ACOUSTIC RESEARCH LAB.

BLX ACOUSTIC RESEARCH LABORATORY TL-993

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TEST REPORT

TEST RAPORU

Customer Name *Müşterinin Adı*	**: Acarkon Entegre Ağaç San. ve Tic. A.Ş.**
Customer Address *Müşterinin Adresi*	**: Horozluhan Mahallesi Gümüşlü Sk. No :48 Selçuklu/Konya**
Order No *Talep Numarası*	**: 220809**
Name and Identity of Test *Numunenin Adı ve Tarifi*	**: Silva Concept 10 mm Akustik Panel**
Date of Report *Rapor Tarihi*	**: 18.10.2022**
Date of Test *Test tarihi*	**: 17.10.2022**
Date of Receiving of Test Item *Numunelerin Kabul Tarihi*	**: 17.09.2022**
Number of Pages of the Report *Raporun Sayfa Sayısı*	**: 34**

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The test and/or measurement results, the uncertainties (if customer demand) with confidence probality and test methods are given on the following pages which are part of report.
Deney ve / veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (müşteri talep ettiğinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.

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- *BLX AKUSTİK ARAŞTIRMA LABORATUVARI KARAKUTU ELEKTROAKUSTİK FİRMASININ BİR ALT KURULUŞUDUR.*

Seal *Mühür*	**Date** *Tarih*	**Person in charge of test** *Deneyi Yapan*	**Person is charge of reporting** *Raporlayan*	**Approval** *Onaylayan*
KARAKUTU ELEKTROAKUSTİK	*18.10.2022*	*Salih Okan Ercan*	*Gizem İdal*	*Altay Özdokan*

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Test method *Deney Metodu*	: ASTM C423 Standard Test Method for Measuring Sound Absorption and Sound Absorption Coefficient in a Reverberation Room
Sampling Methods *Numune Alma Prosedürü*	: The report complies with Sample Taken Procedure that coded with number of BLX-PR-28.
Test Results Deney Sonuçları	: SAA = 0,53 NRC = 0.6
Environmental conditions *Çevre Şartları*	: Temperature has been measured as 23.9 °C, Relative Humidity has been measured as 67.0 % rH, Pressure has been measured as 1013.0 hPa.
Measurement uncertainty *Ölçüm Belirsizliği*	: ± 0,17
Opinions and interpretations *Görüş ve Yorumlar*	: The whole preperation process for the measurement has been made by BLX-ARL Technical details of the sample has been obtained by the customer.

** Conformity with requirements or specifications/Ölçüm sonuçlarının şartnamelere veya standartlara uygunluk beyanı:*

** Disclaimer/Feragat beyanı:*

** Definition of Decision Rule/Karar kuralının açık tanımı:*

Rule 1- If the measurement results before and after the consideration the uncertainties are both positive, the test result is positive.

Rule 2- If measurement results are positive but there is a shift to the negative zone when measurement uncertainties are taken into consideration, customer agreement is taken for conformity assessment.

Rule 3- If measurement results are negative but there is a shift to the positive zone when measurement uncertainties are taken into consideration, the result of the tests are negative.

Rule 4- If measurement results are inconvenient and also there is a shift to the negative zone when measurement uncertainties are taken into consideration, the result of tests are negative.

** Statement that the results are valid for the sample received/Sonuçların teslim alınan numune için geçerli olduğuna dair beyan:*

** Additions to, deviations, or exclusions from the test method/Deney yönteminden eklemeler, çıkarmalar ve sapmalar:*

"Experiments marked with the "**" specified in the report are not covered by Accreditation.

(*Applicable/when necessary))

The uncertainty given in the measurement results is extended uncertainty. Uncertainty is the result of multiplication with the k=2 scope factor, which provide s a 95% reliability level for normal distribution.

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1. INTRODUCTION

On **17.10.2022,** Measurement results of Sound Absorption and Sound Absorption Coefficient in accordance with ASTM C423 Standard are presented with this report. Measurements were taken between **16.00** and **17.00**.

Measurements were made according to the relevant section of ASTM C423 standard. Measurements are made with calibrated with traceability chain in accordance with TS EN ISO/IEC 17025 standard with devices and equipment in accordance with the acceptance criteria of the relevant standard.

Measurement results are presented in Section 6 of the report.

Calibration certificates for all equipment used during measurement are presented in Appendix A.

In Appendix B, the plan drawing of room 1 where the Sound Absorption Test was carried out in the BLX Acoustic Research Laboratory is presented.

The accreditation certificate and attachment of BLX Acoustic Research Laboratory are presented in Appendix C.

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2. ABOUT MEASUREMENT OF SOUND INSULATION PARAMETERS

2.1. Terms related to Sound Insulation

Decibel (dB): Decibel (dB) is a relative unit of measurement widely used in acoustics. The dB is a logarithmic ratio between the measured level and a reference (threshold) level of 0 dB.

Background noise level ($L_{p,B}$): Measured sound pressure level in the receiving room from all sources except the loudspeaker in the source room.

Room Sound Absorption Area (A_{1-2}): It is the assumed area of a completely absorptive surface that has the same reverberation time as a given room, free from diffraction effects, as if the room had only the absorber.

Sample Sound Absorption Area (A_T): It is the difference between the equivalent sound absorption areas of the reverberation room when the test sample is in the room and when it is not in the room.

Sound Absorption Average (SAA): An odd-numbered rating of a material's sound absorption coefficients, rounded to the nearest 0.01, for 12 1/3 octave bands from 200 to 2500 Hz, measured according to ASTM C423.

Noise Reduction Coefficient (NRC): It is the odd-numbered rating of a material's sound absorption coefficients, rounded to the nearest 0.05, for 4 1/3 octave bands, 250 Hz, 500 Hz, 1000 Hz and 2000 Hz, measured according to ASTM C423.

Reverberation Time (T): Reverberation time is a measure of the time required for reflecting sound to "fade away" in an enclosed area after the source of the sound has stopped. The time it takes a reverberant sound field to decay 60 dB after the source is interrupted.

White Noise: White noise is a random signal having equal intensity at different frequencies, giving it a constant power spectral density.

Pink Noise: Pink noise is a signal or process with a frequency spectrum such that the power spectral density (power per frequency interval) is inversely proportional to the frequency of the signal. In pink noise, each octave interval (halving or doubling in frequency) carries an equal amount of noise energy.

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2.2. Measurement Standard

It was carried out by BLX Acoustic Research Laboratory on **17.10.2022** in accordance with ASTM C423 standard. Below are the standards referenced during the preparation of the report numbered **BLX-R-BA-93_EN.**

- ASTM C423 Standard Test Method for Measuring Sound Absorption and Sound Absorption Coefficient in a Reverberation Room

2.3. Calculation Method

The calculation process was carried out using the formulas specified in C423 standard.

The equivalent sound absorption (a) area of a test sample is calculated as follows.

$$\alpha = (A_2 - A_1)/S$$

In this formula

α= It is the ratio of the equivalent sound absorption area of a test sample to the area of the test sample.

A_1: The area measured when there is no sample in the reverberation chamber.

A_2: The area measured with the sample in the reverberation chamber.

S: The area of the floor or wall covered with the test sample.

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3. SAMPLE INFORMATION

3.1. General

All technical specifications of the sample measured were obtained by the customer, In order to prepare the sample for measurement, the shipment and assembly operations were carried out by **Acarkon Entegre Ağaç San. ve Tic. A.Ş.**

The area of sample which had been placed directly on the floor of the reverberation chamber(Type A Mounting) is **11.76 m²**.

The back surface of the measurement sample contains a 10 mm felt panel and the front surface contains a decorative profile at regular intervals.

Technical details of the sample are given in Figure 3.1 to 3.3.

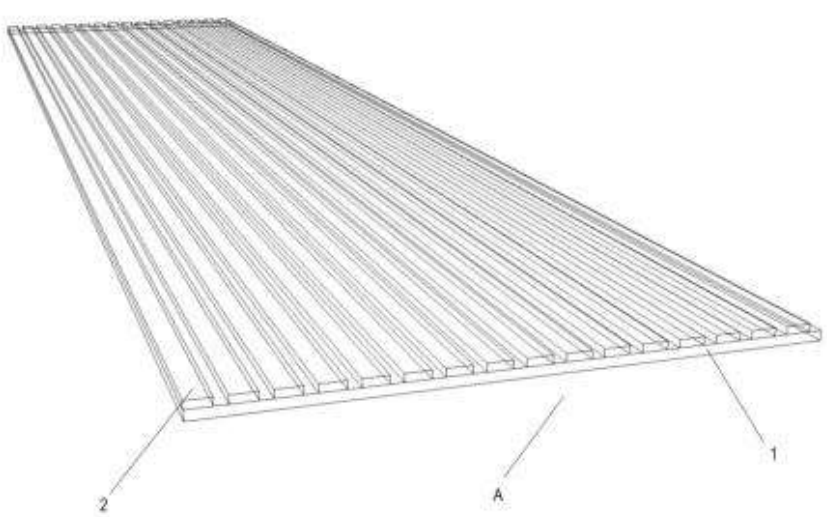

Figure 3.1 Technical Details

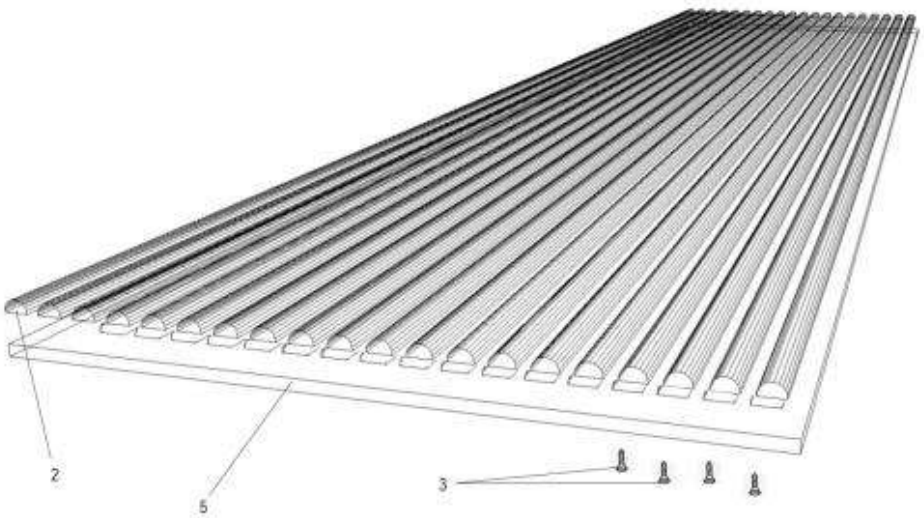

Figure 3.2 Technical Details 2

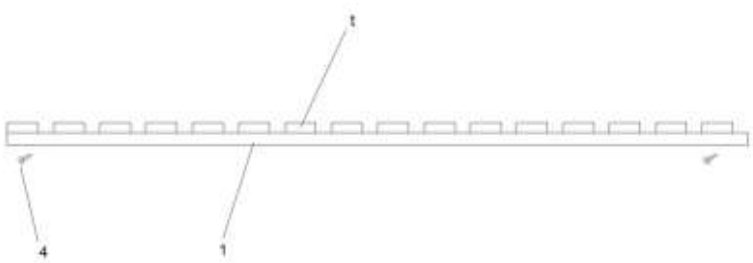

Figure 3.3 Technical Details 3

Application detail photographs of the sample in preparation for measurement are given in Figure 3.4 to Figure 3.6.

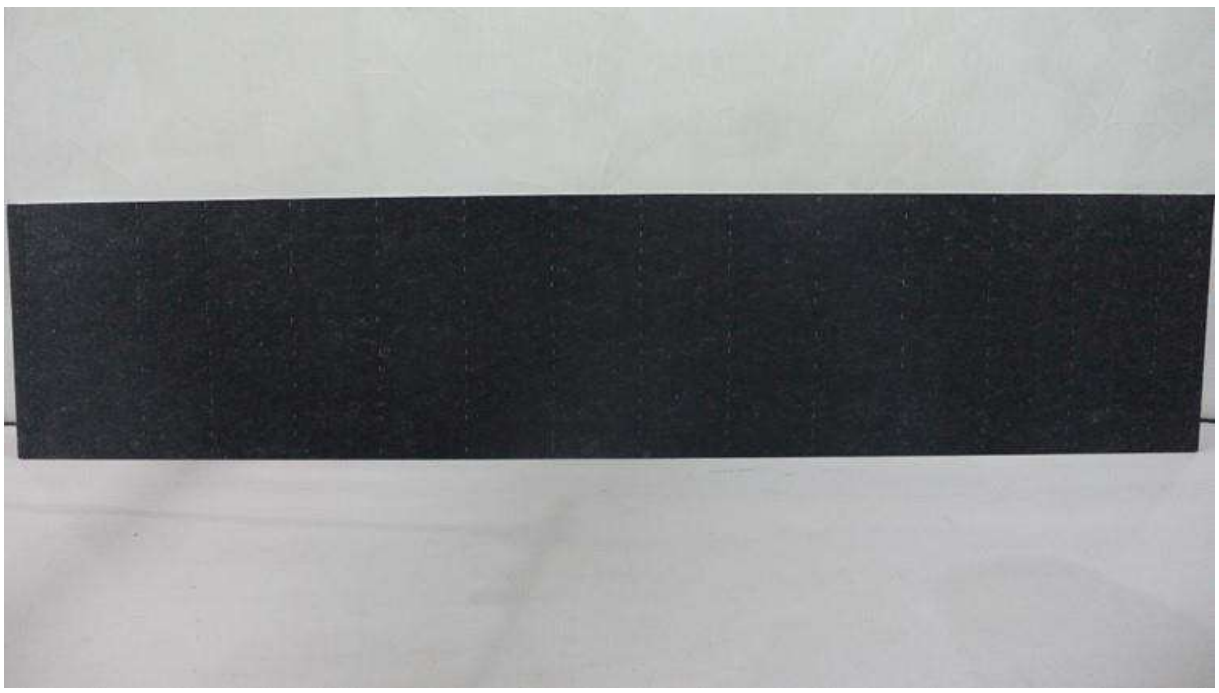

Figure 3.4 Rear face of the specimen

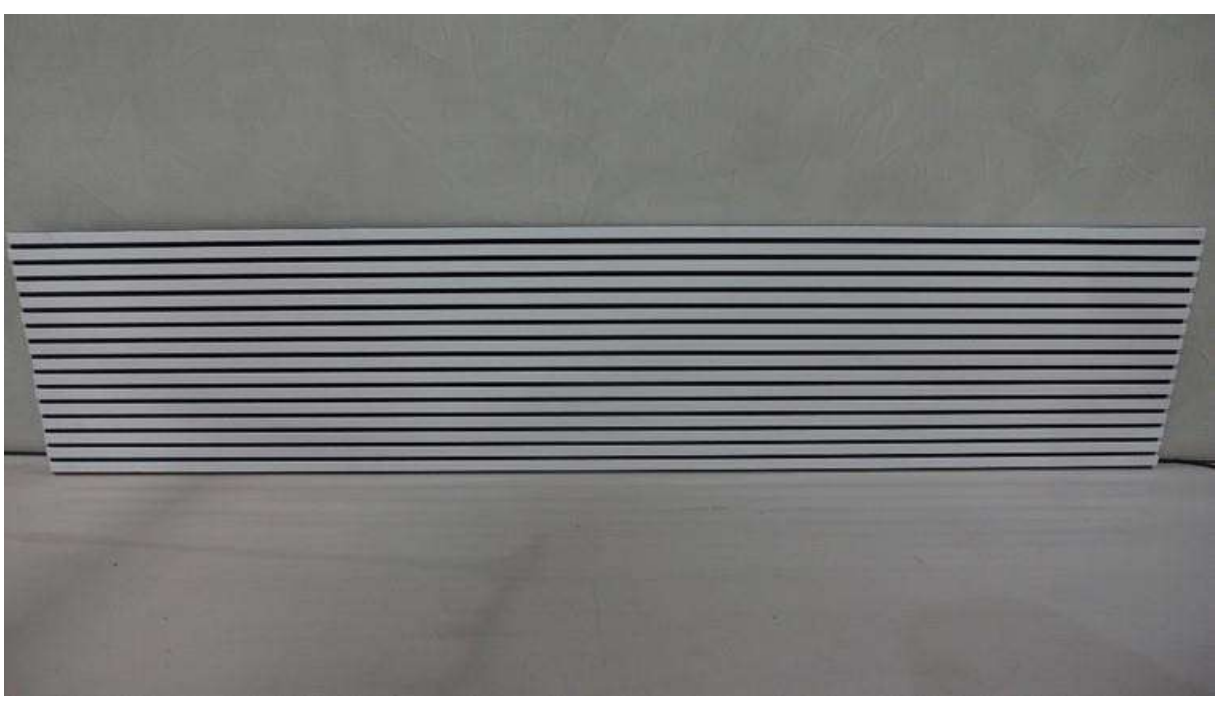

Figure 3.5 Front face of the specimen

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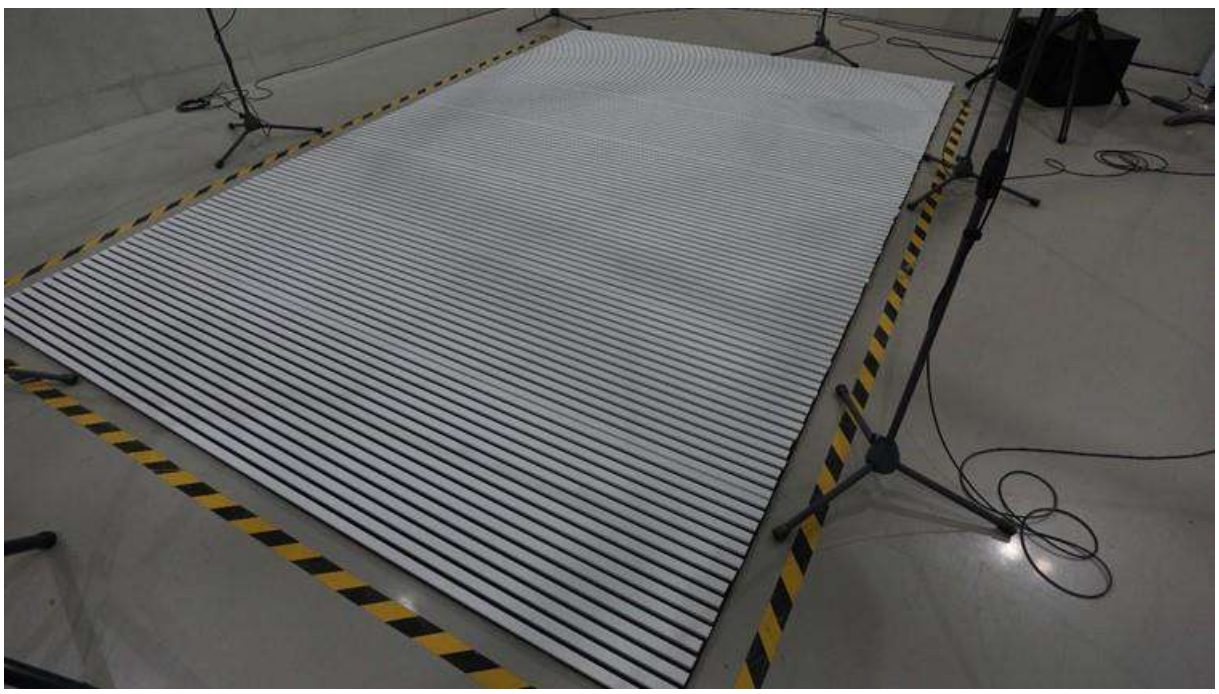

Figure 3.6 Sample photograph inside the reverberation room

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4. DEVICE INFORMATION USED IN MEASURING VOLUME AND MEASUREMENT

The volume of the reverberation chamber where the measurement is made has a volume of **223 m³**. At the time of measurement, the temperature is **23.9 °C**, the pressure is **1013.0 hPa**, and the relative humidity is **67.0% rH**. The measurement was carried out depending on the numbers specified by the relevant standard.

The properties of the reverberation room :

• The floor area of the reverberation room is 44.5 square meters and its height is 5 meters.

• There are 18 diffuser panels of 5.5 kg/m^2, each of which is 5.5 m^2 in the reverberation room where the measurement is taken.

• The average sound absorption performance between 500-5000 Hz is 1,20%.

• According to ISO 9613 standard, environmental conditions are controlled at the beginning and end of the measurement and adaptation to ambient conditions is ensured.

4.1. DEVICE INFORMATIONS

- SINUS Apollo Lite 8D
- NTI Audio DS3 Dodecahedron Omnidirectional Loudspeakers
- I-Tech HD Power Amplifier
- GRAS 46AQ 1/2" CCP Microphone Set
- Microphone Rotation Boom
- Grass 42AG Microphone Calibrator
- Grass 42AG Acoustic Calibrator-Temperature / Humudity Meter
- Stanley Tape Measure

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5. MEASUREMENT PROCESS

TYPE A MOUNTING

The test sample is mounted or placed directly opposite the surface of a room, for example, on the floor of the reverberation room.

If necessary, adhesives or mechanical stabilizers can be used to hold the test sample during the experiment without leaving the slightest air gap.

The mounting type of the sample is shown in Figure 5.1.

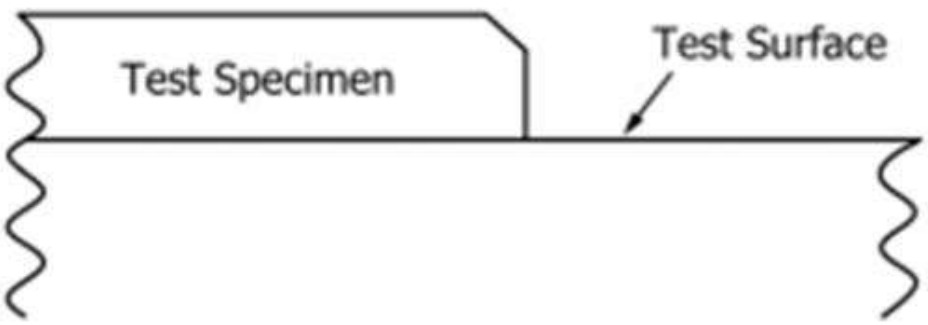

FIG. 1 Type A Mounting

Figure 5.1 Specimen Mounting Type Indication

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The photograph of the measured room and the process of measurement are shown in Figure 5.2 to Figure 5.4.

Figure 5.2 Preparation process of measurement

Figure 5.3 Preparation process of measurement

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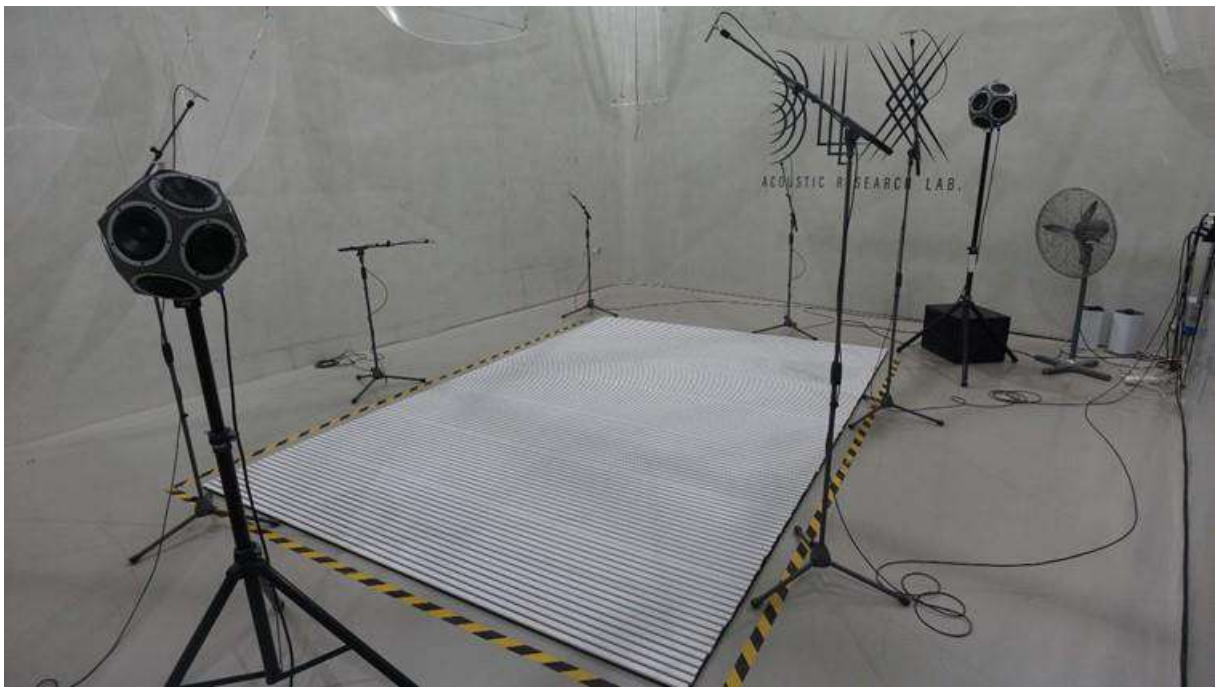

Figure 5.4 Measurement of sound absorption

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6. RESULTS OF MEASUREMENT

Reverberation times at each frequency, sound absorption coefficient, equivalent sound absorption area; Measurement results including SAA and NRC values are presented in this section.

Measurement results are given in Figure 6.1.

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Measurement of sound absorption in a reverberation room ASTM C423

Laboratory measurements of the sound absorption coefficient in a reverberation room

Manufacturer: Acarkon Entegre Ağaç San. ve Tic. A.Ş.
Client: Acarkon Entegre Ağaç San. ve Tic. A.Ş.
Test specimen mounted by: BLX-ARL
Description of test specimen: Silva Concept 10mm Akustik Panel

Date of test: 17.10.2022

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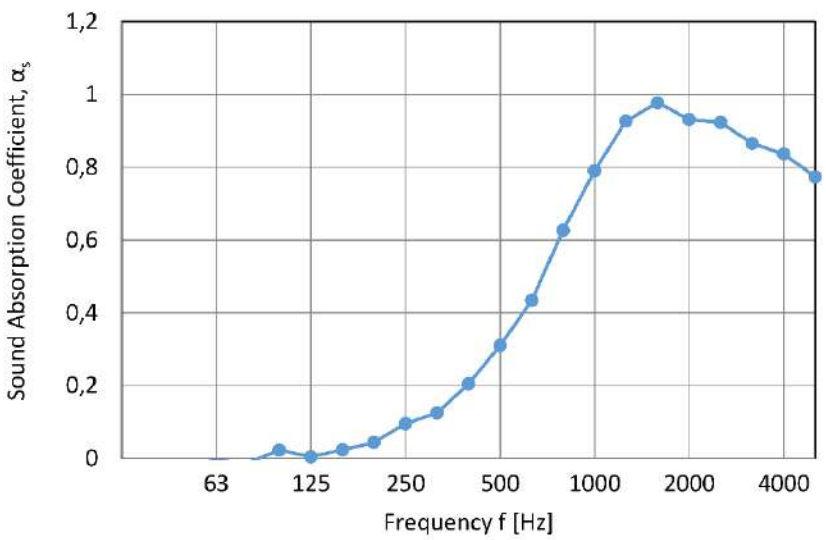
TL-993

	θ[°C]	rH[%]	P[hPa]	
Without specimen:	26,3	63	1003	Room: 01
With specimen:	23,9	67	1013	Volume: 223.2 m^3
				Specimen Area: 11,76 m2

Frequency f [Hz]	α_s 1/3 Octave	α_p Octave
50	0,0	
63	0,0	-0,01
80	0,0	
100	0,0	
125	0,0	0,02
160	0,0	
200	0,0	
250	0,1	0,09
315	0,1	
400	0,2	
500	0,3	0,32
630	0,4	
800	0,6	
1000	0,8	0,78
1250	0,9	
1600	1,0	
2000	0,9	0,94
2500	0,9	
3150	0,9	
4000	0,8	0,83
5000	0,8	



α_s Sound absorption coefficient according to ASTM C423
α_p Practical sound absorption coefficient according to ISO 11654

Rating according to ISO 11654:
Weighted sound absorption coefficient
$\alpha_{w=}$ **0,35**
Sound absorption class: **D**

Rating according to ASTM C423:
Noise Reduction Coefficient NRC = 0,6
Sound Absorption Average SAA = 0,53

No. Of Test Report: BLX-R-BA-93
Name of test institute: BLX ACOUSTIC RESEARCH LAB.

Tested by
Salih Okan ERCAN

Reported by
Gizem İDAL

Approved by
Altay ÖZANKAN

TESTED BY BLX ACOUSTIC RESEARCH LAB.

Figure 6.1 Measurement Results

7. EVALUATION of the MEASUREMENT RESULTS

- The relevant result is presented in Figure 6.1.
- No visible damage was detected on the test sample during the test.

8. APPENDIX

- Calibration certificates for the equipment used during measurement are presented in Appendix-A.
- In Appendix B, plan drawing of the BLX Acoustic Research Laboratory are presented.
- In Appendix C, accreditation certificate of the BLX Acoustic Research Laboratory are presented.

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AVL Kalibrasyon Laboratuarı

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220631
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	469414
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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The measurements, the uncertainties with confidence probability and calibration methods are given on the following pages which are part of this certificate.

Mühür / Kaşe *Seal*	Yayım Tarihi *Publication Date*	Kalibrasyonu Yapan *Calibrated By*	Onaylayan / Tarih *Approval / Date*
AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

Bu sertifika 5070 sayılı kanununa göre güvenli elektronik imza ile imzalanmıştır. Belge teyidi için sayfalarda yer alan karekodu okutabilirsiniz.

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Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220632
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427877
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220633
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

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İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427874
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220634
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427876
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
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Calibration Certificate

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İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427879
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220636
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

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İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427875
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220637
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	469418
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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Mühür / Kaşe *Seal*	Yayım Tarihi *Publication Date*	Kalibrasyonu Yapan *Calibrated By*	Onaylayan / Tarih *Approval / Date*
AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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T: +90 (312) 394 15 50 F: +90 (312) 394 15 53 E: bilgi@avl.com.tr W: www.avl.com.tr

TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220638
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Mikrofon / Güçlendirici *Microphone*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	46AQ
Seri Numarası *Serial number*	:	427878
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

Bu kalibrasyon sertifikası, Uluslararası Birimler Sisteminde (SI) tanımlanmış birimleri realize eden ulusal ölçüm standartlarına izlenebilirliği belgeler.

This calibration certificate documents the traceabilty to national standards, which realize the unit of measurement according to the International System of Units (SI).

Kalibrasyon laboratuvarı olarak faaliyet gösteren AVL Kalibrasyon Laboratuvarı, TÜRKAK'tan AB-0089-K dosya numarası ile TS EN ISO/IEC 17025-2017 standardına göre akredite edilmiştir.

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Mühür / Kaşe *Seal*	Yayım Tarihi *Publication Date*	Kalibrasyonu Yapan *Calibrated By*	Onaylayan / Tarih *Approval / Date*
AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220650
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi *Customer Name*	:	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 OFİS.401 BAYRAKLI / İZMİR
İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Akustik Kalibratör *Acoustic Calibrator*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	42AG
Seri Numarası *Serial number*	:	280620
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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AB-0089-K
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İstek Numarası *Order No.*	:	T-0322-037
Makine / Cihaz *Instrument / Device*	:	Akustik Kalibratör *Acoustic Calibrator*
İmalatçı *Manufacturer*	:	GRAS
Tip *Type*	:	42AG
Seri Numarası *Serial number*	:	280620
Kalibrasyon Tarihi *Date of calibration*	:	14.04.2022
Sertifika Sayfa Sayısı *Number of pages*	:	4

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AVL Kalibrasyon	14.04.2022	Fatma SOLGUNTEKİN Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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TÜRKAK Kalibrasyon TS EN ISO/IEC 17025 AB-0089-K

AB-0089-K
220651
04-22

KALİBRASYON SERTİFİKASI
Calibration Certificate

Cihazın Sahibi / Adresi: *Customer / Address:*	KARAKUTU ELEKTROAKUSTİK PROJE VE UYGULAMA SANAYİ VE TİCARET LİMİTED ŞİRKETİ ADALET MAH. ANADOLU CAD. NO.40 K.4 BAYRAKLI / İZMİR
Talep Numarası: *Order No:*	T-0322-037 / 1 - L22
Makina / Cihaz: *Instrument / Device:*	Akustik Kalibratör - Sıcaklık / Nem Ölçer Acoustic Calibrator - Temperature / Humidity Meter
İmalatçı: *Manufacturer:*	GRAS
Tip: *Type:*	42AG
Seri No / Cihaz Kodu: *Serial No / Product Code:*	280620
Kalibrasyon Tarihi: *Date of Calibration:*	14.04.2022
Sertifikanın Sayfa Sayısı: *Number of Pages:*	4

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The measurements, the uncertainties with confidence probability and calibration methods are given on the following pages which are part of this certificate.

Mühür / Kaşe *Seal*	Yayım Tarihi *Publication Date*	Kalibrasyonu Yapan *Calibrated by*	Onaylayan / Tarih *Approval / Date*
AVL Kalibrasyon	14.04.2022	Mehmet GÜVENDİ Kalibrasyon Personeli *Calibration Responsible* e-imzalıdır	Younes NEVAYESHİRAZİ / 14.04.2022 Laboratuvar Müdürü *Laboratory Manager* e-imzalıdır

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Calibration Kalibrierung калибровка 校准 étalonnage Calibratura

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LABORATUVAR CİHAZLARI SAN. TİC. LTD. ŞTİ.

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KALİBRASYON SERTİFİKASI
CALIBRATION CERTIFICATE

Cihaz Sahibi / Adres *Customer / Address*	: KARAKUTU ELEKTROAKUSTİK ADALET MAH. ANADOLU CAD. NO:40 TEPEKULE İŞ MERKEZİ OFİS NO: 401 BAYRAKLI
İstek Numarası *Order No*	: 20473
Makine/Cihaz *Instrument / Device*	: ŞERİTMETRE
İmalatçı *Manufacturer*	: STANLEY
Tip *Type*	: II
Seri No *Serial Number*	: -
Kalibrasyon Tarihi *Date of Calibration*	: 28.02.2020
Sertifika Sayfa Sayısı *Number Of Pages Of The Certificate*	: 2

Bu cihaz Omka-Omega Kalibrasyon Kalite Güvence kılavuzuna uygun olarak işlenmiş ve kalibre edilmiştir ve Ulusal Metroloji Enstitüsü´ne (UME) kadar izlenebilirdir.
This instrument has been processed and calibrated in accordance with the Omka-Omega Calibration Quality Assurance manual and is traceable to the National Metrology Institute (UME).

Ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri ve kalibrasyon metodları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
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Bu laboratuvar ISO\IEC 17025:2005 Uluslararası standardına göre akredite edilmiştir. Bu akreditasyon tanımlı kapsam için teknik yeterliliği ve laboratuvar kalite yönetim sisteminin işleyişini ve varlığını göstermektedir (18 Haziran 2005 tarihli ISO-ILAC-IAF ortak tebliğine hakımız.)
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Etiket *Tag*	Kontrol Kodu *QR Code*	Kalibrasyonu Yapan *Calibrated By*	Teknik Müdür *Head of Calibration Laboratory*
CL-142 280220EÖ01 28.02.2020		e-imzalıdır	e-imzalıdır
		Emre ÖRSEL	Gürcan KAPTANOĞLU

1348 Sokak No:5/401 Yenişehir - İZMİR / TÜRKİYE

Calibration Kalibrierung калибровка 校准 étalonnage Calibratura

OMEGA
ÖLÇME KONTROL SİSTEMLERİ KALİBRASYON
LABORATUVAR CİHAZLARI SAN. TİC. LTD. ŞTİ.

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KALİBRASYON SERTİFİKASI
CALIBRATION CERTIFICATE
Tel & Fax : +90 232 459 62 63 - 458 89 88, - http://www.kalibrasyon.net, izmir@kalibrasyon.net

Calibration Kalibrierung калибровка 校准 étalonnage Calibratura OMKA Calibration Kalibrierung калибровка 校准 étalonnage Calibratura

AKUSTİK ARAŞTIRMA LABORATUVARI - ACOUSTIC RESEARCH LAB.

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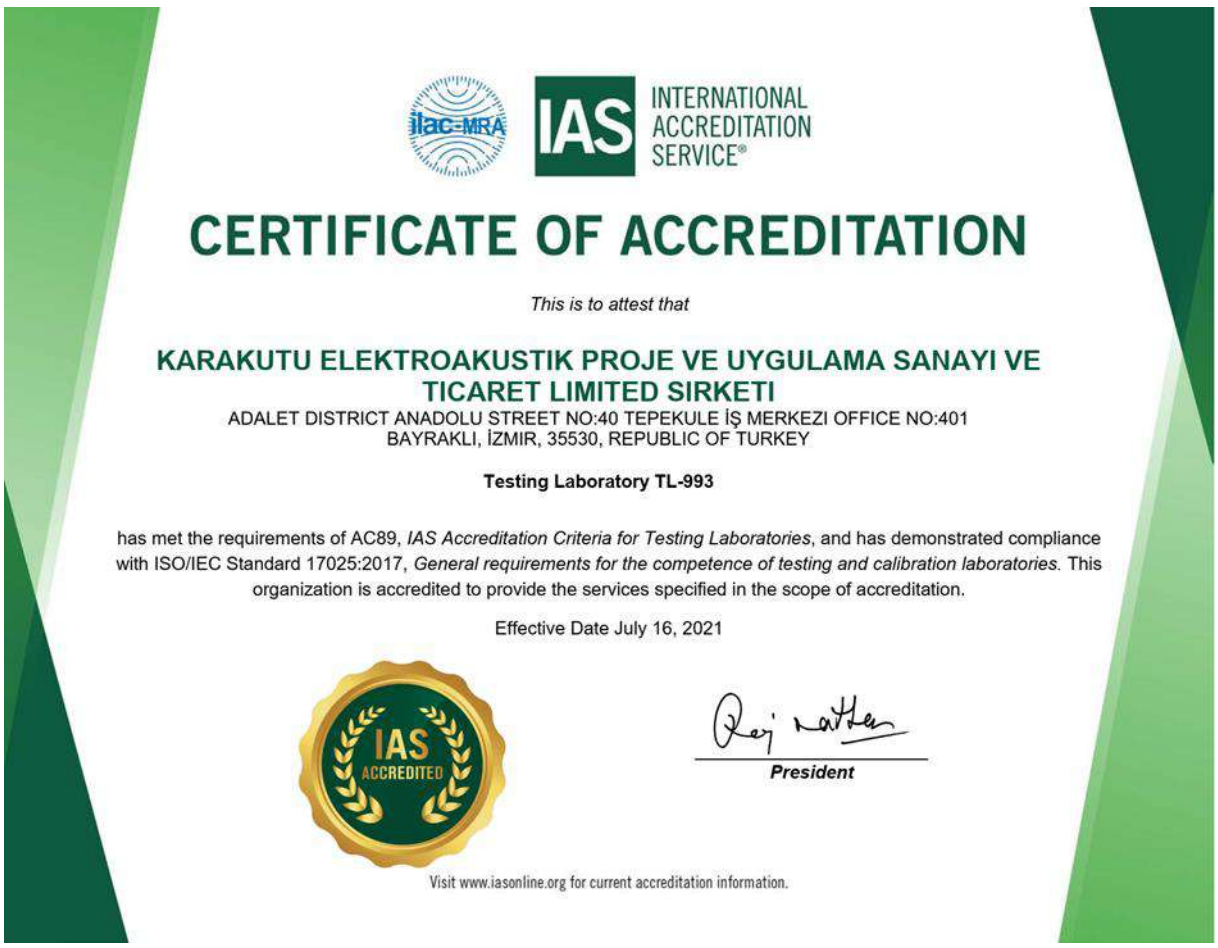

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CERTIFICATE OF ACCREDITATION

This is to attest that

KARAKUTU ELEKTROAKUSTIK PROJE VE UYGULAMA SANAYI VE TICARET LIMITED SIRKETI

ADALET DISTRICT ANADOLU STREET NO:40 TEPEKULE İŞ MERKEZI OFFICE NO:401
BAYRAKLI, İZMIR, 35530, REPUBLIC OF TURKEY

Testing Laboratory TL-993

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date July 16, 2021

IAS ACCREDITED

President

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SCOPE OF ACCREDITATION

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www.blx-arl.com

Contact Name Erdal KARA **Contact Phone** +90 535 717 55 99

Accredited to ISO/IEC 17025:2017 *Effective Date July 16, 2021*

ASTM C423	Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
ASTM E90	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
ASTM E2179	Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
IEC 60268-16:2020	Sound system equipment - Part 16: Objective rating of speech intelligibility by speech transmission index
ISO 354:2003	Acoustics - Measurement of sound absorption in a reverberation room
ISO 3382-1	Acoustics - Measurement of room acoustic parameters - Part 1: Performance spaces
ISO 3741:2010	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms
ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
ISO 16251-1:2014	Acoustics - Laboratory measurement of the reduction of transmitted impact noise by floor coverings on a small floor mock-up - Part 1: Heavyweight compact floor
ISO 23351-1:2020	Acoustics — Measurement of speech level reduction of furniture ensembles and enclosures — Part 1: Laboratory method.

TL-993
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