AKUSTIKVERKSTAN

Report 17-321-R4
2017-12-13
3 pages, 2 appendices

Akustikverkstan AB, Fabriksgatan 4, 531 30 Lidköping, Sweden phone: +46 (0)510 - 911 44 carl.nyqvist@akustikverkstan.se
Direct: +46 (0)70-938 00 45

LAB MEASUREMENTS OF SOUND REDUCTION FOR OFFICE BOOTHS THE HUT WITH DOOR AND HALF A HUT WITH DOOR FROM GÖTESSONS INDUSTRI AB

CONCLUSIONS

The sound reduction for office booths, The Hut with door and Half a Hut with door from Götessons Industri AB, has been measured according to the method described in SS-EN ISO 16283-1:2014. The measurements have been evaluated according to SS-EN ISO 717-1:2014 and are presented as weighted sound level difference in the table below. Detailed results are presented in appendices in this report.

	D_w (dB)
The Hut with door	5
Half a Hut with door	7

1. CLIENT

Götessons Industri AB, Rönnåsgatan 5B, 523 38 Ulricehamn, Sweden
Contact: Jonathan Andersson, phone 0321-687765, jonathan@gotessons.se

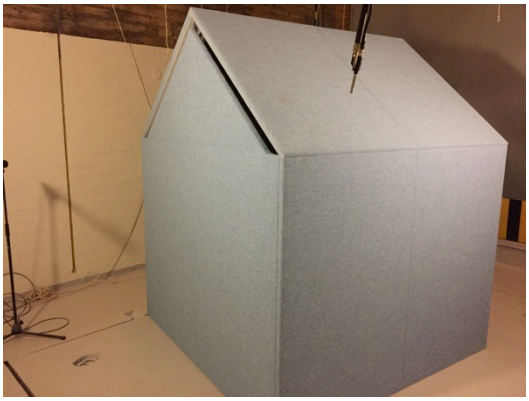
2. ASSIGNMENT

To measure airborn sound reduction according to SS-EN ISO 16283-1:2014 for two office booths, The Hut with door and Half a Hut with door from from Götessons Industri AB.
The measurements shall be evaluated according to SS-EN ISO 717-1:2014.

3. TEST OBJECTS

The Hut
Office booth with outer dimensions (WxHxD) 1880 x 2270 x 1800 mm. Made from panels with pine frame and PET-filling covered in fabric and with an 8 mm plexiglas door. Front panels are 60 mm thick, the rest of the panels are 40 mm thick. The Hut was measured in the middle of the room.

Figur 1: The Hut with door, front side.



Figur 2: The Hut with door, back side.

Half a Hut

Office booth with outer dimensions (WxHxD) 1880 x 2270 x 900 mm. Made from panels with pine frame and PET-filling covered in fabric and with an 8 mm plexiglas door. Front panels are 60 mm thick, the rest of the panels are 40 mm thick. Half a Hut was measured in the middle of the room.

Figur 3: Half a Hut with door, front side.

Figur 4: Microphone position Half a Hut with door.

4. MEASUREMENT PROCEDURE

The measurements were performed according to the method described in SS-EN ISO 16283-1:2014. The booths were placed in the reverberation room in the lab of Akustikverkstan (diffuse sound field). The sound level difference was measured with two speaker positions and three microphone positions at a height of 1.2 m inside The Hut and two microphone positions inside Half a Hut. Outside the booths, the sound level was measured with manual scanning. The level difference was then averaged according to standard and the results as been evaluated to a weighted level difference according to SS-EN ISO 717-1:2014. For practical reasons, some deviations from standard were made:

- The reverberation time has been assumed to 0.5 s wich corresponds to the reference case. No correction for reverberation time has therefore been made.

- The microphone positions inside the booths were closer to the boundaries than the standard specifies.

5. MEASUREMENT EQUIPMENT

Table 1 lists the equipment used during the measurements. The equipment fulfils class 1 according to SS-EN 61672-1, 60942 and 61260. Date for the latest calibration is available in the instrument journal of Akustikverkstan.

Instrument	Manufacture and type	Serial number
Analyser	Norsonic Nor150	15030421
Mic. preamp	Norsonic Nor1209	21210
Mic. preamp	Norsonic Nor1209	21195
Microphone	Norsonic Nor1225	251310
Microphone	Norsonic Nor1225	271069
Calibrator	Norsonic Nor1256	125626092
Speaker	IMA Kub 1	8
Speaker	IMA Kub 1	9
Equalizer	Monacor MEQ-2152	-
Amplifier	Denon POA-2200	-

Table 1: Equipment used during the measurements.

6. RESULTS

Table 2 shows the results as weighted sound level difference ($D_{nT,w}$). Detailed results are presented in appendices B1-B2.

	$D_{nT,w}$ (dB)
The Hut with door	5
Half a Hut with door	7

Table 2: Weighted sound level difference for the tested objects.

Carl Nyqvist

Reviewed by Anders Grimmehed, 2017-12-13

Standardized level difference according to ISO 16283-1

Field measurements of airborne sound insulation between rooms

Client: Götessons industri AB Date of test: 2017-11-21

Description: Measured from Reverberation room (sending room) to office booth within the reverberation room. Reverberation time has been assumed to 0.5 s which is the reference case.

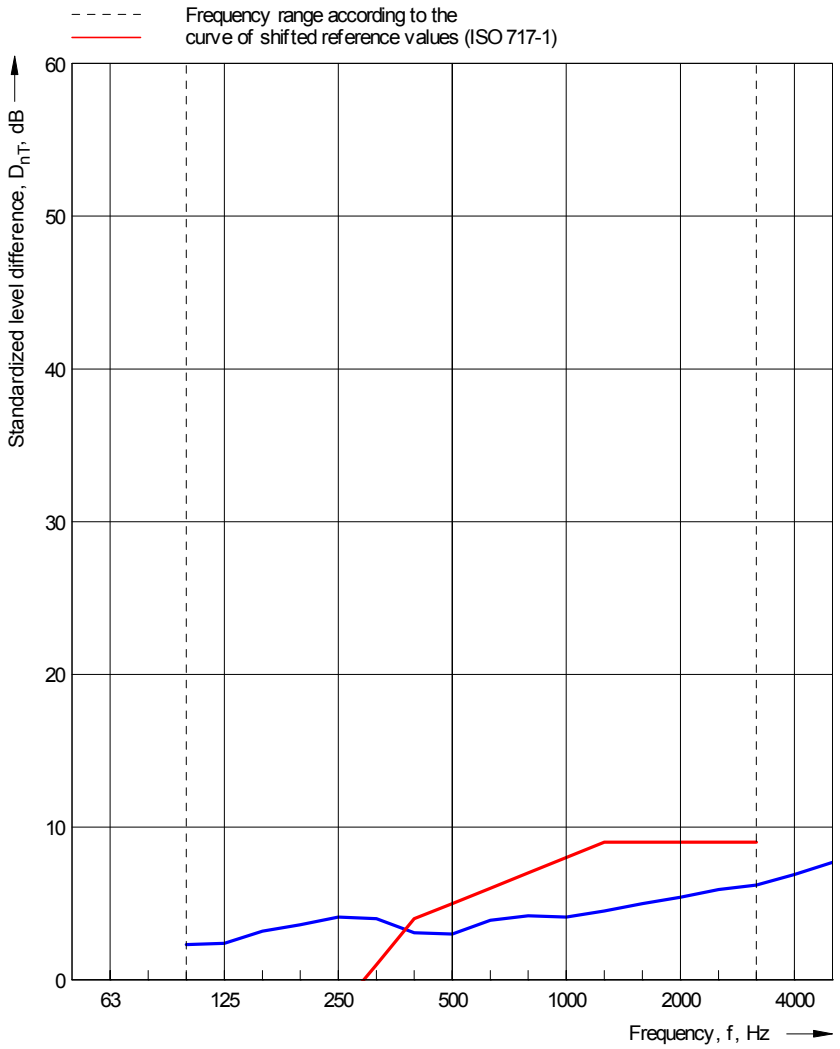
Object: The Hut with door

Area of common partition: 17,00 m²

Source room volume: 194 m³

Receiving room volume: 6,0 m³

Frequency f [Hz]	D_{nT} 1/3 octave [dB]
50	
63	
80	
100	2,3
125	2,4
160	3,2
200	3,6
250	4,1
315	4,0
400	3,1
500	3,0
630	3,9
800	4,2
1 000	4,1
1 250	4,5
1 600	5,0
2 000	5,4
2 500	5,9
3 150	6,2
4 000	6,9
5 000	7,7



Rating according to ISO 717-1

$D_{nT,w}(C;C_{tr})$ = 5 (0; -1) dB

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

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

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

Company: Akustikverkstan

No. of test report: 17-321-R4-B1

Date: 2017-12-07 Signature: Carl Nyqvist

Standardized level difference according to ISO 16283-1

Field measurements of airborne sound insulation between rooms

Client: Götessons industri AB Date of test: 2017-11-21

Description: Measured from Reverberation room (sending room) to office booth within the reverberation room. Reverberation time has been assumed to 0.5 s which is the reference case.

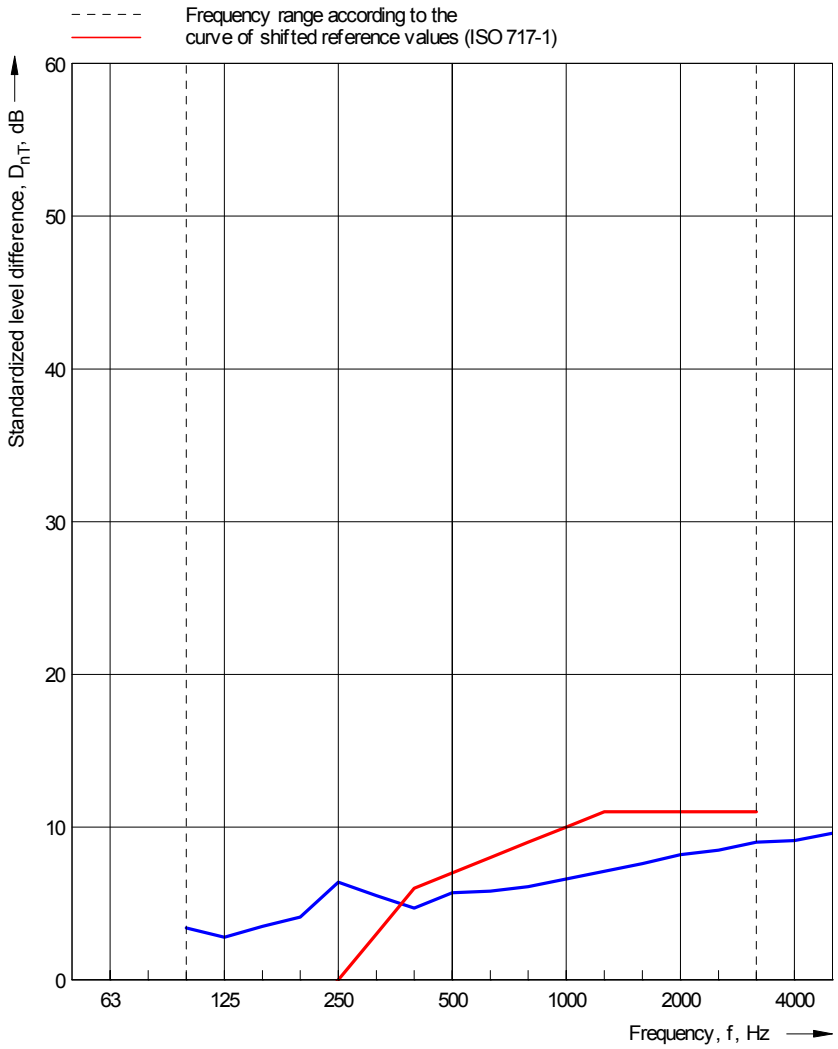
Object: Half a Hut with door

Area of common partition: 12,00 m²

Source room volume: 197 m³

Receiving room volume: 3,0 m³

Frequency f [Hz]	D_{nT} 1/3 octave [dB]
50	
63	
80	
100	3,4
125	2,8
160	3,5
200	4,1
250	6,4
315	5,5
400	4,7
500	5,7
630	5,8
800	6,1
1 000	6,6
1 250	7,1
1 600	7,6
2 000	8,2
2 500	8,5
3 150	9,0
4 000	9,1
5 000	9,6



Rating according to ISO 717-1

$D_{nT,w}(C;C_{tr})$ = 7 (0; -1) dB

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

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

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

Company: Akustikverkstan

No. of test report: 17-321-R4-B2

Date: 2017-12-07 Signature: Carl Nyqvist