
1250	34.0	
1600	29.2	
2000	27.1	
2500	29.3	
3150	29.8	
4000	29.6	
5000	30.3	

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 32 (-1 ; 1) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB
$C_{tr,50\text{-}3150}$ = 0 dB $C_{tr,50\text{-}5000}$ = 0 dB $C_{tr,100\text{-}5000}$ = 0 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 11/08/2022 **Test Number:** L322-021

Test specimen mounted by: BRE
Product identification: Slot ventilator

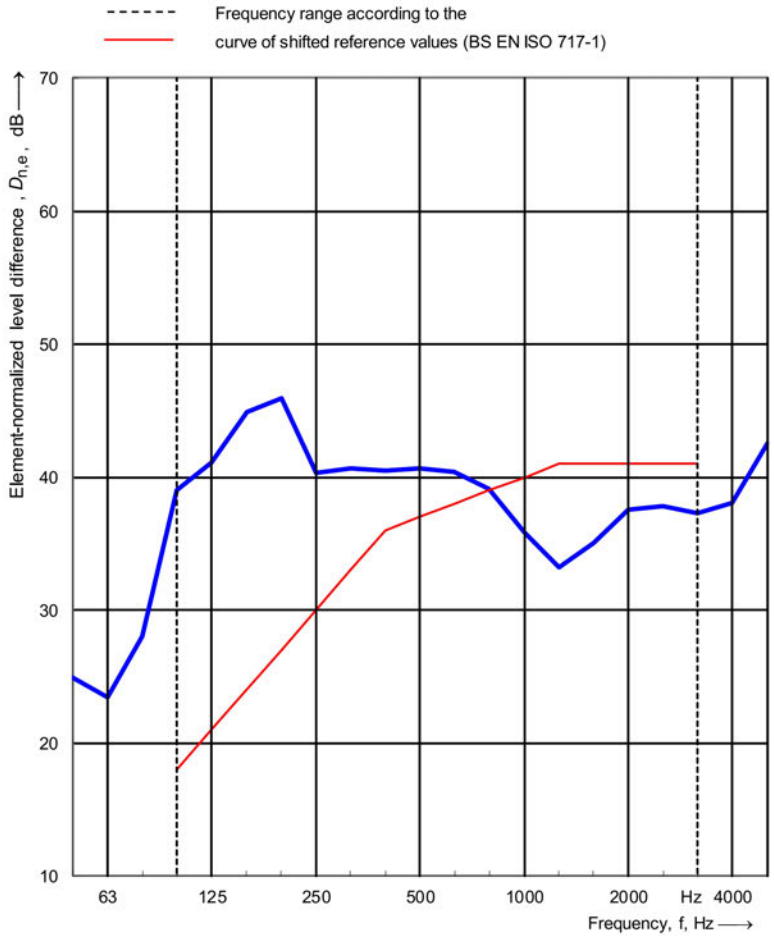
Description of the specimen: Double slot - 2x 204 mm x 10 mm - Block 3 - 5000EA - closed

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	24.9 [2]
63	23.4 [2]
80	28.0 [2]
100	39.0 [2]
125	41.1 [2]
160	44.9 [2]
200	45.9
250	40.3
315	40.7
400	40.5
500	40.7
630	40.4
800	39.1
1000	35.8
1250	33.2
1600	35.0
2000	37.5
2500	37.8
3150	37.3
4000	38.1
5000	42.6

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 37 (0 ; 0) dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = 0 dB $C_{50\text{-}5000}$ = 0 dB $C_{100\text{-}5000}$ = 0 dB
$C_{tr,50\text{-}3150}$ = -1 dB $C_{tr,50\text{-}5000}$ = -1 dB $C_{tr,100\text{-}5000}$ = 0 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-022

Test specimen mounted by: BRE
Product identification: Slot ventilator

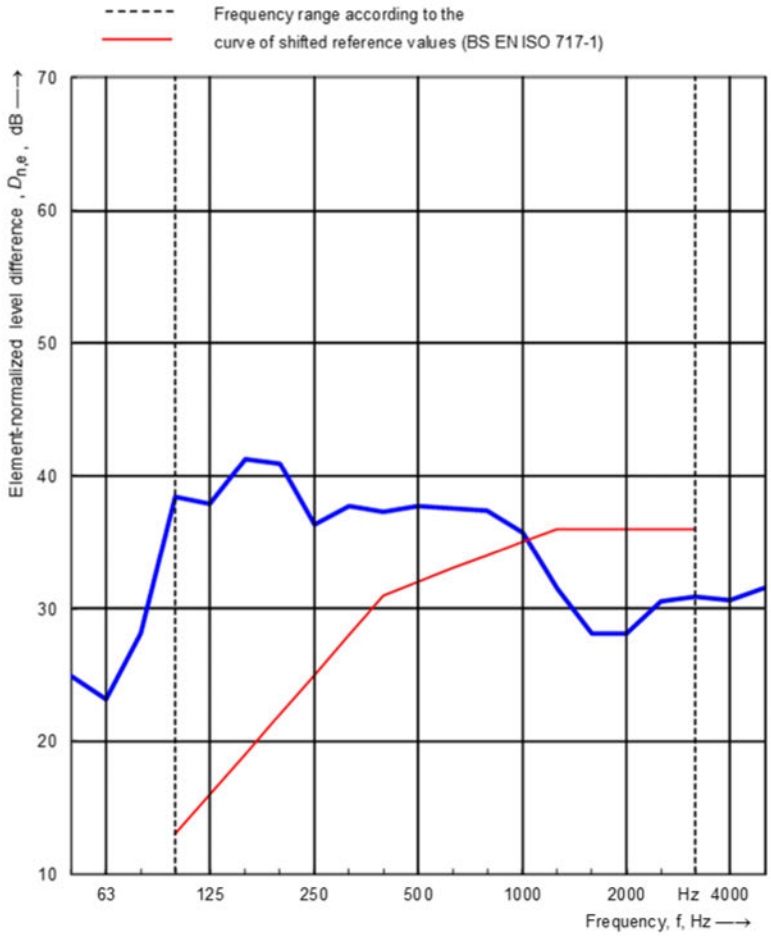
Description of the specimen: Double slot - 2x 167 mm x 13 mm - Block 5 - 4000EA - open

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	24.9 [2]
63	23.2 [2]
80	28.1 [2]
100	38.4 [2]
125	37.9 [2]
160	41.3
200	40.9
250	36.3
315	37.7
400	37.3
500	37.7
630	37.5
800	37.4
1000	35.7
1250	31.5
1600	28.1
2000	28.1
2500	30.5
3150	30.9
4000	30.6
5000	31.6

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 32 (-1 ; 1) dB

$C_{50\text{-}3150}$ = -1 dB $C_{50\text{-}5000}$ = -1 dB $C_{100\text{-}5000}$ = -1 dB
$C_{tr,50\text{-}3150}$ = 0 dB $C_{tr,50\text{-}5000}$ = 0 dB $C_{tr,100\text{-}5000}$ = 0 dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-023

Test specimen mounted by: BRE
Product identification: Slot ventilator

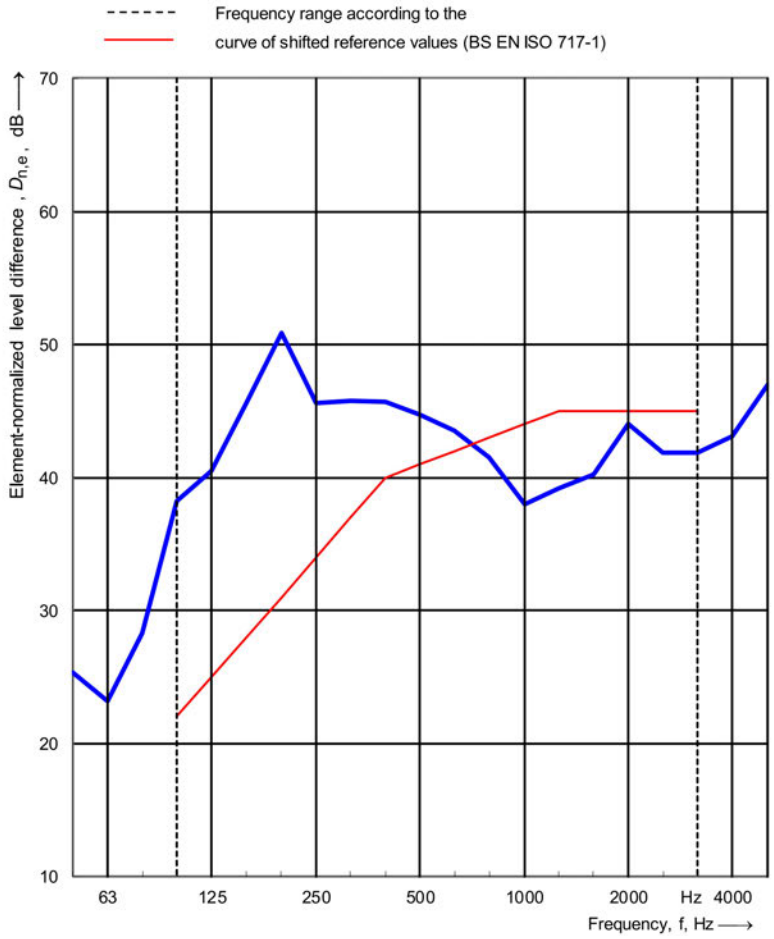
Description of the specimen: Double slot - 2x 167 mm x 13 mm - Block 5 - 4000EA - closed

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	25.3	2
63	23.2	2
80	28.3	2
100	38.2	2
125	40.5	2
160	45.7	2
200	50.9	2
250	45.6	
315	45.8	
400	45.7	
500	44.7	
630	43.5	
800	41.5	
1000	38.0	
1250	39.2	
1600	40.2	
2000	44.0	
2500	41.9	
3150	41.9	
4000	43.1	
5000	47.0	

[2] Minimum values



Rating according to ISO 717-1

$D_{n,e,w}$ $(C;C_{tr})$ = 41 (0 ; 0) dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = 0 dB $C_{50\text{-}5000}$ = 1 dB $C_{100\text{-}5000}$ = 1 dB

$C_{tr,50\text{-}3150}$ = -2 dB $C_{tr,50\text{-}5000}$ = -2 dB $C_{tr,100\text{-}5000}$ = 0 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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bre

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-024

Test specimen mounted by: BRE
Product identification: Slot ventilator

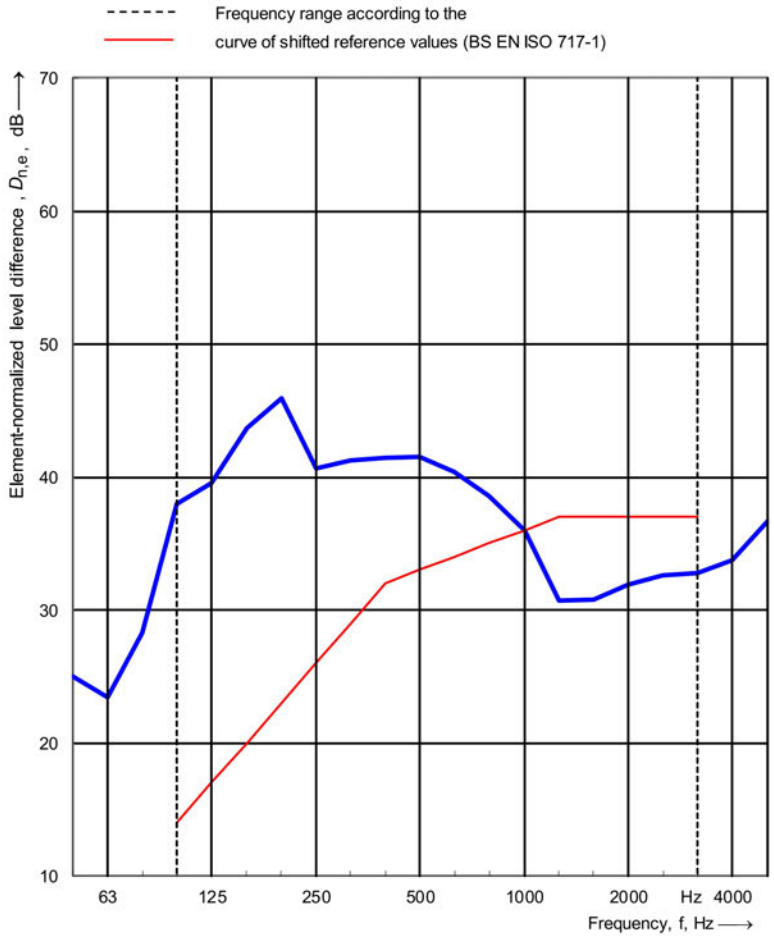
Description of the specimen: Single slot - 132 mm x 19 mm - Block 6 - 2000EA - open

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]
50	25.0 [2]
63	23.4 [2]
80	28.3 [2]
100	38.0 [2]
125	39.5 [2]
160	43.7 [2]
200	45.9
250	40.7
315	41.3
400	41.4
500	41.5
630	40.4
800	38.6
1000	36.0
1250	30.7
1600	30.8
2000	31.9
2500	32.6
3150	32.8
4000	33.7
5000	36.7

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 33 (0 ; 1) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50\text{-}3150}$ = 0 dB $C_{50\text{-}5000}$ = 0 dB $C_{100\text{-}5000}$ = 1 dB
$C_{tr,50\text{-}3150}$ = 1 dB $C_{tr,50\text{-}5000}$ = 1 dB $C_{tr,100\text{-}5000}$ = 1 dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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Level difference according to BS EN ISO 10140-2

Laboratory measurement of sound insulation of building elements

Test Room BRE Transmission Suite (Hall D)
Client: Glazpart
Manufacturer:
Date of test: 09/08/2022 **Test Number:** L322-025

Test specimen mounted by: BRE
Product identification: Slot ventilator

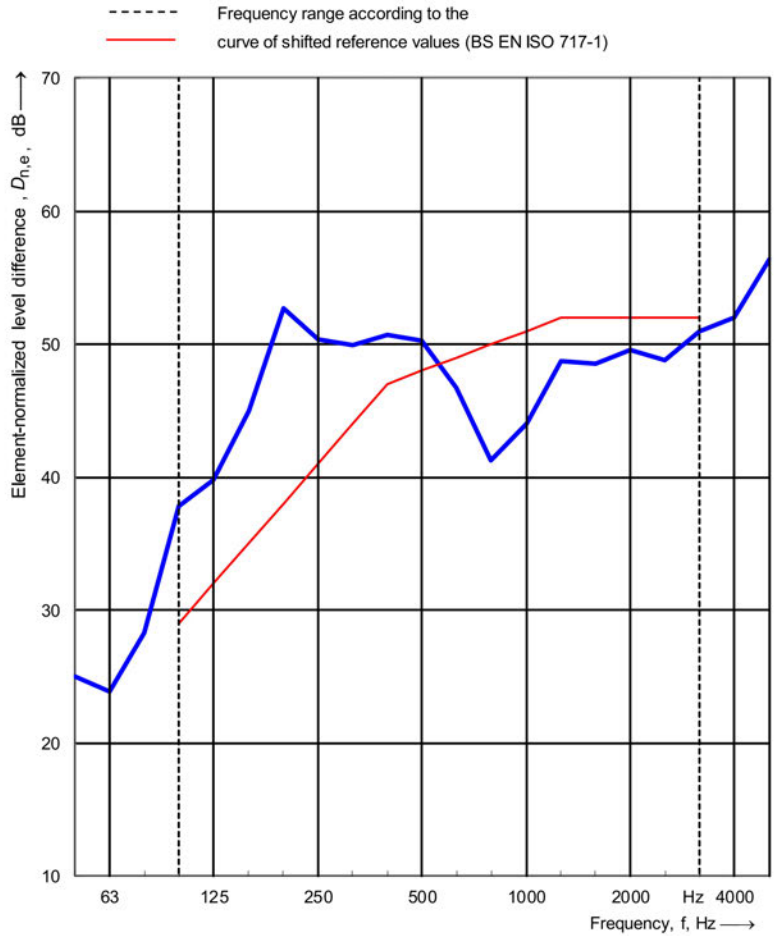
Description of the specimen: Single slot - 132 mm x 19 mm - Block 6 - 2000EA - closed

Static pressure: 100.1 kPa
Air temperature: 27.6 °C
Relative air humidity: 38.0 %

Area, S, of test element: 10.80 m²
Source room volume: 112 m³
Receiving room volume: 71.1 m³

Frequency f [Hz]	$D_{n,e}$ 1/3 octave [dB]	
50	25.0	2
63	23.9	2
80	28.3	2
100	37.8	2
125	39.8	2
160	45.0	2
200	52.7	2
250	50.4	2
315	49.9	2
400	50.7	2
500	50.3	
630	46.7	
800	41.3	
1000	44.0	
1250	48.7	
1600	48.5	
2000	49.6	
2500	48.8	
3150	51.0	
4000	52.0	
5000	56.4	

[2] Minimum values



Rating according to ISO 717-1
$D_{n,e,w}$ $(C;C_{tr})$ = 48 (-1 ; -2) dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$C_{50-3150}$ =	-2	dB	$C_{50-5000}$ =	-1	dB	$C_{100-5000}$ =	0	dB
$C_{tr,50-3150}$ =	-6	dB	$C_{tr,50-5000}$ =	-6	dB	$C_{tr,100-5000}$ =	-2	dB

Based on the data provided in BS EN 20140-2:1993 it is estimated that the measurement uncertainty should not exceed ±1 dB for the single-number quantity (Rw) and should not exceed the values in Table A1 of BS EN 20140-2:1993 for the data in the individual third octaves (R)

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4.2 Octave tables

Block 1 – L322-014 - open		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	25.1	**25.4**
63	23.3	
80	27.7	
100	38.0	**41.0**
125	38.7	
160	43.7	
200	45.9	**43.2**
250	40.4	
315	41.2	
400	41.2	**41.2**
500	41.3	
630	41.2	
800	40.8	**39.6**
1000	40.3	
1250	37.0	
1600	32.5	**31.7**
2000	30.2	
2500	32.1	
3150	32.9	***33.0***
4000	32.6	
5000	33.3	

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Block 1 – L322-015 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.6	***25.6***
63	23.6	
80	27.6	
100	38.2	***42.4***
125	40.2	
160	45.4	
200	49.6	***47.0***
250	44.3	
315	44.7	
400	44.6	***44.2***
500	44.3	
630	43.7	
800	42.4	***40.1***
1000	39.6	
1250	36.3	
1600	37.4	***39.4***
2000	40.1	
2500	40.2	
3150	40.2	***43.7***
4000	41.9	
5000	46.5	

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Block 2 – L322-016 - open		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.7	***25.3***
63	23.4	
80	27.1	
100	38.6	***41.0***
125	39.3	
160	43.4	
200	44.8	***42.3***
250	39.7	
315	40.6	
400	40.5	***40.4***
500	40.4	
630	40.2	
800	39.4	***37.8***
1000	38.2	
1250	34.1	
1600	29.9	***31.2***
2000	30.9	
2500	32.5	
3150	32.8	***33.0***
4000	32.7	
5000	33.4	

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Block 2 – L322-017 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.5	*25.9*
63	23.9	
80	28.1	
100	38.1	42.2
125	39.8	
160	45.3	
200	52.7	50.7
250	49.6	
315	49.2	
400	49.4	49.0
500	49.5	
630	48.1	
800	44.9	44.2
1000	43.2	
1250	44.3	
1600	47.3	46.4
2000	46.7	
2500	45.2	
3150	44.3	49.1
4000	47.5	
5000	52.0	

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Block 4 – L322-018 - open		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.8	*26.3*
63	23.6	
80	28.7	
100	38.6	38.8
125	37.4	
160	39.9	
200	39.6	37.5
250	35.0	
315	36.5	
400	36.3	36.5
500	36.5	
630	36.6	
800	36.4	34.6
1000	34.7	
1250	31.2	
1600	27.2	28.1
2000	27.3	
2500	29.5	
3150	29.9	30.0
4000	29.7	
5000	30.5	

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Block 4 – L322-019 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.6	*26.0*
63	23.4	
80	28.3	
100	38.3	42.3
125	40.0	
160	45.4	
200	50.9	48.5
250	45.7	
315	47.1	
400	46.5	45.2
500	45.1	
630	43.4	
800	41.0	40.0
1000	39.1	
1250	39.7	
1600	42.8	42.8
2000	42.9	
2500	42.6	
3150	42.0	43.3
4000	42.4	
5000	45.0	

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Block 3 – L322-020 - open		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.6	*26.1*
63	23.5	
80	28.4	
100	38.4	39.4
125	38.0	
160	41.2	
200	40.5	38.6
250	36.2	
315	37.8	
400	37.1	37.6
500	37.8	
630	37.8	
800	37.6	36.3
1000	36.7	
1250	34.0	
1600	29.2	28.6
2000	27.1	
2500	29.3	
3150	29.8	29.9
4000	29.6	
5000	30.3	

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Block 3 – L322-021 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.9	*25.9*
63	23.4	
80	28.0	
100	39.0	42.4
125	41.1	
160	44.9	
200	45.9	43.1
250	40.3	
315	40.7	
400	40.5	40.5
500	40.7	
630	40.4	
800	39.1	36.7
1000	35.8	
1250	33.2	
1600	35.0	36.9
2000	37.5	
2500	37.8	
3150	37.3	40.0
4000	38.1	
5000	42.6	

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Block 5 – L322-022 - open		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	24.9	*25.9*
63	23.2	
80	28.1	
100	38.4	39.5
125	37.9	
160	41.3	
200	40.9	38.7
250	36.3	
315	37.7	
400	37.3	37.5
500	37.7	
630	37.5	
800	37.4	35.5
1000	35.7	
1250	31.5	
1600	28.1	29.1
2000	28.1	
2500	30.5	
3150	30.9	31.1
4000	30.6	
5000	31.6	

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Block 5 – L322-023 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	25.3	*26.1*
63	23.2	
80	28.3	
100	38.2	42.6
125	40.5	
160	45.7	
200	50.9	48.2
250	45.6	
315	45.8	
400	45.7	44.7
500	44.7	
630	43.5	
800	41.5	39.8
1000	38.0	
1250	39.2	
1600	40.2	42.3
2000	44.0	
2500	41.9	
3150	41.9	44.6
4000	43.1	
5000	47.0	

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Block 6 – L322-024 - open		
Frequency (Hz)	**1/3rd Octave data (dB)** $D_{ne,1/3oct}$	**Octave data (dB)** $D_{ne,oct}$
50	25.0	*26.1*
63	23.4	
80	28.3	
100	38.0	41.1
125	39.5	
160	43.7	
200	45.9	43.3
250	40.7	
315	41.3	
400	41.4	41.1
500	41.5	
630	40.4	
800	38.6	36.2
1000	36.0	
1250	30.7	
1600	30.8	31.8
2000	31.9	
2500	32.6	
3150	32.8	34.7
4000	33.7	
5000	36.7	

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Block 6 – L322-025 - closed		
Frequency (Hz)	**1/3rd Octave data (dB) $D_{ne,1/3oct}$**	**Octave data (dB) $D_{ne,oct}$**
50	25.0	*26.2*
63	23.9	
80	28.3	
100	37.8	42.0
125	39.8	
160	45.0	
200	52.7	51.2
250	50.4	
315	49.9	
400	50.7	49.6
500	50.3	
630	46.7	
800	41.3	45.7
1000	44.0	
1250	48.7	
1600	48.5	49.0
2000	49.6	
2500	48.8	
3150	51.0	53.8
4000	52.0	
5000	56.4	

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