



TÜRK STANDARDLARI ENSTİTÜSÜ
DENEY ve KALİBRASYON
MERKEZİ BAŞKANLIĞI
Yapı Malzemeleri Yangın ve Akustik
Laboratuvarı Müdürlüğü

TURKISH STANDARDS INSTITUTION
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MUAYENE VE DENEY RAPORU
TEST REPORT

Deneysel Talep Eden/Firma (Adı, Adresi, Şehir vb.) <i>Requesting/Customer</i> (Name, Address, City etc.)	: LANDE ENDÜSTRİYEL METAL ÜRÜNLERİ SAN VE TİC. A.Ş. (LANDE ENDÜSTRİYEL METAL ÜRÜNLERİ SAN VE TİC. A.Ş. MERVE MAH. GAZİ CAD. NO.17 Sancaktepe-İSTANBUL)
Deneysel Talep Tarihi/No <i>Order Date / No</i>	: 20.12.2021 / 682020
Numunenin Tanımı (No, Cins, Marka, Tip, Tür, Model vb.) <i>Sample Description (No, Type, Model etc.)</i>	: 857904, ÇELİK KONSTRÜKSİYONLU AHŞAP PANELLİ İÇ YÜZEYİ SES YUTAN ÖZEL MALZEME İLE KAPLI 19 SERVER CİHAZ KABİNETİ, LANDE, Mahfaza, -, -, 1,00 adet 857904, Steel constructed, 19" server cabinet with wooden panels which inside is covered by sound absorbent material, LANDE, Cabinet, -, 1,00 item
Numune Kabul Tarihi <i>Test Item Receipt Date</i>	: 20.12.2021
Dene	



MUAYENE - DENEY SONUÇLARI TEST RESULTS

TS EN ISO 11546-1:2011; TS EN ISO 3741 : 2011

Test Laboratory

TSE Yapı Malzemeleri Yangın Ve Akustik Laboratuvarı
Aydınlı Mah. Ulus Sokak No:7/1

Tuzla/İSTANBUL

Requested by

LANDE ENDÜSTRİYEL METAL ÜRÜNLER SANAYİ
VE TİCARET ANONİM ŞİRKETİ

Merve Mahallesi Gazi Caddesi No: 17

Sancaktepe / İstanbul / TÜRKİYE

Test Sample

Steel constructed, 19" server cabinet with wooden panels
which inside is covered by sound absorbent material

1. Introduction

At the request of **LANDE ENDÜSTRİYEL METAL ÜRÜNLER SANAYİ VE TİCARET ANONİM ŞİRKETİ**, sound power insulation measurements were carried out for *"Steel constructed, 19" server cabinet with wooden panels which inside is covered by sound absorbent material"* at the acoustic department of TSE Construction Materials Fire and Acoustic Laboratory according to TS EN ISO 3741 and TS EN ISO 11546-1 on **23/12/2021**.

2. Test Facility

Test facility complies with all requirements of TS EN ISO 3741 standard. Dimensions and shape of the reverberation room, and mounting conditions were presented at the end of the report.



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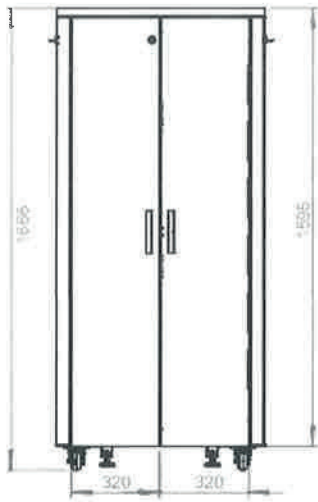
Dimensions of the cabinet;



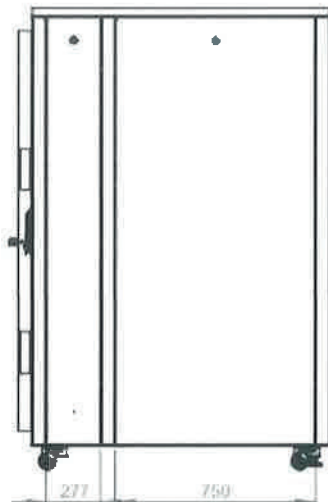
Inside of the cabinet



Outside of the cabinet



Front view



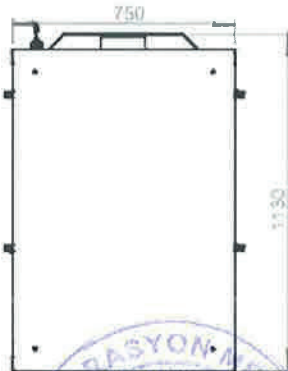
Side view



Back view



bottom view



top view



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Cabinet dimensions: 1595(h)*1080(l)*750mmw)

Gaps: There are 5 gaps with 150*50mm dimensions at back side of the cabinet for fans, 1 gap for cabling with 250*30mm at bottom side.

3.2 Real sound sources used in tests

Two devices were mounted in to the cabinet.

Devices which were used as real source ;

- **Dell Power Edge R620 (1 piece)**



- **Huawei Qidway S3300 (1 adet)**



3.3 Mounting and conditioning

Rubber plates were used to avoid vibration which may influence the measurement results.

Sources were started two hours before the test in order to get stable state.

The sources were mounted inside the cabinet as in practice .

4. Method

Reverberation room which comply with all specifications of TS EN ISO 3741 standard were



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Measurements were conducted in frequency range of 100 Hz – 10.000 Hz using rotating microphone which sweeps about 10m arc length.

A weighted sound power insulation was determined as below;

$$D_{WA} = L_{WA}(\text{without cabinet}) - L_{WA}(\text{with cabinet})$$

L_{WA} : A weighted sound power level which is determined and calculated according to TS EN ISO 3741.

5. Ambient conditions

With Cabinet:

Temperature : 24,0 °C
Relative Humidity : % 44,8
Pressure : 101,7 kPa

Without Cabinet:

Temperature : 23,7 °C
Relative Humidity : % 46,6
Pressure : 101,7 kPa

6. Test equipments

Equipment name	Brand	Model
½" Diffuse field microphone	GRAS	GRAS40AR
Sound level analyser (10 channels)	NORSONİC	Nor850-MF1
Reference sound source	NORSONİC	Nor278
Microphone calibrator	NORSONİC	Nor1251
Datalogger	EXTECH	SD700
Tape measure	İZELTAŞ	5m

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SOUND POWER LEVEL ACCORDING TO ISO 3741:2011

Precision methods for reverberation test rooms - Comparison method

Client: LANDE ENDÜSTRİYEL METAL ÜRÜNLER SANAYİ VE
TİCARET ANONİM ŞİRKETİ Date of test 23.12.2021
Sample : Steel constructed, 19" server cabinet with wooden panels which inside is covered by sound absorbent material
Measurement method: Test with actual sound sources

	With cabinet	Without cabinet
Pressure:	101,7 kPa	101,7 kPa
Temperature:	24,0 °C	23,7 °C
Relative humidity:	44,8 %	46,6 %
Test room volume:	298,5 m³	
Test room surface area	273,0 m²	



Frequency	L _w with cabinet	L _w without cabinet
f	1/3 octave	1/3 octave
[Hz]	[dB]	[dB]
100		



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PHOTOS REGARDING TEST





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TEST ROOM AND MEASUREMENT LAYOUT TECHNICAL DRAWING

