

SOUND ABSORPTION EVALUATION FOR ZILENZIO PRODUCTS ACCORDING TO ASTM C423-17

CONCLUSIONS

The sound absorption for Zilenzio products have been evaluated according to the reverberation room method ASTM C423-17. The evaluation is based on earlier measurements according to SS-EN ISO 354:2003.

Product	SAA	NRC
Offizz	0.72	0.75
Classic	0.74	0.75
Kyoto	0.76	0.75
Focus	0.42	0.40
Dezign wall	1.06	1.05
Dezibel	0.57	0.55
Mute ceiling	0.85	0.85

1. CLIENT

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2. ASSIGNMENT

To evaluate the sound absorption according to ASTM C423-17 for a selection of products from Zilenzio, based on earlier measurements.

3. PRODUCTS

Offizz is a floor standing screen made of a visible wooden frame with a sound absorbing mineral wool filling. The evaluation is based on measurements for a screen 1200 mm wide and 1900 mm tall standing vertically on the floor. All Offizz screens are 70 mm thick.

Classic is a floor standing screen with an MDF core with sound absorbing mineral filling covered with fabric (figure 1). The evaluation is based on measurements for three screens with 1200 mm width and 1800 mm height spread out standing vertically on the floor. All Classic screens are 68 mm thick.

Kyoto is a floor standing screen with an MDF core with sound absorbing filling covered with fabric, assembled to a wooden frame. The evaluation is based on six free standing screens without frame, with 600 mm width and 1170 mm height and 82 mm thickness (figure 2).

Focus is a light foldable screen available for desks and as floor standing screen. It is made of 2.5 mm MDF strips covered with sound absorbing material and fabric, resulting in a total thickness of 10 mm. Evaluation is based on measurements for three desk screens with dimensions 2970x320 mm.

Dezign is a wall absorber with 53 mm thickness and is hanged with 12 mm distance from the wall. It is made of mineral wool filling in an MDF frame and with MDF backing sheet.

Dezign wall panels use the same material build up and material thickness as Dezign print, Fazett and Timber. Evaluation is based on measurements for three panels 1200x1200x53 spread with one side facing the floor. All panels were placed on a distance of 12 mm.

Dezibel is a screen available for desks and as floor standing screen made of a chip board frame and sound absorbing mineral wool filling covered with fabric. The evaluation is based on measurements for three vertically standing screens with dimensions 750x2000x40 spread out on the floor.

Mute is a vertically hanging sound absorbing panel with same material build up and thickness as Dezign wall panels. Evaluation is based on three panels hanging from the ceiling with both sides exposed.



Figure 1: 3 Classic screens 1200x1800 mm



Figure 2: Kyoto screens excluding frame 1170x600 mm.

Dimensions of test objects and references to measurement reports are given in table 1.

Product	Test object size (mm)	Measurement report	No of objects tested	Total one sided area (m ²)	Area used in evaluation (m ²)
Offizz	1200x900x70	13-07-M22	1	2.28	4.56
Classic	1200x1800x68	16-058-R1-M2	3	6.48	12.96
Kyoto	1170x600x82	18-082-R1-B5	6	4.21	8.42
Focus	2970x320x10	15-246-M2	3	2.85	5.70
Dezign wall	1200x1200x53	13-07-M17	3	4.32	5.08
Dezibel	750x2000x40	13-07-M3	3	4.5	9.0
Mute	1200x600x53	13-07-M13	3	2.16	4.32

Table 1: Dimensions and reference to measurement reports.

4. EVALUATION PROCEDURE

The evaluations were performed according to the standard ASTM C423-17, where the resulting Sound Absorption Average (SAA) and Noise Reduction Coefficient (NRC) were calculated. Evaluation was based on measurement reports and area given in Table 1.

5. RESULTS

Complete spectra and evaluated results are presented in protocols specified in Table 2. Protocols are attached to this report as appendices.

Evaluation protocol	Product	SAA	NRC
20-703-M1	Offizz	0.72	0.75
20-703-M2	Classic	0.74	0.75
20-703-M3	Kyoto	0.76	0.75
20-703-M4	Focus	0.42	0.40
20-703-M5	Dezign wall	1.06	1.05
20-703-M6	Dezibel	0.57	0.55
20-703-M7	Mute	0.85	0.85

Table 2: Results of evaluation.

This report should always be used in its complete context, even though the protocols may be used independently.

7. DEVIATIONS FROM THE TEST PROCEDURE

ASTM C423-17 states a minimum one sided area of a tested office screen that are no less than 2.32 m². This condition is fulfilled for all test specimens except the Offizz screen with a one sided area 2.28 m².

The standard also states that screens should be connected to create one single screen if more than one screen is used to fulfill the area condition above. All screens were standing separately in the measurements used for the evaluations presented in this report.

For the purpose to estimate the Noise Reduction Coefficient of a wall absorber the test specimen shall be a rectangular patch of one or more panels to create a recommended area of 6.69 m². This condition is not fulfilled for Dezign wall as the panels were spread out and the total exposed area was smaller.

8. COMMENTS AND INTERPRETATIONS

Some deviations from ASTM C423-17 are given above. All measurements were originally performed to estimate the single object sound absorption area at each frequency.

For this reason, screens are not connected and are instead spread out on the floor with distance in between.

Offizz is tested as one single screen with a surface which is only 2% less than stated in the standard and are therefore most suited for comparison with other screens tested according to ASTM C 423-17.

As the conditions stated in the standard are not fully fulfilled and more edges are exposed when not connecting screens in a line, the evaluations results shall be used with care when comparing products.



Joachim Schubert

Reviewed by Pontus Thorsson, 2020-01-10

Zilenzio Offizz floor screen 1200x1900

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M1

Date

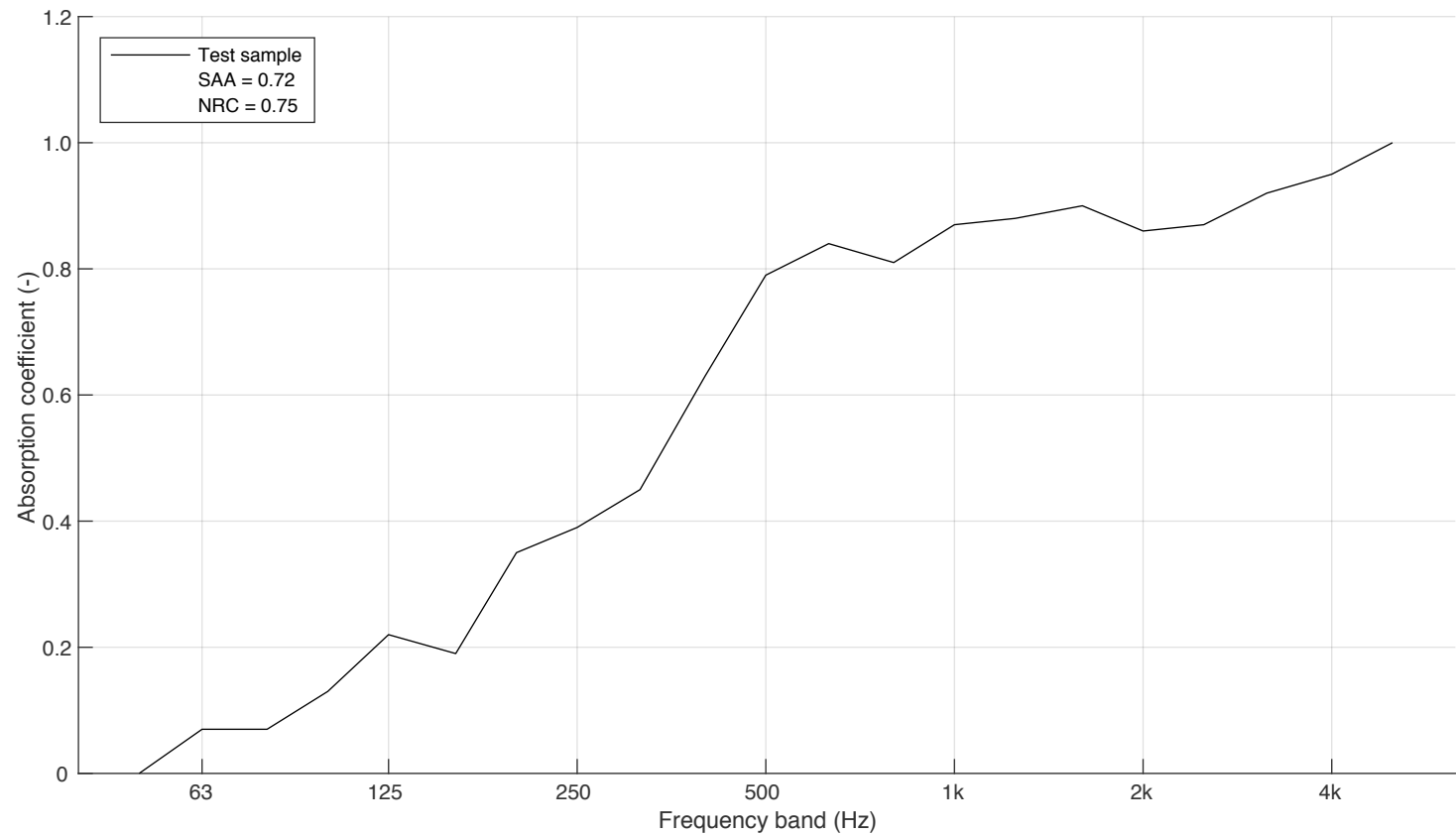
2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.00
63	0.07
80	0.07
100	0.13
125	0.22
160	0.19
200	0.35
250	0.39
315	0.45
400	0.63
500	0.79
630	0.84
800	0.81
1000	0.87
1250	0.88
1600	0.90
2000	0.86
2500	0.87
3150	0.92
4000	0.95
5000	1.00

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Offizz floor screen 1200x1900

Description of test specimen: Floor standing screen including visible frame with size 1200x1900x70.
Evaluation based on measurement for 1 screen. Original measurement report 13-07-M22.

Reverberation room volume: 200 m³
Temperature: 15.0 °C (empty: 14.0 °C)
Air humidity: 77% (empty: 76%)
Air pressure: 101.3 kPa (empty: 101.3 kPa)
Size of specimen: 4.56 m²
Area weight: n.a. kg/m²
Measurement date: 2013-06-18
Measured by: Pontus Thorsson



Sound Absorption Average (SAA): 0.72

Noise Reduction Coefficient (NRC): 0.75

Zilenzio Classic floor screen 1200x1800

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M2

Date

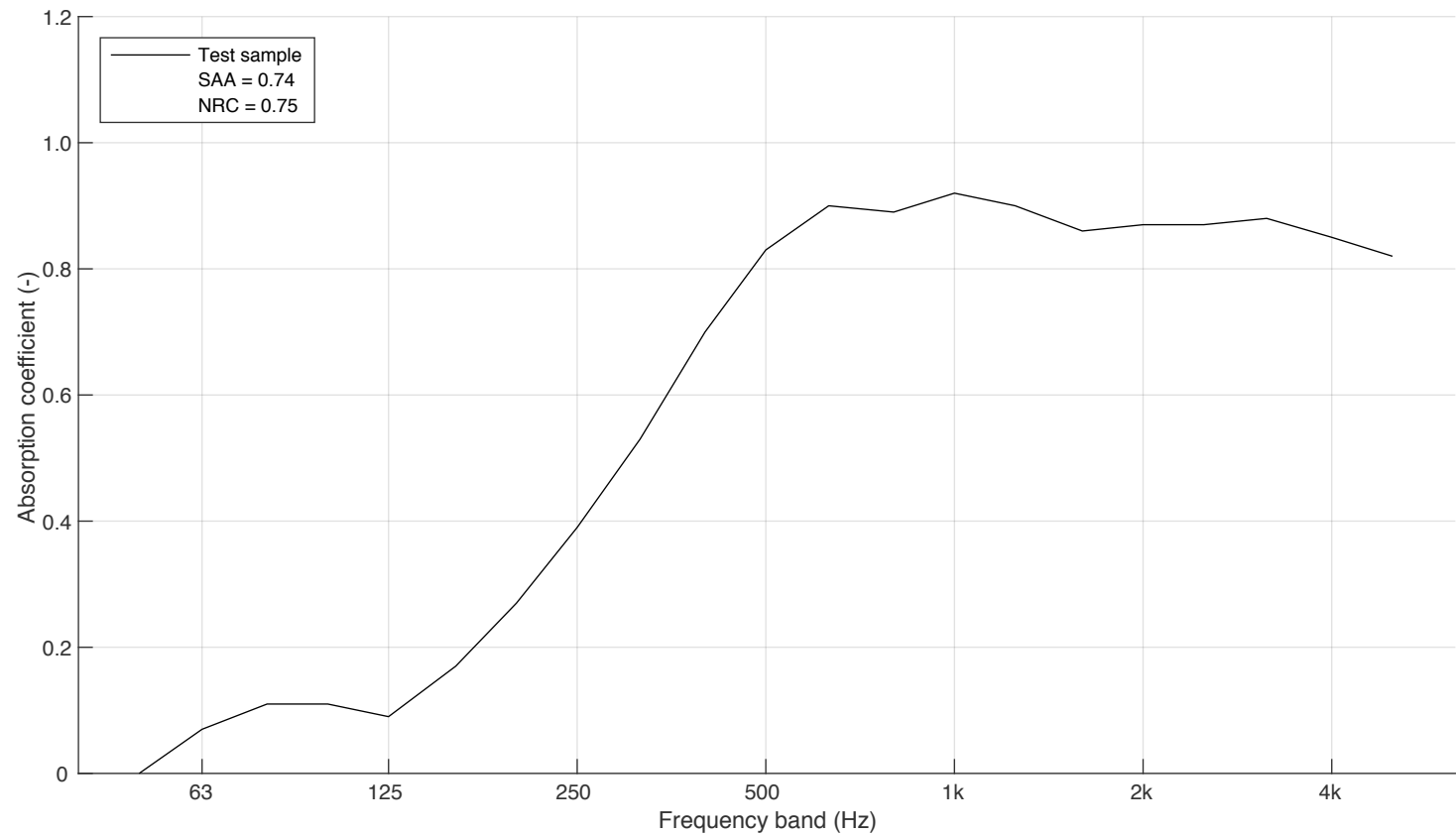
2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.00
63	0.07
80	0.11
100	0.11
125	0.09
160	0.17
200	0.27
250	0.39
315	0.53
400	0.70
500	0.83
630	0.90
800	0.89
1000	0.92
1250	0.90
1600	0.86
2000	0.87
2500	0.87
3150	0.88
4000	0.85
5000	0.82

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Classic 1200x1800

Description of test specimen: Floor standing screen 1200x1800x68.
Evaluation based on measurement for 3 screens spread out on the floor.
Original measurement report 16-058-R1-M2.

Reverberation room volume: 200 m³
Temperature: 17.7 °C (empty: 18.9 °C)
Air humidity: 39 % (empty: 39 %)
Air pressure: 98.0 kPa (empty: 98.0 kPa)
Size of specimen: 12.96 m²
Area weight: n.a. kg/m²
Measurement date: 2016-03-21
Measured by: Carl Nyqvist



Sound Absorption Average (SAA): 0.74

Noise Reduction Coefficient (NRC): 0.75

Zilenzio Kyoto floor screen 1170x600

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M3

Date

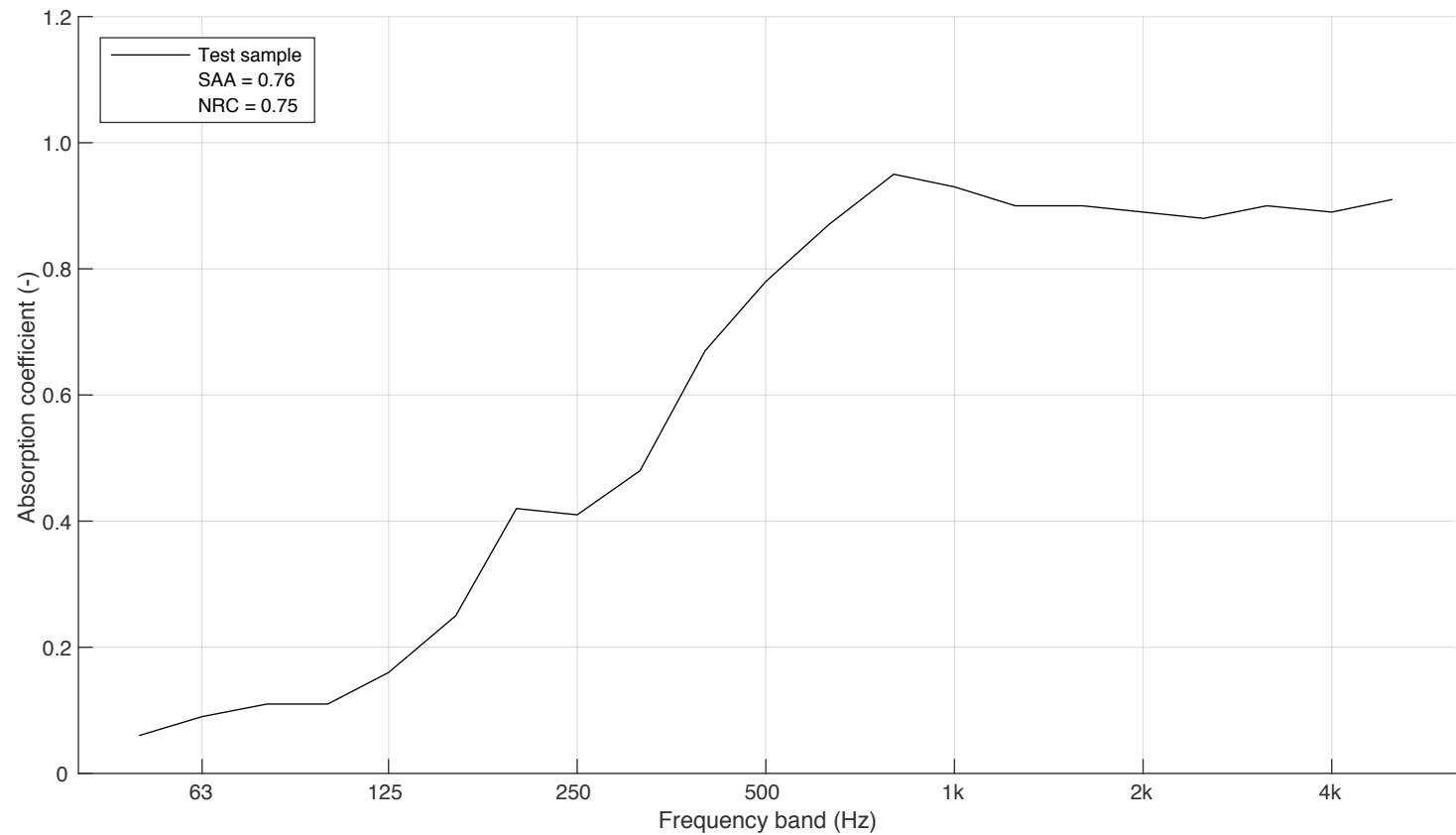
2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.06
63	0.09
80	0.11
100	0.11
125	0.16
160	0.25
200	0.42
250	0.41
315	0.48
400	0.67
500	0.78
630	0.87
800	0.95
1000	0.93
1250	0.90
1600	0.90
2000	0.89
2500	0.88
3150	0.90
4000	0.89
5000	0.91

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Kyoto 1170x600

Description of test specimen: Floor standing screen 1170x600x82.
Evaluation based on measurement for 6 screens spread out on the floor.
Original measurement report 18-082-R1-B5.

Reverberation room volume: 200 m³
Temperature: 17.0 °C (empty: 17.0 °C)
Air humidity: 45 % (empty: 46 %)
Air pressure: 100.0 kPa (empty: 100.0 kPa)
Size of specimen: 8.424 m²
Area weight: n.a. kg/m²
Measurement date: 2018-09-25
Measured by: Staffan



Sound Absorption Average (SAA): 0.76

Noise Reduction Coefficient (NRC): 0.75

Zilenzio Focus screen 2970x320

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M4

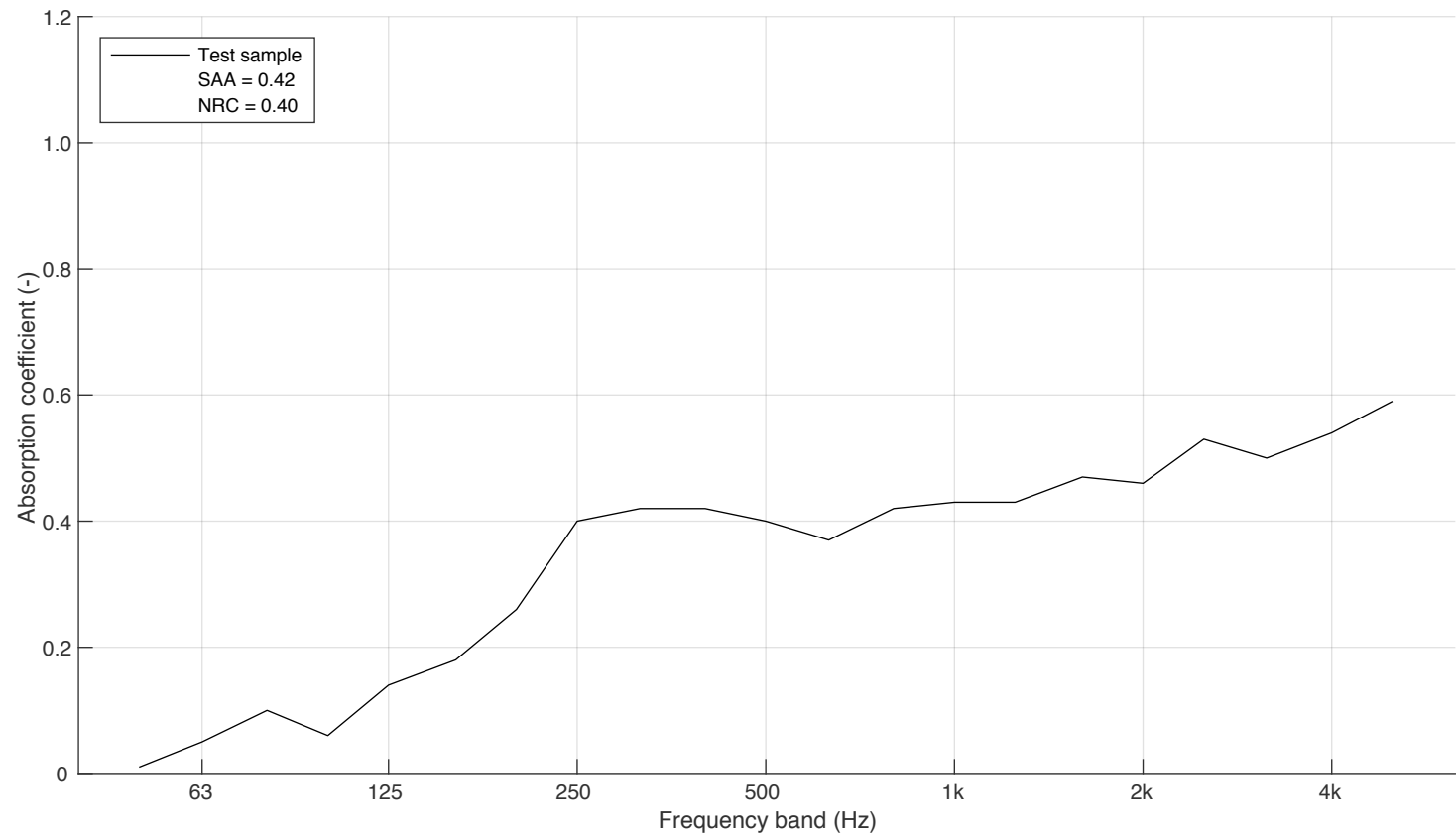
Date

2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.01
63	0.05
80	0.10
100	0.06
125	0.14
160	0.18
200	0.26
250	0.40
315	0.42
400	0.42
500	0.40
630	0.37
800	0.42
1000	0.43
1250	0.43
1600	0.47
2000	0.46
2500	0.53
3150	0.50
4000	0.54
5000	0.59

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Focus screen 2970x320
Description of test specimen: Screen 2970x320x10.
Evaluation based on measurement for 3 screens spread out on the floor.
Original measurement report 15-246-M2.

Reverberation room volume: 200 m³
Temperature: 14.6 °C (empty: 15.3 °C)
Air humidity: 47% (empty: 45%)
Air pressure: 99.0 kPa (empty: 99.0 kPa)
Size of specimen: 5.7 m²
Area weight: n.a. kg/m²
Measurement date: 2015-12-14
Measured by: Carl Nyqvist



Sound Absorption Average (SAA): 0.42

Noise Reduction Coefficient (NRC): 0.40

Zilenzio Dezn wall 1200x1200

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M5

Date

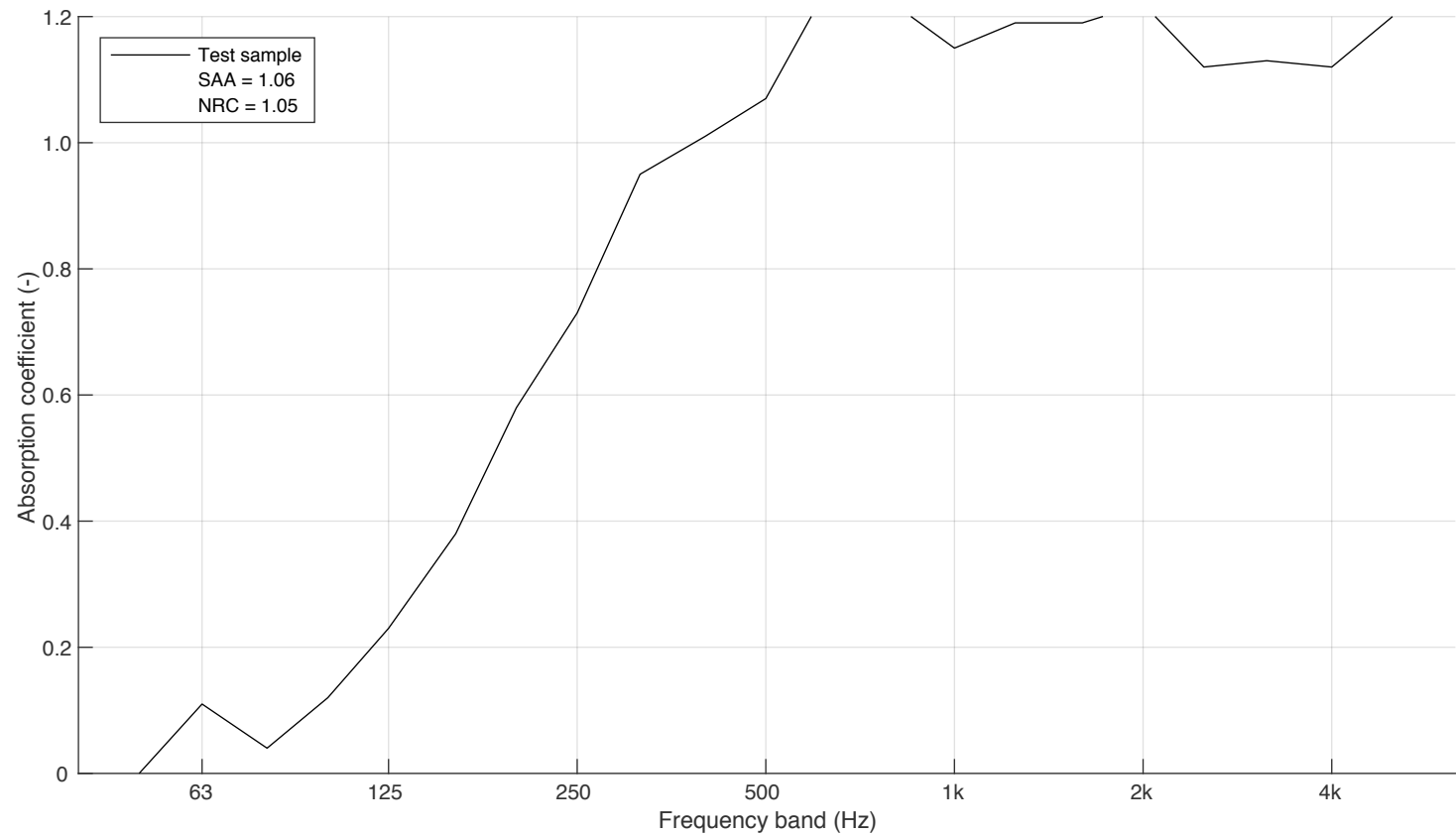
2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.00
63	0.11
80	0.04
100	0.12
125	0.23
160	0.38
200	0.58
250	0.73
315	0.95
400	1.01
500	1.07
630	1.25
800	1.22
1000	1.15
1250	1.19
1600	1.19
2000	1.22
2500	1.12
3150	1.13
4000	1.12
5000	1.20

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Dezn wall 1200x1200

Description of test specimen: Sound absorbing wall panel with dimensions 1200x1200x65 including an air gap of 12 mm between the panel and wall surface. Area of specimen includes area of edges. Evaluation based on measurement for 3 panels spread out on the floor. Original measurement report 13-07-M17.

Reverberation room volume: 200 m³
Temperature: 15.0 °C (empty: 14.0 °C)
Air humidity: 77% (empty: 76%)
Air pressure: 101.3 kPa (empty: 101.3 kPa)
Size of specimen: 5.08 m²
Area weight: n.a. kg/m²
Measurement date: 2013-06-18
Measured by: Pontus Thorsson



Sound Absorption Average (SAA): 1.06

Noise Reduction Coefficient (NRC): 1.05

Zilenzio Dezibel 750x2000

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M6

Date

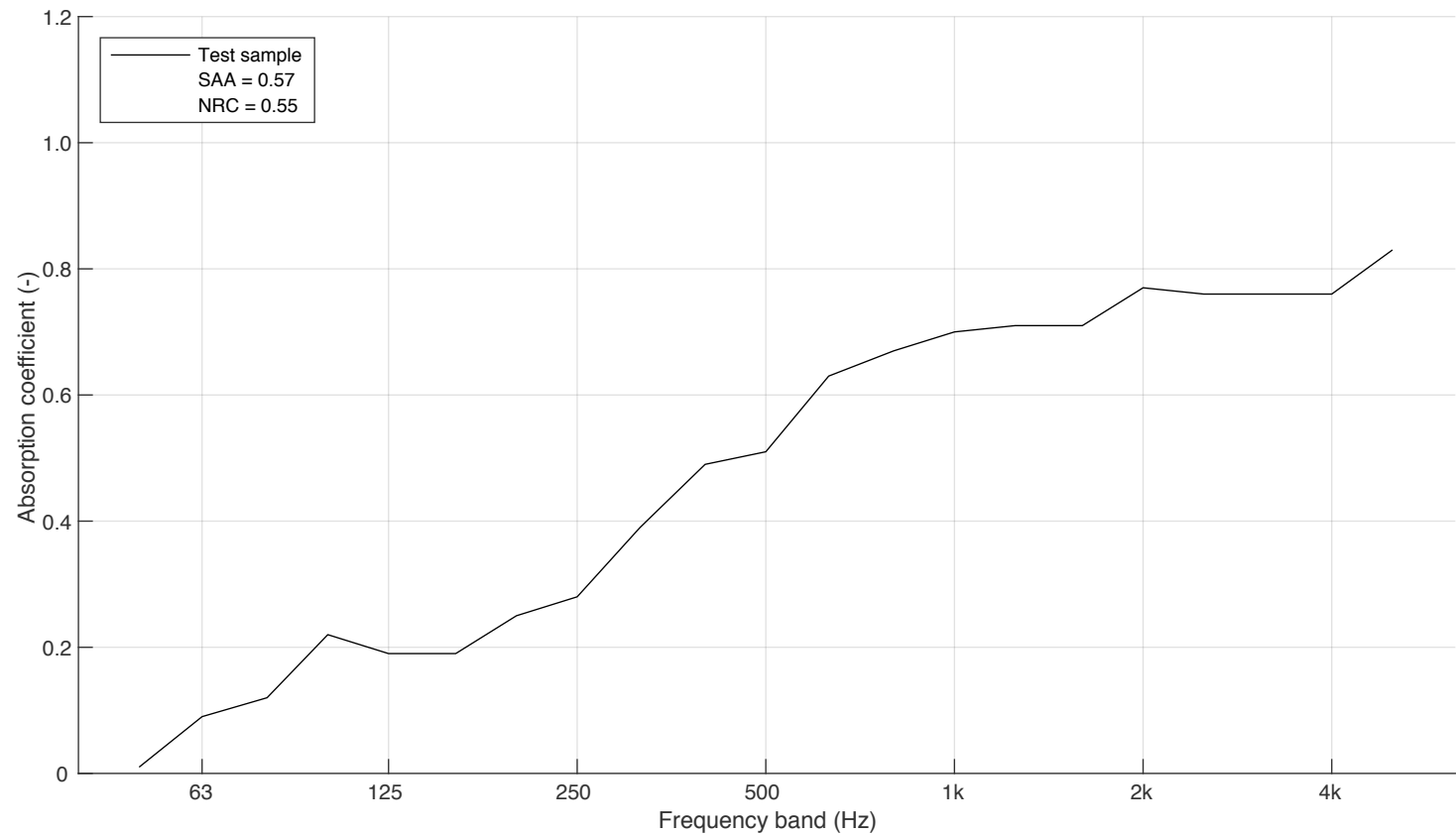
2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.01
63	0.09
80	0.12
100	0.22
125	0.19
160	0.19
200	0.25
250	0.28
315	0.39
400	0.49
500	0.51
630	0.63
800	0.67
1000	0.70
1250	0.71
1600	0.71
2000	0.77
2500	0.76
3150	0.76
4000	0.76
5000	0.83

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Dezibel 750x2000x40

Description of test specimen: Screen 750x2000x40.
Evaluation based on measurement for 3 screens spread out on the floor.
Original measurement report 13-07-M3.

Reverberation room volume: 200 m³
Temperature: 15.0 °C (empty: 14.0 °C)
Air humidity: 76 % (empty: 76 %)
Air pressure: 101.3 kPa (empty: 101.3 kPa)
Size of specimen: 9 m²
Area weight: n.a. kg/m²
Measurement date: 2013-06-18
Measured by: Pontus Thorsson



Sound Absorption Average (SAA): 0.57

Noise Reduction Coefficient (NRC): 0.55

Zilenzio Mute ceiling absorber 1200x600

SOUND ABSORPTION COEFFICIENT PER ASTM C423-17

Measurement of sound absorption coefficient by the reverberation room method

Report number:

20-703-M7

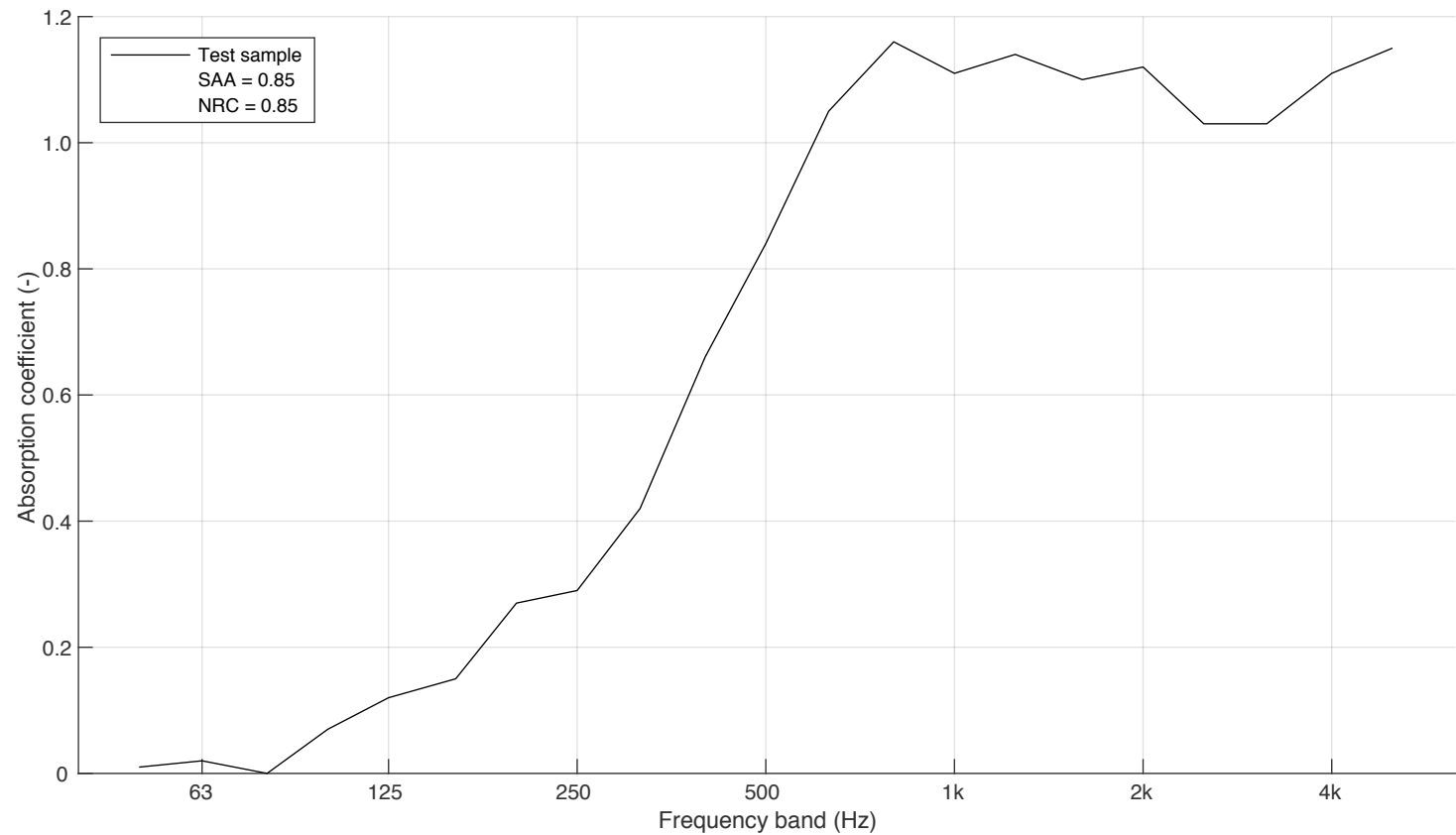
Date

2020-01-09

Frequency f [Hz]	Sound absorption coefficient α
50	0.01
63	0.02
80	0.00
100	0.07
125	0.12
160	0.15
200	0.27
250	0.29
315	0.42
400	0.66
500	0.84
630	1.05
800	1.16
1000	1.11
1250	1.14
1600	1.10
2000	1.12
2500	1.03
3150	1.03
4000	1.11
5000	1.15

Client: Zilenzio
Manufacturer: Zilenzio
Product identification: Mute ceiling absorber 1200x600
Description of test specimen: Vertically hanging sound absorber 1200x600x53.
Evaluation based on measurement for 3 specimen hanging from the roof.
Original measurement report 13-07-M13.

Reverberation room volume: 200 m³
Temperature: 15.0 °C (empty: 14.0 °C)
Air humidity: 78 % (empty: 76 %)
Air pressure: 101.3 kPa (empty: 101.3 kPa)
Size of specimen: 4.32 m²
Area weight: n.a. kg/m²
Measurement date: 2013-06-18
Measured by: Pontus Thorsson



Sound Absorption Average (SAA): 0.85

Noise Reduction Coefficient (NRC): 0.85