

AUGUST series pod

Client: Softrend Group OÜ

Ordered: 16.12.2021

Contact person: Rene Mere

ACOUSTIC MEASUREMENTS**1 INTRODUCTION**

Acoustic measurements were ordered on 16.12.2021 by Softrend Group OÜ representative Rene Mere. Measurements were conducted on 21.12.2021 at 15:30 – 17:30.

The purpose of the measurements was to determine the speech reduction properties of AUGUST series pod with side panels and without.

Measurements and calculations were performed in accordance with ISO 23351-1:2020 standard “Acoustics — Measurement of speech level reduction of furniture ensembles and enclosures”.

Measurement location	Paldiski mnt 96, Tallinn
Room	Softrend office
Time	Tuesday, 21.12.2021 from 15:30 to 17:30
Measurer(s)	Johan Hallimäe, Dmitri Tiško

1.1 Specimen definition

Furniture ensembles and enclosures are assembled on site using elements, which can be transferred into any room through normal-sized passage doors. They are not treated as a fixed part of the building and are beyond the scope of building regulations. These products are typically assembled in a finished room and not during the construction of the building.

The following method is applicable for entire furniture ensembles or enclosures, which form a unity that serves one or several occupants, and which are also used to provide improved speech privacy. The method is not intended for single components used in workstations (acoustic screens etc).

2 MEASUREMENTS**2.1 Measurement method**

The sound power level is measured in two scenarios:

- Without the product
 - The test signal is produced in an empty room while the product is absent
- With the product
 - The test signal is produced inside the product in the occupant’s position

Reverberation time is measured in the room with and without the product. Background noise is measured in the same positions as sound power level with the product in the room and without. Level reduction is the difference of the sound power levels measured in the two scenarios in 1/1-octave frequency bands from 125 Hz to 8000 Hz. Speech level reduction is a single-numbered quantity that

expresses the corresponding reduction in A-weighted sound power level of standard speech within the entire frequency range from 125 Hz to 8000 Hz.

The lowest one-third-octave band frequency of interest is 125 Hz, meaning the room has to have a minimum volume of 150 m³.

3 MEASUREMENT EQUIPMENT AND CALIBRATION DATES

Measurements were conducted using „Brüel & Kjær 2250 SLM“ sound level meter, which corresponds to class 1 measurement equipment.

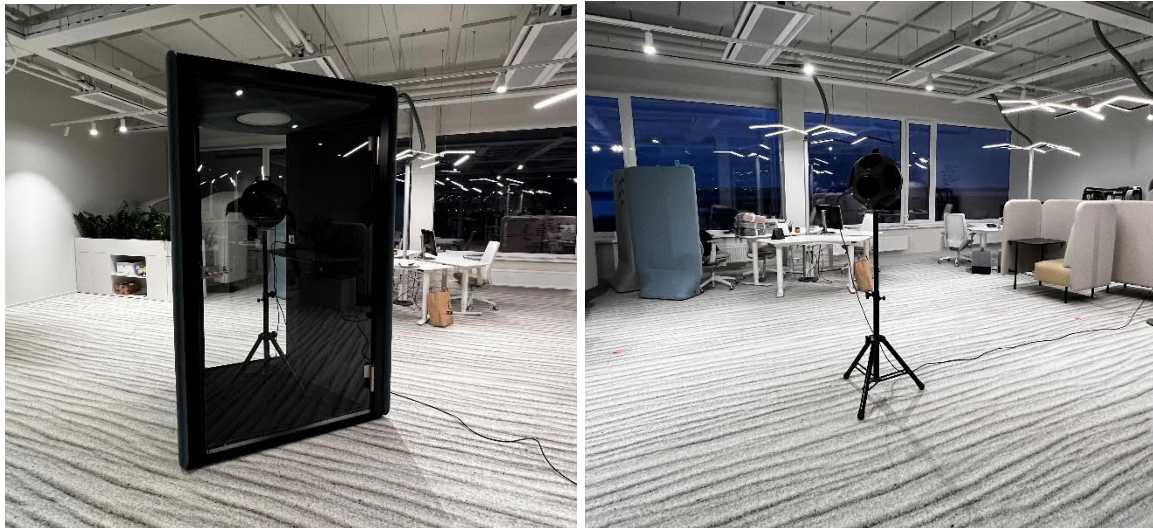
Device	Supplier and model	Serial nr	Calibration date
calibrator	Brüel & Kjær 4231	2253338	02.09.2021 [AKUKON]
microphone	Brüel & Kjær 4966	3271301	03.02.2021 [AKUKON]
SLM	Brüel & Kjær 2250	3004362	03.02.2021 [AKUKON]

* The microphone was calibrated before and after the measurements.

3.1 Environment and conditions

Volume of room	~ 508m ³
Total surface area	~ 442m ²
Microphone positions	6
Test Specimen	AUGUST series pod

Measured pods and conditions are shown on photos 1 - 4.



Photos 1 and 2. AUGUST series pod with panels



Photos 3 and 4. AUGUST series pod without panels.

4 MEASUREMENT RESULTS

The level reduction depends strongly on the ratio of covered area to the total area of the external envelope of the test specimen. Enclosures, which have coverage over 99%, typically produce $D_{S,A}$ results between 15dB and 30dB. Furniture ensembles, which have coverage under 30%, typically produce $D_{S,A}$ results between 0 dB and 5dB.

Adequate target values of $D_{S,A}$ cannot be unambiguously given since the perceived acoustic performance in situations depends on various factors: the distance from the product, the speech effort used by the occupant inside the product, the speech level reduction, the acoustic conditions of the surrounding room and background noise level.

4.1 Speech level reduction index

Speech level reduction index for the furniture model was measured and calculated according to the ISO 23351-1 standard. The measurement results are presented in table 1.

Table 1. Speech level reduction index $D'_{S,A}$

Furniture model	$D'_{S,A}$, dB	Measurement report
1. AUGUST with panels	31.1	Akukon 201641 – M01
2. AUGUST without panels	30.0	Akukon 201641 – M02

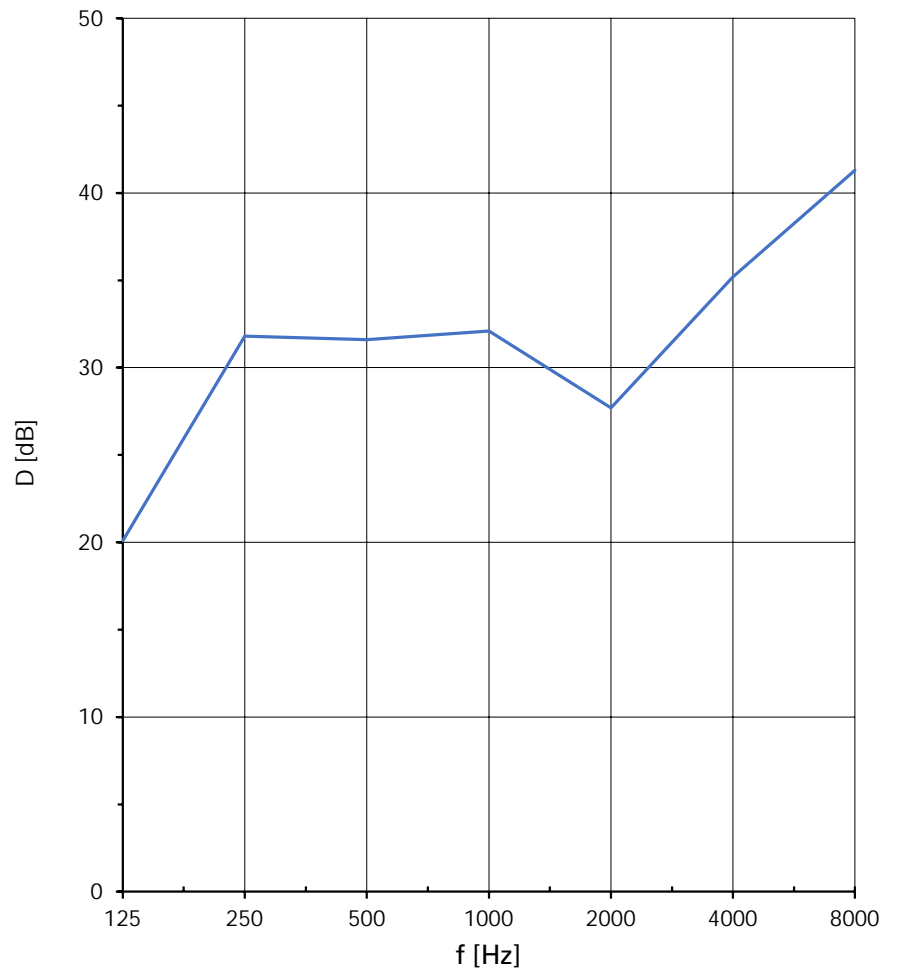
Johan Hallimäe
Composed by

Dmitri Tiško
Consultant

Determination of speech level reduction according to ISO 23351-1

Customer: Softrend Group OÜ
 Product: AUGUST with panels
 Order date: 16.12.21
 Contact person: Rene Mere
 Test laboratory: Paldiski mnt 96
 10618, Tallinn
 Test date: 21.12.21

Frequency	Speech level reduction
f Hz	D dB
125	20.1
250	31.8
500	31.6
1000	32.1
2000	27.7
4000	35.2
8000	41.3
$D'_{S,A}$	31.1



Key

f 1/1 -octave frequency band, in Hz
 D level reduction, in dB
 $D'_{S,A}$ speech level reduction, in dB

Johan Hallimäe

Dmitri Tiško

Determination of speech level reduction according to ISO 23351-1

Customer: Softrend Group OÜ

Product: AUGUST no panels

Order date: 16.12.21

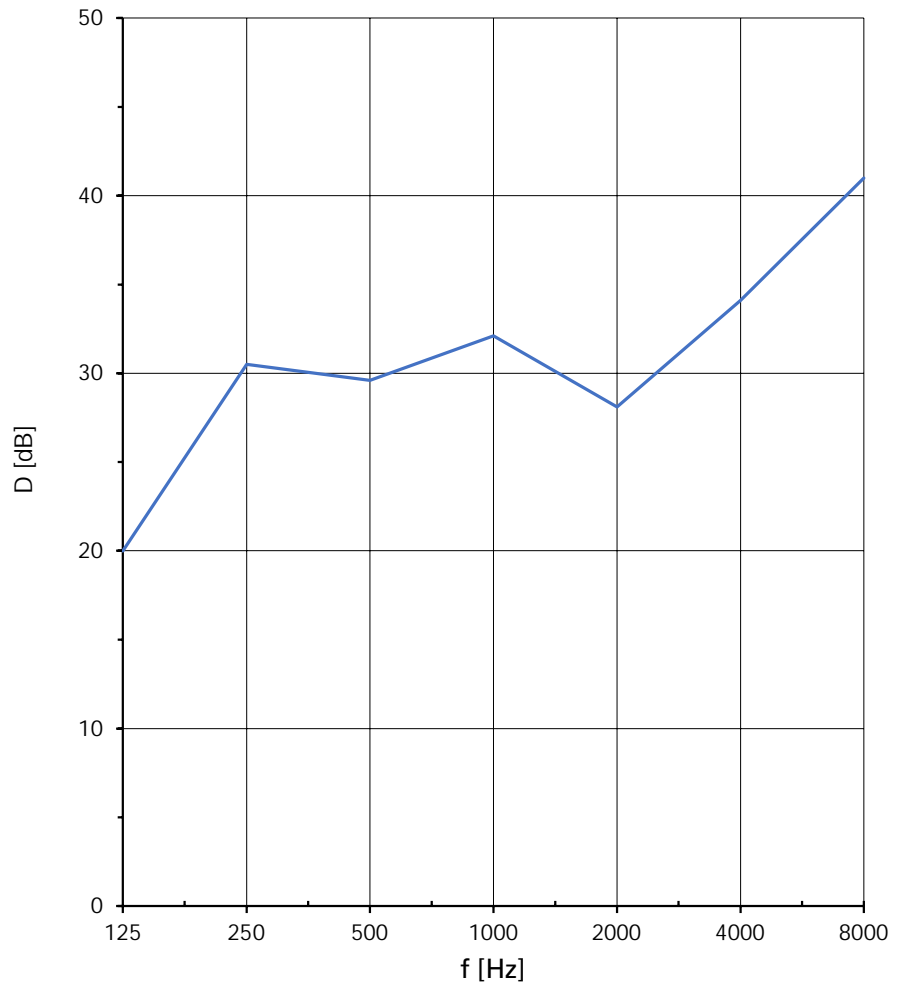
Contact person: Rene Mere

Test laboratory: Paldiski mnt 96

10618, Tallinn

Test date: 21.12.21

Frequency	Speech level reduction
f Hz	D dB
125	20.0
250	30.5
500	29.6
1000	32.1
2000	28.1
4000	34.1
8000	41.0
$D'_{S,A}$	30.0



Key

f 1/1 -octave frequency band, in Hz

D level reduction, in dB

$D'_{S,A}$ speech level reduction, in dB

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Dmitri Tiško