



Von der Schweizerischen Akkreditierungsstelle akkreditierte Prüfstelle
Laboratoire d'essai accrédité par le Service d'Accréditation Suisse
Testing Laboratory accredited by the Swiss Accreditation Service

Akkreditierungs-Nr.
No. d'accréditation STS 0499
Accreditation No.

The Swiss Testing Service is one of the signatories to the EAL
Multilateral Agreement for the recognition of test certificates

Prüfnummer
No. d'essai LW-652-24-11h
Test No. Version 1

Prüfzertifikat - Luft/Wasser-Wärmepumpe
Certificat d'essai - Pompes à chaleur air-eau
Test certificate - Air to water heat pump

| | | | |
|---------------|---|-------------------------|-------------------------|
| Auftraggeber | Wienkra Sp. Z o o | Datum der Prüfung | |
| Client | Kotlarska 34 | Date du test | 21.02.2024 - 05.03.2024 |
| Customer | PL - 31-539 Kraków | Date of test | |
| Manufacturer | MBT/ GD Midea Heating & Ventilating Equipment Co.,Ltd | Bauart | Splitwärmepumpe |
| Brand / Model | Wienkra SEV-HPS1-06/O & SEV-MHPS3-06/I | Type de construction | machine de split |
| Serial Number | SN: 341H554250332040100023 & 341H08501102C020100035 | Type of construction | split heat pump |
| Kältemittel | | Kältemittelfüllmenge | |
| Réfrigérant | R32 GWP(100) = 675 | Quantité de réfrigérant | 1.500 kg |
| Refrigerant | | Capacity of refrigerant | |

Prüfung wurde gemäss den folgenden Normen durchgeführt
Mesures exécutées conformément aux normes
Measurements according to the following standards

EN 14511:2022 and EN 14825:2022
EN 12102-1:2022 and EN ISO 9614-1:2010
EHPA test regulation V2.4

Dieses Prüfzertifikat darf ohne schriftliche Zustimmung der Prüfstelle nicht auszugsweise vervielfältigt werden.
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Messresultate und Messunsicherheiten sind auf der folgenden Seite aufgeführt und sind Teil des Zertifikates.
Les résultats et les incertitudes de mesure sont donnés aux page suivante et font partie du certificat.
This measurements, the uncertainties are given on the following page and are part of the certificate.

| | | | |
|-------------------|------------|----------------|-------------------------------|
| Stempel und Datum | | Messort | Wärmepumpen-Testzentrum WPZ |
| Timbre et date | 05.06.2024 | Site de mesure | Werdenbergstrasse 4 |
| Stamp and date | | Measuring site | CH - 9471 Buchs (Switzerland) |

| | |
|-----------------------------|----------------------------|
| Prüfer | Prüfstellenleiter |
| Contrôleur | Chef du Laboratoire |
| Supervisor | Head of the Laboratory |
| R. Rankwiler, Messtechniker | M. Eschmann, Dipl. Ing. FH |

Leistungen / Performances / Performances

LW-652-24-11h / Version 1

| | Prüfbedingung Condition d'essai Test condition | Heizleistung Puis. chauf. moy. Heating capacity kW | elek. Leistung Puis. elec. moy. Input power kW | COP | Cdh | CR | T _{VL} T _{OUT} T _{OUT} °C |
|---|--|---|---|------|-------|------|---|
| 1 | A7W30-35 | 6.268 | 1.269 | 4.94 | - | - | - |
| 2 | A7W26-31 Tbiv warmer | 3.837 | 0.654 | 5.87 | - | - | - |
| 3 | A-15W27.6-32.6 Tbiv colder | 4.533 | 1.800 | 2.52 | - | - | - |
| 4 | A2W22-27 B colder | 2.598 | 0.504 | 5.15 | - | - | - |
| A | A-7W29-34 | 5.677 | 1.859 | 3.05 | - | 1.00 | 33.7 |
| B | A2W25-30 | 3.692 | 0.780 | 4.74 | - | 1.00 | 29.8 |
| C | A7W22-27 | 2.632 | 0.402 | 6.55 | 0.963 | 0.89 | 27.6 |
| D | A12W10-24 | 3.152 | 0.365 | 8.63 | 0.959 | 0.33 | 27.4 |
| E | A-10W30-35 | 5.292 | 1.850 | 2.86 | - | 1.00 | 35.0 |
| F | A-7W29-34 | 5.677 | 1.859 | 3.05 | - | 1.00 | 33.7 |

| climate | average |
|--------------------------------|-----------------------|
| Temperature application | low (35 °C) |
| SCOP _{on} 4.88 | SCOP 4.87 |
| Labeling | A+++ / 191.9 % |
| Pdesignh [kW] | 6.8 |
| Q _h [kWh] | 14048.8 |
| Tbivalent [°C] | -7 |

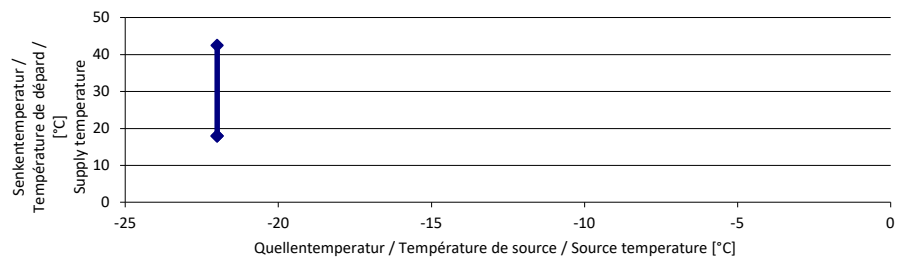
| | Prüfbedingung Condition d'essai Test condition | Heizleistung Puis. chauf. moy. Heating capacity kW | elek. Leistung Puis. elec. moy. Input power kW | COP | Cdh | CR | T _{VL} T _{OUT} T _{OUT} °C |
|---|--|---|---|------|-------|------|---|
| 1 | A7W47-55 | 5.858 | 1.994 | 2.94 | - | - | - |
| A | A-7W44-52 | 4.929 | 2.239 | 2.20 | - | 1.00 | 51.9 |
| B | A2W34-42 | 2.940 | 0.874 | 3.36 | - | 1.00 | 42.0 |
| C | A7W28-36 | 2.786 | 0.610 | 4.57 | 0.962 | 0.71 | 37.5 |
| D | A12W22-30 | 3.382 | 0.534 | 6.34 | 0.972 | 0.26 | 33.8 |
| E | A-10W47-55 | 4.381 | 2.317 | 1.89 | - | 1.00 | 55.1 |
| F | A-7W44-52 | 4.929 | 2.239 | 2.20 | - | 1.00 | 51.9 |
| 1 | - | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - | - |

| climate | average |
|--------------------------------|--------------------|
| Temperature application | medium (55 °C) |
| SCOP _{on} 3.48 | SCOP 3.47 |
| Labeling | A++ / 136 % |
| Pdesignh [kW] | 5.7 |
| Q _h [kWh] | 11776.2 |
| Tbivalent [°C] | -7 |

Pto W 15.0 P_{sb} W 14.6 P_{ck} W - P_{off} W 14.6

Einsatzgrenzen / Limites d'utilisation / Operating range

Temperaturbedingungen A-22 / Wxx-18
 Conditions du température A-22 / Wxx-42.5
 Temperature conditions -
 -
 -



Sicherheitsprüfung nach EN 14511-4 clause 4.5 bestanden / passé avec succès / passed
 Test de sécurité aux EN 14511-4 clause 4.6 bestanden / passé avec succès / passed
 Safety test according to

Schalleistungspegel bei / Niveau de puissance acoustique au / Sound power level at A7/W47-55

Innenmessung Aussenmessung
 Mesure intérieure dB(A) 33.1 Mesure extérieure dB(A) 46.1
 Indoor measurement Outdoor measurement

Hinweis / Remarque / Notice

- test correspondent to LW-652-24-11 MHA-V6W/D2N8-B & HB-A60/CD30GN8-B



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Prüfnummer LW-652-24-11i
No. d'essai -
Test No. Version 1

Prüfzertifikat - SchalleLeistungspegel
Certificat d'essai - Niveau de puissance acoustique
Test certificate - Sound power level

Auftraggeber Wienkra Sp. Z o o
Client Kotlarska 34
Customer PL - 31-539 Kraków

Datum der Prüfung
Date du test 05.03.2024
Date of test

Manufacturer MBT/ GD Midea Heating & Ventilating Equipment Co.,Ltd
Brand / Model Wienkra SEV-HPS1-06/O & SEV-MHPS3-06/I
Serial Number SN: 341H554250332040100023 & 341H08501102C020100035

Messobjekt Aussenmessung
Object de mesure Mesure extérieure
Measuring object Outdoor measurement

Prüfbedingung **A7 / W47-55 ErP**
Condition d'essai compressor speed = 34 Hz
Test condition fan speed = 300 rpm

Genauigkeitsklasse
Precision classe 2
Accuracy class

SchalleLeistungspegel
Niveau de puissance acoustique dB(A) 46.1
Sound power level

Messunsicherheit
Ecart type dB ± 1.5
Standard deviation

Messung wurde gemäss der folgenden Norm durchgeführt
Mesures exécutées conformément aux normes
Measurement regarding the following standard

EN ISO 9614-1 and EN 12102-1
NF 414 rev13 / RS 6C003-2018 LCP Rev1
EHPA test regulation V2.4

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Stempel und Datum
Timbre et date 05.06.2024
Stamp and date

Prüfer Messort Wärmepumpen-Testzentrum WPZ
Contrôleur Site de mesure Werdenbergstrasse 4
Supervisor Measuring site CH-9471 Buchs (Switzerland)
R. Rankwiler, Messtechniker



Verwendete Messgeräte / Employer d'appareillage de mesure / Measuring instruments in use

| Bezeichnung / Description / Description | Gerät / Type / Type | Seriennr. / No. de Série / Serial no. |
|---|--|---------------------------------------|
| Real Time Analyzer | 01 dB-Metravib PCMCIA-Card | #1912 #0001912 |
| Auswertesoftware Utilisation de software Analysis software | dBFA Excel-Sheet | Version 4.7.01 Version 1.0/me |
| Intensitätssonde Sonde de intensité Intensity sonde | G.R.A.S Typ 50AI-B | 38213 |
| Mikrofonpaar Couple de microphone Couple of microphone | Typ 40 AK | 49855 49876 |
| Vorverstärker Amplificateur d'entrée Pre-amplifier | Typ 26AA | 48806 48807 |
| Zuordnung | Kanal A - Vorverstärker 48806 - Mikrofon 49855 Kanal B - Vorverstärker 48807 - Mikrofon 49876 | |
| Attribution | Canal A - Amplificateur d'entrée 48806 - Microphone 49855 Canal B - Amplificateur d'entrée 48807 - Microphone 49876 | |
| Attribution | Channel A - Pre-amplifier 48806 - Microphone 49855 Channel B - Pre-amplifier 48807 - Microphone 49876 | |
| Zubehör Accessoire Accessory | Windschirm (Ellipsoid) Abat-vent (ellipsoïde) Wind deflector (ellipsoid) | - - - |
| Kabel 5 m Câble 5 m Cable 5m | AC0002 | - |
| Schallintensitätskalibrator Calibratore d'intensité acoustique Sound intensity calibrator | G.R.A.S Typ 51AB | 49049 |
| Akustischer Kalibrator Klasse 1 Calibratore acoustique classe 1 Acoustic calibrator class 1 | Nor1251 | 29926 |



Messresultate mit Genauigkeitsklasse 1 / Résultat de mesure avec précision classe 1 / Measurement result with accuracy class 1

| Third band [dB] | L _w [dB] | Criteria 1 | | | Criteria 2 | | Criteria 3 | All criterias passed? | L _{w,A} [dB(A)] | |
|------------------------|------------------------|----------------|----------------|---------------------------------|----------------|--------------------------------------|---------------------------------------|--------------------------|-----------------------------|------------|
| | | F ₂ | L _d | L _d > F ₂ | F ₃ | F ₃ - F ₂ <= 3 | N - CF ₄ ² >= 0 | | | |
| 50 | 49.7 | 5.3 | 16.6 | OK | 10.6 | - | - | no | 19.5 | w |
| 63 | NEGATIV | 1.9 | 14.9 | OK | 5.9 | - | - | no | NEGATIV | s |
| 80 | 43.0 | 0.2 | 13.8 | OK | 4.3 | - | - | no | 20.5 | w |
| 100 | 45.4 | 3.7 | 16.6 | OK | 4.9 | OK | - | no | 26.3 | u |
| 125 | 37.2 | 3.3 | 16.5 | OK | 7.8 | - | - | no | 21.1 | u |
| 160 | 41.1 | 2.4 | 16.6 | OK | 2.4 | OK | OK | yes | 27.7 | u |
| 200 | 42.6 | 3.1 | 16.6 | OK | 3.3 | OK | OK | yes | 31.7 | u |
| 250 | 42.6 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 34.0 | u |
| 315 | 38.4 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 31.8 | u |
| 400 | 39.5 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 34.7 | u |
| 500 | 38.6 | 3.8 | 16.6 | OK | 3.8 | OK | OK | yes | 35.4 | u |
| 630 | 36.3 | 4.0 | 16.6 | OK | 4.0 | OK | OK | yes | 34.4 | u |
| 800 | 32.9 | 3.3 | 16.6 | OK | 3.3 | OK | OK | yes | 32.1 | u |
| 1k | 36.3 | 3.5 | 16.6 | OK | 3.5 | OK | OK | yes | 36.3 | <<< passed |
| 1.25k | 40.9 | 3.5 | 16.6 | OK | 3.5 | OK | OK | yes | 41.5 | <<< passed |
| 1.6k | 32.3 | 3.7 | 16.6 | OK | 6.1 | OK | - | no | 33.3 | u |
| 2k | 28.9 | 3.3 | 16.6 | OK | 3.3 | OK | OK | yes | 30.1 | u |
| 2.5k | 26.3 | 3.4 | 16.6 | OK | 3.4 | OK | OK | yes | 27.6 | u |
| 3.15k | 28.2 | 2.5 | 16.6 | OK | 2.5 | OK | - | no | 29.4 | u |
| 4k | 19.5 | 5.0 | 16.6 | OK | 5.0 | OK | OK | yes | 20.5 | u |
| 5k | 21.5 | 5.6 | 16.6 | OK | 5.6 | OK | OK | yes | 22.0 | w |
| 6.3k | 17.8 | 8.6 | 15.2 | OK | 9.4 | OK | OK | yes | 17.7 | w |
| L_{w,A} | | | | | | | | | 46.1 | |

Legende / Legend

<<< passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< passed" ist die geforderte Genauigkeitsklasse erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class is passed with "<<< passed".

<<< no passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< no passed" ist die geforderte Genauigkeitsklasse nicht erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class isn't passed with "<<< no passed".

u Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} unbedeutend, werden aber bei der Berechnung des L_{w,A} berücksichtigt.
Third bands with this description aren't significant for accuracy of A-weighted total sound power level L_{w,A} but shall be regarded on Calculation of L_{w,A}.

s and w Terzbänder mit dieser Bezeichnung werden bei der Berechnung des L_{w,A} nicht berücksichtigt.
Third bands with this description shall not be regarded on Calculation of L_{w,A}.



Messresultate mit Genauigkeitsklasse 2 / Résultat de mesure avec précision classe 2 / Measurement result with accuracy class 2

| Third band [dB] | L _w [dB] | Criteria 1 | | | Criteria 2 | | Criteria 3 | All criterias passed? | L _{w,A} [dB(A)] | |
|------------------------|------------------------|----------------|----------------|---------------------------------|----------------|--------------------------------------|---------------------------------------|--------------------------|-----------------------------|------------|
| | | F ₂ | L _d | L _d > F ₂ | F ₃ | F ₃ - F ₂ <= 3 | N - CF ₄ ² >= 0 | | | |
| 50 | 49.7 | 5.3 | 16.6 | OK | 10.6 | - | - | no | 19.5 | w |
| 63 | NEGATIV | 1.9 | 14.9 | OK | 5.9 | - | - | no | NEGATIV | s |
| 80 | 43.0 | 0.2 | 13.8 | OK | 4.3 | - | - | no | 20.5 | w |
| 100 | 45.4 | 3.7 | 16.6 | OK | 4.9 | OK | - | no | 26.3 | u |
| 125 | 37.2 | 3.3 | 16.5 | OK | 7.8 | - | - | no | 21.1 | u |
| 160 | 41.1 | 2.4 | 16.6 | OK | 2.4 | OK | OK | yes | 27.7 | u |
| 200 | 42.6 | 3.1 | 16.6 | OK | 3.3 | OK | OK | yes | 31.7 | u |
| 250 | 42.6 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 34.0 | u |
| 315 | 38.4 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 31.8 | u |
| 400 | 39.5 | 3.7 | 16.6 | OK | 3.7 | OK | OK | yes | 34.7 | u |
| 500 | 38.6 | 3.8 | 16.6 | OK | 3.8 | OK | OK | yes | 35.4 | u |
| 630 | 36.3 | 4.0 | 16.6 | OK | 4.0 | OK | OK | yes | 34.4 | u |
| 800 | 32.9 | 3.3 | 16.6 | OK | 3.3 | OK | OK | yes | 32.1 | u |
| 1k | 36.3 | 3.5 | 16.6 | OK | 3.5 | OK | OK | yes | 36.3 | <<< passed |
| 1.25k | 40.9 | 3.5 | 16.6 | OK | 3.5 | OK | OK | yes | 41.5 | <<< passed |
| 1.6k | 32.3 | 3.7 | 16.6 | OK | 6.1 | OK | - | no | 33.3 | u |
| 2k | 28.9 | 3.3 | 16.6 | OK | 3.3 | OK | OK | yes | 30.1 | u |
| 2.5k | 26.3 | 3.4 | 16.6 | OK | 3.4 | OK | OK | yes | 27.6 | u |
| 3.15k | 28.2 | 2.5 | 16.6 | OK | 2.5 | OK | - | no | 29.4 | u |
| 4k | 19.5 | 5.0 | 16.6 | OK | 5.0 | OK | OK | yes | 20.5 | u |
| 5k | 21.5 | 5.6 | 16.6 | OK | 5.6 | OK | OK | yes | 22.0 | w |
| 6.3k | 17.8 | 8.6 | 15.2 | OK | 9.4 | OK | OK | yes | 17.7 | w |
| L_{w,A} | | | | | | | | | 46.1 | |

Legende / Legend

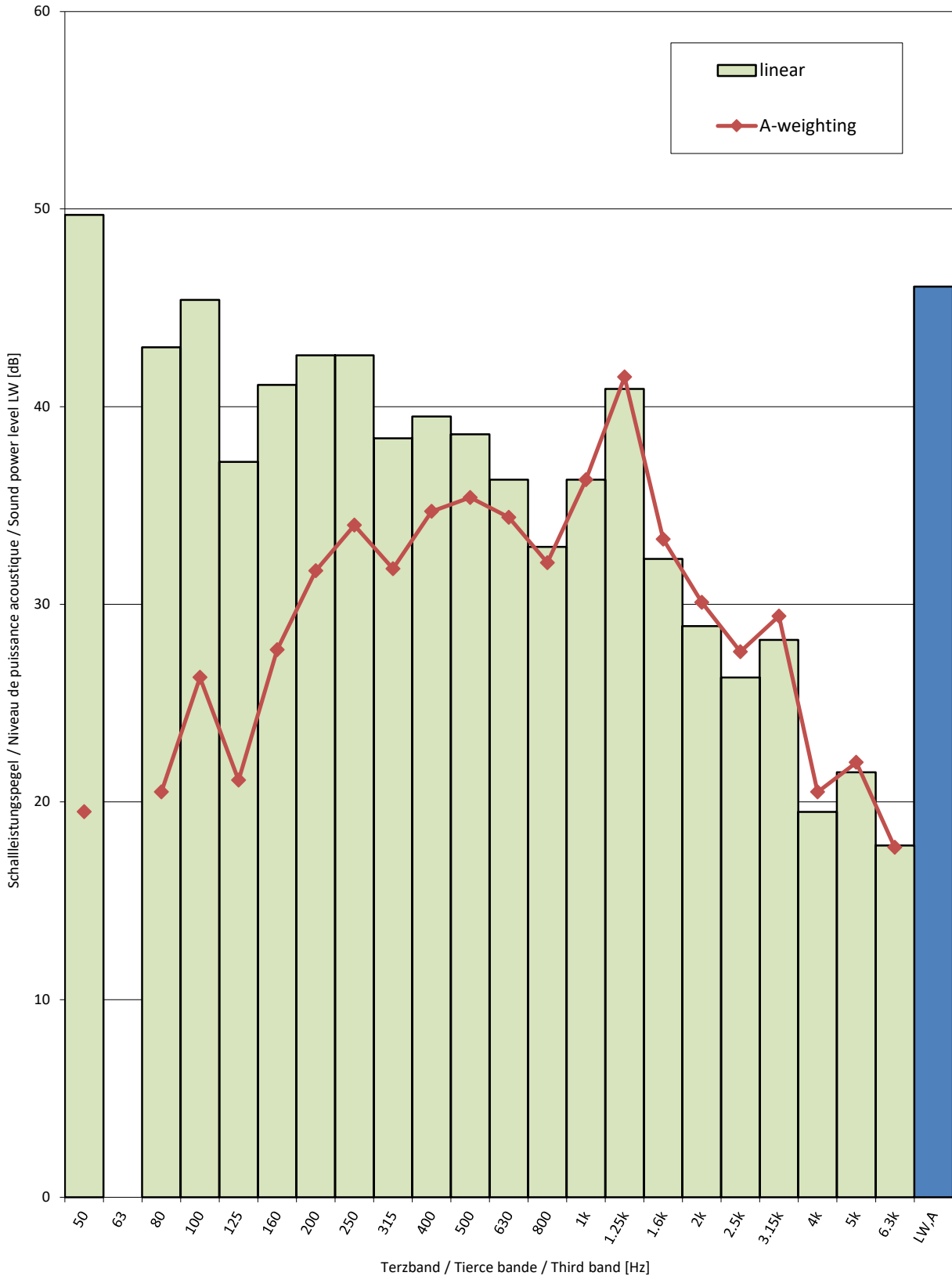
<<< passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< passed" ist die geforderte Genauigkeitsklasse erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class is passed with "<<< passed".

<<< no passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< no passed" ist die geforderte Genauigkeitsklasse nicht erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class isn't passed with "<<< no passed".

u Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} unbedeutend, werden aber bei der Berechnung des L_{w,A} berücksichtigt.
Third bands with this description aren't significant for accuracy of A-weighted total sound power level L_{w,A} but shall be regarded on Calculation of L_{w,A}.

s and w Terzbänder mit dieser Bezeichnung werden bei der Berechnung des L_{w,A} nicht berücksichtigt.
Third bands with this description shall not be regarded on Calculation of L_{w,A}.

Spektrum Schallleistungspegel / Niveau de puissance acoustique du spectre /
Spectrum Sound power level LW



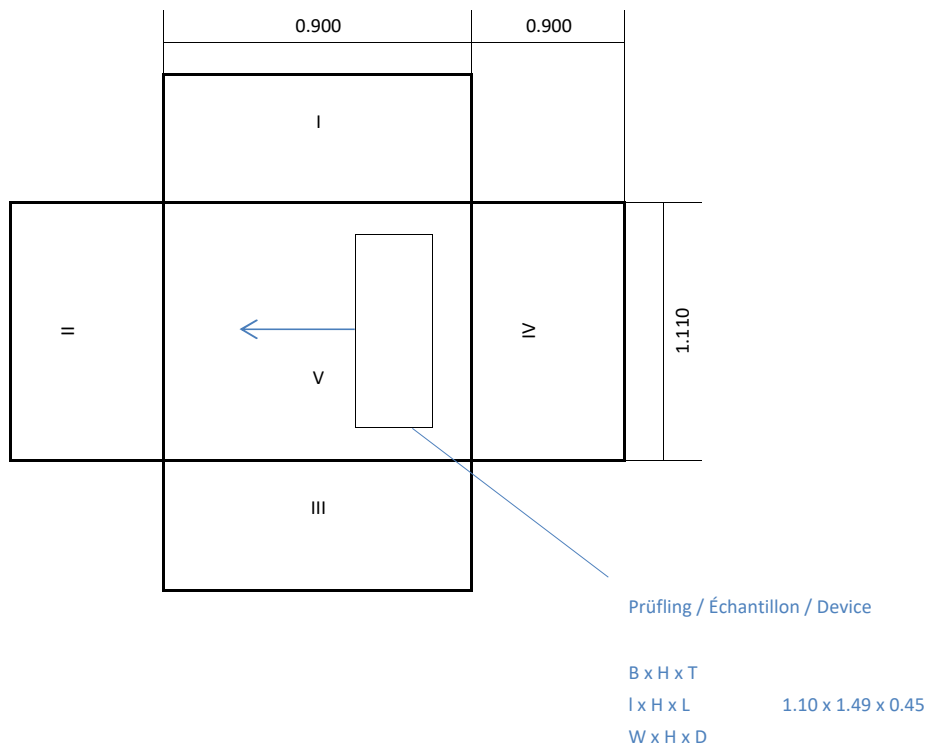


Hüllfläche / Face de mesure / Measurement surface

Abstand zur Hüllfläche

Distance à la face de mesure min 0.1

Distance to measurement surface



Segmente / Segments / Segments

| | | |
|---------|----|----------------------|
| I & III | S= | 0.810 m ² |
| II & IV | S= | 0.999 m ² |
| V | S= | 0.999 m ² |

Gesamte Hüllfläche

Surface de mesure totale 4.617 m²

Total measurement surface

Alle Angaben in Meter

Toutes les indications en mètres

All dimensions are given in meters

Bemerkung



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Prüfnummer LW-652-24-11i
No. d'essai -
Test No. Version 1

Prüfzertifikat - SchalleLeistungspegel
Certificat d'essai - Niveau de puissance acoustique
Test certificate - Sound power level

Auftraggeber Wienkra Sp. Z o o
Client Kotlarska 34
Customer PL - 31-539 Kraków

Datum der Prüfung
Date du test 05.03.2024
Date of test

Manufacturer MBT/ GD Midea Heating & Ventilating Equipment Co.,Ltd
Brand / Model Wienkra SEV-HPS1-06/O & SEV-MHPS3-06/I
Serial Number SN: 341H554250332040100023 & 341H08501102C020100035

Messobjekt Innenmessung
Object de mesure Mesure interieure
Measuring object Indoor measurement

Prüfbedingung **A7 / W47-55 ErP**
Condition d'essai compressor speed = 34 Hz
Test condition fan speed = 300 rpm

Genauigkeitsklasse
Precision classe 2
Accuracy class

SchalleLeistungspegel
Niveau de puissance acoustique dB(A) 33.1
Sound power level

Messunsicherheit
Ecart type dB ± 1.5
Standard deviation

Messung wurde gemäss der folgenden Norm durchgeführt
Mesures exécutées conformément aux normes
Measurement regarding the following standard

EN ISO 9614-1 and EN 12102-1
NF 414 rev13 / RS 6C003-2018 LCP Rev1
EHPA test regulation V2.4

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Stempel und Datum
Timbre et date 05.06.2024
Stamp and date

Prüfer Messort Wärmepumpen-Testzentrum WPZ
Contrôleur Site de mesure Werdenbergstrasse 4
Supervisor Measuring site CH-9471 Buchs (Switzerland)
R. Rankwiler, Messtechniker



Verwendete Messgeräte / Employer d'appareillage de mesure / Measuring instruments in use

| Bezeichnung / Description / Description | Gerät / Type / Type | Seriennr. / No. de Série / Serial no. |
|---|--|---------------------------------------|
| Real Time Analyzer | 01 dB-Metravib PCMCIA-Card | #1912 #0001912 |
| Auswertesoftware Utilisation de software Analysis software | dBFA Excel-Sheet | Version 4.7.01 Version 1.0/me |
| Intensitätssonde Sonde de intensité Intensity sonde | G.R.A.S Typ 50AI-B | 38213 |
| Mikrofonpaar Couple de microphone Couple of microphone | Typ 40 AK | 49855 49876 |
| Vorverstärker Amplificateur d'entrée Pre-amplifier | Typ 26AA | 48806 48807 |
| Zuordnung | Kanal A - Vorverstärker 48806 - Mikrofon 49855 Kanal B - Vorverstärker 48807 - Mikrofon 49876 | |
| Attribution | Canal A - Amplificateur d'entrée 48806 - Microphone 49855 Canal B - Amplificateur d'entrée 48807 - Microphone 49876 | |
| Attribution | Channel A - Pre-amplifier 48806 - Microphone 49855 Channel B - Pre-amplifier 48807 - Microphone 49876 | |
| Zubehör Accessoire Accessory | Windschirm (Ellipsoid) Abat-vent (ellipsoïde) Wind deflector (ellipsoid) | - - - |
| Kabel 5 m Câble 5 m Cable 5m | AC0002 | - |
| Schallintensitätskalibrator Calibratore d'intensité acoustique Sound intensity calibrator | G.R.A.S Typ 51AB | 49049 |
| Akustischer Kalibrator Klasse 1 Calibratore acoustique classe 1 Acoustic calibrator class 1 | Nor1251 | 29926 |



Messresultate mit Genauigkeitsklasse 1 / Résultat de mesure avec precision classe 1 / Measurement result with accuracy class 1

| Third band [dB] | L _w [dB] | Criteria 1 | | | Criteria 2 | | Criteria 3 | All criterias passed? | L _{w,A} [dB(A)] | |
|------------------------|------------------------|----------------|----------------|---------------------------------|----------------|--------------------------------------|---------------------------------------|--------------------------|-----------------------------|------------|
| | | F ₂ | L _d | L _d > F ₂ | F ₃ | F ₃ - F ₂ <= 3 | N - CF ₄ ² >= 0 | | | |
| 50 | NEGATIV | 3.5 | 16.6 | OK | 8.6 | - | - | no | NEGATIV | s |
| 63 | NEGATIV | 2.4 | 14.9 | OK | 6.9 | - | - | no | NEGATIV | s |
| 80 | 34.9 | 2.6 | 13.8 | OK | 8.3 | - | - | no | 12.4 | w |
| 100 | NEGATIV | 6.9 | 16.6 | OK | 12.4 | - | - | no | NEGATIV | s |
| 125 | 34.2 | 7.5 | 16.5 | OK | 10.0 | OK | - | no | 18.1 | u |
| 160 | NEGATIV | 8.4 | 16.6 | OK | 14.1 | - | OK | no | NEGATIV | s |
| 200 | 27.8 | 10.6 | 16.6 | OK | 12.2 | OK | - | no | 16.9 | u |
| 250 | 36.0 | 6.1 | 16.6 | OK | 6.1 | OK | OK | yes | 27.4 | <<< passed |
| 315 | 21.6 | 11.6 | 16.6 | OK | 17.3 | - | - | no | 15.0 | u |
| 400 | 28.9 | 9.9 | 16.6 | OK | 11.0 | OK | OK | yes | 24.1 | <<< passed |
| 500 | 24.3 | 10.0 | 16.6 | OK | 12.8 | OK | - | no | 21.1 | u |
| 630 | 23.1 | 6.1 | 16.6 | OK | 13.5 | - | - | no | 21.2 | u |
| 800 | 22.6 | 6.5 | 16.6 | OK | 6.5 | OK | OK | yes | 21.8 | u |
| 1k | 24.3 | 4.6 | 16.6 | OK | 6.4 | OK | OK | yes | 24.3 | <<< passed |
| 1.25k | 23.2 | 5.3 | 16.6 | OK | 5.3 | OK | OK | yes | 23.8 | <<< passed |
| 1.6k | 14.2 | 8.3 | 16.6 | OK | 12.2 | - | - | no | 15.2 | u |
| 2k | 7.4 | 7.3 | 16.6 | OK | 15.7 | - | - | no | 8.6 | u |
| 2.5k | 13.5 | 7.7 | 16.6 | OK | 7.9 | OK | OK | yes | 14.8 | u |
| 3.15k | 17.8 | 5.3 | 16.6 | OK | 5.3 | OK | - | no | 19.0 | u |
| 4k | 9.0 | 7.0 | 16.6 | OK | 10.8 | - | - | no | 10.0 | u |
| 5k | 11.9 | 10.0 | 16.6 | OK | 10.9 | OK | - | no | 12.4 | u |
| 6.3k | 13.4 | 5.2 | 15.2 | OK | 8.2 | OK | - | no | 13.3 | w |
| L_{w,A} | | | | | | | | | 33.1 | |

Legende / Legend

- <<< passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< passed" ist die geforderte Genauigkeitsklasse erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class is passed with "<<< passed".
- <<< no passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< no passed" ist die geforderte Genauigkeitsklasse nicht erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class isn't passed with "<<< no passed".
- u Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} unbedeutend, werden aber bei der Berechnung des L_{w,A} berücksichtigt.
Third bands with this description aren't significant for accuracy of A-weighted total sound power level L_{w,A} but shall be regarded on Calculation of L_{w,A}.
- s and w Terzbänder mit dieser Bezeichnung werden bei der Berechnung des L_{w,A} nicht berücksichtigt.
Third bands with this description shall not be regarded on Calculation of L_{w,A}.



Messresultate mit Genauigkeitsklasse 2 / Résultat de mesure avec précision classe 2 / Measurement result with accuracy class 2

| Third band [dB] | L _w [dB] | Criteria 1 | | | Criteria 2 | | Criteria 3 | All criterias passed? | L _{w,A} [dB(A)] | |
|------------------------|------------------------|----------------|----------------|---------------------------------|----------------|--------------------------------------|---------------------------------------|--------------------------|-----------------------------|------------|
| | | F ₂ | L _d | L _d > F ₂ | F ₃ | F ₃ - F ₂ <= 3 | N - CF ₄ ² >= 0 | | | |
| 50 | NEGATIV | 3.5 | 16.6 | OK | 8.6 | - | - | no | NEGATIV | s |
| 63 | NEGATIV | 2.4 | 14.9 | OK | 6.9 | - | - | no | NEGATIV | s |
| 80 | 34.9 | 2.6 | 13.8 | OK | 8.3 | - | - | no | 12.4 | w |
| 100 | NEGATIV | 6.9 | 16.6 | OK | 12.4 | - | - | no | NEGATIV | s |
| 125 | 34.2 | 7.5 | 16.5 | OK | 10.0 | OK | - | no | 18.1 | u |
| 160 | NEGATIV | 8.4 | 16.6 | OK | 14.1 | - | - | no | NEGATIV | s |
| 200 | 27.8 | 10.6 | 16.6 | OK | 12.2 | OK | - | no | 16.9 | u |
| 250 | 36.0 | 6.1 | 16.6 | OK | 6.1 | OK | OK | yes | 27.4 | <<< passed |
| 315 | 21.6 | 11.6 | 16.6 | OK | 17.3 | - | - | no | 15.0 | u |
| 400 | 28.9 | 9.9 | 16.6 | OK | 11.0 | OK | OK | yes | 24.1 | <<< passed |
| 500 | 24.3 | 10.0 | 16.6 | OK | 12.8 | OK | - | no | 21.1 | u |
| 630 | 23.1 | 6.1 | 16.6 | OK | 13.5 | - | - | no | 21.2 | u |
| 800 | 22.6 | 6.5 | 16.6 | OK | 6.5 | OK | OK | yes | 21.8 | u |
| 1k | 24.3 | 4.6 | 16.6 | OK | 6.4 | OK | OK | yes | 24.3 | <<< passed |
| 1.25k | 23.2 | 5.3 | 16.6 | OK | 5.3 | OK | OK | yes | 23.8 | <<< passed |
| 1.6k | 14.2 | 8.3 | 16.6 | OK | 12.2 | - | - | no | 15.2 | u |
| 2k | 7.4 | 7.3 | 16.6 | OK | 15.7 | - | - | no | 8.6 | u |
| 2.5k | 13.5 | 7.7 | 16.6 | OK | 7.9 | OK | OK | yes | 14.8 | u |
| 3.15k | 17.8 | 5.3 | 16.6 | OK | 5.3 | OK | - | no | 19.0 | u |
| 4k | 9.0 | 7.0 | 16.6 | OK | 10.8 | - | - | no | 10.0 | u |
| 5k | 11.9 | 10.0 | 16.6 | OK | 10.9 | OK | - | no | 12.4 | u |
| 6.3k | 13.4 | 5.2 | 15.2 | OK | 8.2 | OK | - | no | 13.3 | w |
| L_{w,A} | | | | | | | | | 33.1 | |

Legende / Legend

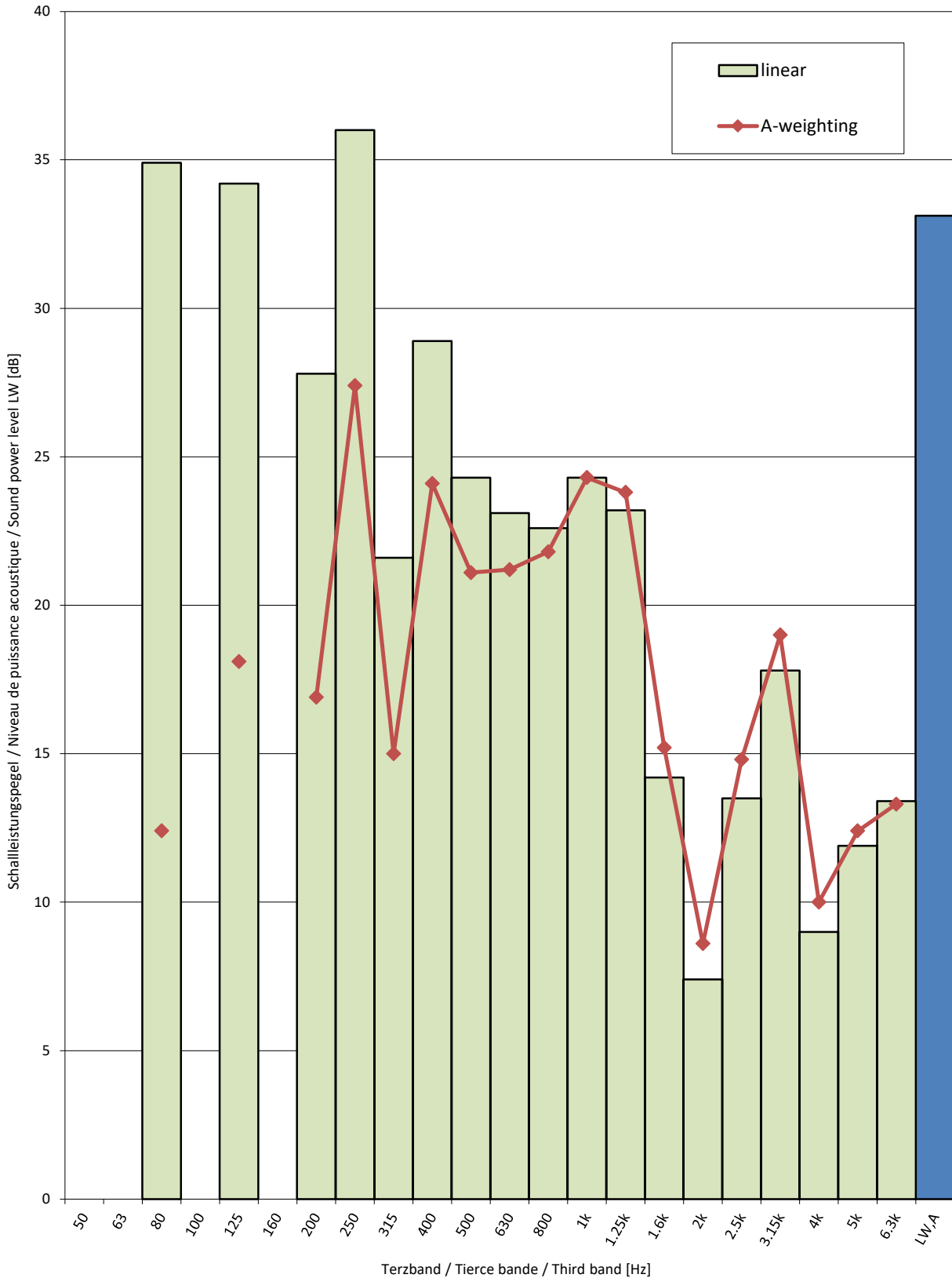
<<< passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< passed" ist die geforderte Genauigkeitsklasse erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class is passed with "<<< passed".

<<< no passed Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} massgebend.
Mit "<<< no passed" ist die geforderte Genauigkeitsklasse nicht erfüllt.
Third bands with this description are significant for accuracy of A-weighted total sound power level L_{w,A}.
Required accuracy class isn't passed with "<<< no passed".

u Terzbänder mit dieser Bezeichnung sind für die Genauigkeit des A-bewerteten Gesamtschallleistungspegel L_{w,A} unbedeutend, werden aber bei der Berechnung des L_{w,A} berücksichtigt.
Third bands with this description aren't significant for accuracy of A-weighted total sound power level L_{w,A} but shall be regarded on Calculation of L_{w,A}.

s and w Terzbänder mit dieser Bezeichnung werden bei der Berechnung des L_{w,A} nicht berücksichtigt.
Third bands with this description shall not be regarded on Calculation of L_{w,A}.

Spektrum Schallleistungspegel / Niveau de puissance acoustique du spectre /
Spectrum Sound power level LW



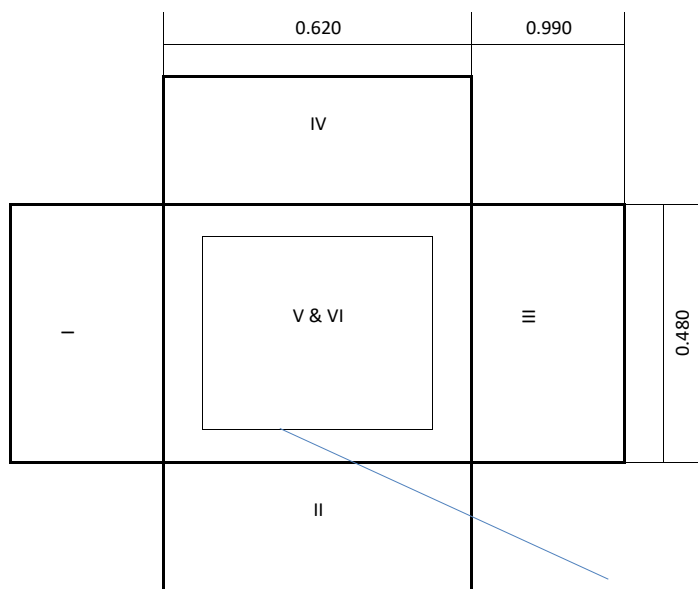


Hüllfläche / Face de mesure / Measurement surface

Abstand zur Hüllfläche

Distance à la face de mesure min 0.1

Distance to measurement surface



Prüfling / Échantillon / Device

B x H x T

I x H x L 0.42 x 0.79 x 0.28

W x H x D

Segmente / Segments / Segments

I & III S= 0.475 m²

II & IV S= 0.614 m²

V & VI S= 0.298 m²

Gesamte Hüllfläche

Surface de mesure totale 2.773 m²

Total measurement surface

Alle Angaben in Meter

Toutes les indications en mètres

All dimensions are given in meters

Bemerkung

Prüfbedingung
Test condition

A7 / W30-35

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 6268 | ± 99 | ± 1.57% |
| a Heizleistung (heating capacity) | W | 6269 | ± 99 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 7.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 3.20 | ± 0.32 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 87.3 | ± 2.6 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 30.01 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 35.02 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 1075.5 | ± 5.4 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -0.15 | ± 0.00 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1269 | ± 11 | ± 0.85% |
| Wirkleistung (power input) | W | 1269 | ± 11 | |
| Spannung (voltage) | V | 232.1 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 2.01 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 1396 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.91 | ± 0.01 | |
| 3 COP (COP) | - | 4.939 | ± 0.088 | ± 1.79% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 21.4 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 14:07:10 | 21.02.2024 | 2024-02-21 |
| Prüfende (end of test) | hh:mm:ss | 15:17:10 | 21.02.2024 | 2024-02-21 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 63 Hz
- Ventilator Drehzahl / fan speed = 550 rpm
- EXV = 276 P
- Pumpendrehzahl / pump speed = 30%

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A7 / W47-55

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 5858 | ± 71 | ± 1.21% |
| a Heizleistung (heating capacity) | W | 5864 | ± 71 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 7.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 3.90 | ± 0.32 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 87.1 | ± 2.6 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 46.98 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 55.03 | ± 0.06 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 627.3 | ± 3.1 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -4.58 | ± -0.11 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1994 | ± 14 | ± 0.70% |
| Wirkleistung (power input) | W | 2001 | ± 14 | |
| Spannung (voltage) | V | 232.5 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 3.05 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 2126 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.94 | ± 0.01 | |
| 3 COP (COP) | - | 2.937 | ± 0.041 | ± 1.40% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.8 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 07:20:50 | 22.02.2024 | 2024-02-22 |
| Prüfende (end of test) | hh:mm:ss | 08:30:50 | 22.02.2024 | 2024-02-22 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 66 Hz
- Ventilator Drehzahl / fan speed = 550 rpm
- EXV = 192 P
- Pumpendrehzahl / pump speed = 30 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A-7 / W44-52 Tbiv

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 4929 | ± 60 | ± 1.22% |
| a Heizleistung (heating capacity) | W | 4935 | ± 60 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -7.00 | ± 0.05 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -10.11 | ± 0.25 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 72.9 | ± 2.2 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 43.99 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 51.88 | ± 0.06 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 538.6 | ± 2.7 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -5.19 | ± -0.13 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 2239 | ± 15 | ± 0.66% |
| Wirkleistung (power input) | W | 2245 | ± 15 | |
| Spannung (voltage) | V | 233.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 3.38 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 2366 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.95 | ± 0.01 | |
| 3 COP (COP) | - | 2.202 | ± 0.031 | ± 1.39% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 21.0 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 12:03:00 | 22.02.2024 | 2024-02-22 |
| Prüfende (end of test) | hh:mm:ss | 13:13:00 | 22.02.2024 | 2024-02-22 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 85 Hz
- Ventilator Drehzahl / fan speed = 580 rpm
- EXV = 166 P
- Pumpendrehzahl / pump speed = 30 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A-7 / W29-34 Tbiv

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 5677 | ± 93 | ± 1.64% |
| a Heizleistung (heating capacity) | W | 5685 | ± 93 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -6.91 | ± 0.05 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -10.59 | ± 0.25 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 73.4 | ± 2.2 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 28.99 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 33.74 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 1029.8 | ± 5.1 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -3.90 | ± -0.10 | |
| d Abtaudauer (period of defrosting) | min | 3.0 | | |
| Heizdauer (period of heating) | min | 110.5 | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | 2.6 | | |
| Abtauleistung (defrosting output) | W | 6262 | ± 113 | ± 1.80% |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1859 | ± 13 | ± 0.73% |
| Wirkleistung (power input) | W | 1868 | ± 13 | |
| Spannung (voltage) | V | 233.1 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 2.84 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 1981 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.94 | ± 0.01 | |
| 3 COP (COP) | - | 3.054 | ± 0.055 | ± 1.79% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.9 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:53:30 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 17:12:00 | 22.02.2024 | 2024-02-22 |
| Prüfende (end of test) | hh:mm:ss | 19:05:30 | 22.02.2024 | 2024-02-22 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 94 Hz
- Ventilator Drehzahl / fan speed = 580 rpm

- EXV = 232 P
- heating time = 110min
- Pumpendrehzahl / pump speed = 35 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A-15 / W27.5-32.5 Tbiv colder

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 4533 | ± 73 | ± 1.60% |
| a Heizleistung (heating capacity) | W | 4541 | ± 72 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -15.00 | ± 0.04 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -17.98 | ± 0.21 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 70.5 | ± 2.1 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 27.46 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 32.41 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 788.8 | ± 3.9 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -5.67 | ± -0.14 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1800 | ± 13 | ± 0.74% |
| Wirkleistung (power input) | W | 1809 | ± 13 | |
| Spannung (voltage) | V | 234.9 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 2.73 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 1925 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.94 | ± 0.01 | |
| 3 COP (COP) | - | 2.519 | ± 0.044 | ± 1.76% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 19.6 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 02:42:10 | 28.02.2024 | 2024-02-28 |
| Prüfende (end of test) | hh:mm:ss | 03:52:10 | 28.02.2024 | 2024-02-28 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 94 Hz
- Ventilator Drehzahl / fan speed = 580 rpm
- EXV = 190 P
- Pumpendrehzahl / pump speed = 34 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A-10 / W30-35 E

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 5292 | ± 83 | ± 1.57% |
| a Heizleistung (heating capacity) | W | 5296 | ± 83 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -10.00 | ± 0.05 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -13.46 | ± 0.23 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 69.4 | ± 2.1 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 30.00 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 35.04 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 905.0 | ± 4.5 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -2.09 | ± -0.05 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1850 | ± 13 | ± 0.71% |
| Wirkleistung (power input) | W | 1855 | ± 13 | |
| Spannung (voltage) | V | 232.9 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 2.82 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 1966 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.94 | ± 0.01 | |
| 3 COP (COP) | - | 2.860 | ± 0.049 | ± 1.73% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.7 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 10:31:10 | 23.02.2024 | 2024-02-23 |
| Prüfende (end of test) | hh:mm:ss | 11:41:10 | 23.02.2024 | 2024-02-23 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 91 Hz
- Ventilatorrehzahl / fan speed = 600 rpm
- EXV = 204 P
- Pumpendrehzahl / pump speed = 30 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A-10 / W47-55 E

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 4381 | ± 53 | ± 1.21% |
| a Heizleistung (heating capacity) | W | 4386 | ± 53 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -10.00 | ± 0.05 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -12.46 | ± 0.24 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 69.3 | ± 2.1 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 46.98 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 55.10 | ± 0.06 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 465.5 | ± 2.3 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -5.64 | ± -0.14 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 2317 | ± 15 | ± 0.66% |
| Wirkleistung (power input) | W | 2323 | ± 15 | |
| Spannung (voltage) | V | 232.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 3.50 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 2437 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.95 | ± 0.01 | |
| 3 COP (COP) | - | 1.891 | ± 0.026 | ± 1.38% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.7 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 14:31:10 | 23.02.2024 | 2024-02-23 |
| Prüfende (end of test) | hh:mm:ss | 15:41:10 | 23.02.2024 | 2024-02-23 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 86 Hz
- Ventilator Drehzahl / fan speed = 580 rpm
- EXV = 148 P
- Pumpendrehzahl / pump speed = 30 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A2 / W22-27 B colder

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 2598 | ± 41 | ± 1.58% |
| a Heizleistung (heating capacity) | W | 2602 | ± 41 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 2.00 | ± 0.06 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -0.37 | ± 0.30 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 83.4 | ± 2.5 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 23.01 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 28.03 | ± 0.04 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 447.1 | ± 2.2 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -4.60 | ± -0.12 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 504 | ± 8 | ± 1.59% |
| Wirkleistung (power input) | W | 509 | ± 8 | |
| Spannung (voltage) | V | 231.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 0.94 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 649 | ± 7 | |
| Leistungsfaktor cosp (power factor) | - | 0.78 | ± 0.01 | |
| 3 COP (COP) | - | 5.155 | ± 0.116 | ± 2.24% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.8 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 15:42:20 | 29.02.2024 | 2024-02-29 |
| Prüfende (end of test) | hh:mm:ss | 16:52:20 | 29.02.2024 | 2024-02-29 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 30 Hz
- Ventilator Drehzahl / fan speed = 580 rpm
- EXV = 114 P
- Pumpendrehzahl / pump speed = 28 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A2 / W25-30 B

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 3692 | ± 60 | ± 1.63% |
| a Heizleistung (heating capacity) | W | 3698 | ± 60 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 2.02 | ± 0.06 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -0.67 | ± 0.30 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 84.2 | ± 2.5 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 25.01 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 29.82 | ± 0.04 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 660.8 | ± 3.3 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -4.25 | ± -0.11 | |
| d Abtaudauer (period of defrosting) | min | 3.0 | | |
| Heizdauer (period of heating) | min | 123.2 | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | 2.4 | | |
| Abtauleistung (defrosting output) | W | 4357 | ± 78 | ± 1.78% |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 780 | ± 9 | ± 1.21% |
| Wirkleistung (power input) | W | 786 | ± 9 | |
| Spannung (voltage) | V | 232.8 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 1.30 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 906 | ± 8 | |
| Leistungsfaktor cosp (power factor) | - | 0.87 | ± 0.01 | |
| 3 COP (COP) | - | 4.736 | ± 0.096 | ± 2.03% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.8 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 02:06:10 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 10:23:30 | 27.02.2024 | 2024-02-27 |
| Prüfende (end of test) | hh:mm:ss | 12:29:40 | 27.02.2024 | 2024-02-27 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 45 Hz
- Ventilatorrehzahl / fan speed = 580 rpm
- EXV = 160 P
- Pumpendrehzahl / pump speed = 30 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A7 / W26-31 Tbiv warmer

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 3837 | ± 61 | ± 1.58% |
| a Heizleistung (heating capacity) | W | 3841 | ± 61 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 7.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 4.04 | ± 0.32 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 87.1 | ± 2.6 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 26.00 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 31.01 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 660.8 | ± 3.3 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -3.16 | ± -0.08 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 654 | ± 9 | ± 1.35% |
| Wirkleistung (power input) | W | 659 | ± 9 | |
| Spannung (voltage) | V | 233.7 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 1.12 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 783 | ± 8 | |
| Leistungsfaktor cosp (power factor) | - | 0.84 | ± 0.01 | |
| 3 COP (COP) | - | 5.866 | ± 0.122 | ± 2.08% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.9 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 13:40:30 | 27.02.2024 | 2024-02-27 |
| Prüfende (end of test) | hh:mm:ss | 14:50:30 | 27.02.2024 | 2024-02-27 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 38 Hz
- Ventilator Drehzahl / fan speed = 500 rpm
- EXV = 164 P
- Pumpendrehzahl / pump speed = 28 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A2 / W30-35 Tbiv warmer

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 5640 | ± 90 | ± 1.60% |
| a Heizleistung (heating capacity) | W | 5654 | ± 90 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 2.12 | ± 0.06 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -1.27 | ± 0.29 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 84.4 | ± 2.5 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 29.99 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 34.95 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 981.1 | ± 4.9 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -8.21 | ± -0.21 | |
| d Abtaudauer (period of defrosting) | min | 3.0 | | |
| Heizdauer (period of heating) | min | 76.5 | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | 3.8 | | |
| Abtauleistung (defrosting output) | W | 5032 | ± 88 | ± 1.74% |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1467 | ± 12 | ± 0.84% |
| Wirkleistung (power input) | W | 1483 | ± 12 | |
| Spannung (voltage) | V | 232.0 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 2.30 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 1601 | ± 9 | |
| Leistungsfaktor cosp (power factor) | - | 0.93 | ± 0.01 | |
| 3 COP (COP) | - | 3.844 | ± 0.069 | ± 1.81% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.6 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 02:39:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 07:10:20 | 29.02.2024 | 2024-02-29 |
| Prüfende (end of test) | hh:mm:ss | 09:49:20 | 29.02.2024 | 2024-02-29 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 74 Hz
- Ventilator Drehzahl / fan speed = 600 rpm
- EXV = 252 P
- Pumpendrehzahl / pump speed = 40 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A2 / W34-42 B

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 2940 | ± 40 | ± 1.37% |
| a Heizleistung (heating capacity) | W | 2944 | ± 40 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 2.00 | ± 0.06 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | -0.23 | ± 0.30 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 84.6 | ± 2.5 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 35.66 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 41.98 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 401.3 | ± 2.0 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -4.84 | ± -0.12 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 874 | ± 10 | ± 1.11% |
| Wirkleistung (power input) | W | 879 | ± 10 | |
| Spannung (voltage) | V | 234.1 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 1.41 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 992 | ± 8 | |
| Leistungsfaktor cosp (power factor) | - | 0.89 | ± 0.01 | |
| 3 COP (COP) | - | 3.362 | ± 0.059 | ± 1.77% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.2 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 03:59:40 | 27.02.2024 | 2024-02-27 |
| Prüfende (end of test) | hh:mm:ss | 05:09:40 | 27.02.2024 | 2024-02-27 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 36 Hz
- Ventilator Drehzahl / fan speed = 580 rpm
- EXV = 102 P
- Pumpendrehzahl / pump speed = 28%

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

A7 / W28-36 C

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 2786 | ± 40 | ± 1.42% |
| a Heizleistung (heating capacity) | W | 2791 | ± 39 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 7.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 4.27 | ± 0.32 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 87.1 | ± 2.6 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 31.49 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 37.48 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 401.3 | ± 2.0 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -5.95 | ± -0.15 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 610 | ± 9 | ± 1.44% |
| Wirkleistung (power input) | W | 615 | ± 9 | |
| Spannung (voltage) | V | 233.2 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 1.05 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 732 | ± 8 | |
| Leistungsfaktor cosp (power factor) | - | 0.84 | ± 0.01 | |
| 3 COP (COP) | - | 4.570 | ± 0.092 | ± 2.02% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.9 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 08:39:00 | 26.02.2024 | 2024-02-26 |
| Prüfende (end of test) | hh:mm:ss | 09:49:00 | 26.02.2024 | 2024-02-26 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 30 Hz
- Ventilator Drehzahl / fan speed = 400 rpm
- EXV = 108 P
- Pumpendrehzahl / pump speed = 30%

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

Verbrauch (Consumption)

Prüfnummer
Test number

LW-652-24-11

A7 / W28-36 C

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|---------------------------------------|-----------------|--------------------------|-------------------------------|-------------------------------|
| 1 Pto | W | 23.0 | ± 0.5 | ± 2.00% |
| 2 Psb | W | - | ± - | ± - |
| 3 Poff | W | - | ± - | ± - |
| 4 Pck | W | - | ± - | ± - |
| 5 Prüfdauer (test duration) | hh:mm:ss | 0:05:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 15:56:00 | 04.03.2024 | 2024-03-04 |
| Prüfende (end of test) | hh:mm:ss | 16:01:00 | 04.03.2024 | 2024-03-04 |

6 **Bemerkung** (remark)

7 **Prüfer** (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14825

passed

Prüfbedingung
Test condition

A7 / W22-27 C

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 2632 | ± 42 | ± 1.59% |
| a Heizleistung (heating capacity) | W | 2637 | ± 42 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 7.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 4.12 | ± 0.32 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 87.1 | ± 2.6 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 22.58 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 27.59 | ± 0.04 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 453.1 | ± 2.3 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -5.63 | ± -0.14 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 402 | ± 7 | ± 1.85% |
| Wirkleistung (power input) | W | 408 | ± 7 | |
| Spannung (voltage) | V | 232.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 0.80 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 559 | ± 7 | |
| Leistungsfaktor cosp (power factor) | - | 0.73 | ± 0.01 | |
| 3 COP (COP) | - | 6.543 | ± 0.159 | ± 2.44% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.9 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 13:16:30 | 26.02.2024 | 2024-02-26 |
| Prüfende (end of test) | hh:mm:ss | 14:26:30 | 26.02.2024 | 2024-02-26 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump

- Kompressorfrequenz / compressor speed = 26 Hz

- Ventilator Drehzahl / fan speed = 380 rpm

- EXV = 122 P

- Pumpendrehzahl / pump speed = 30%

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2

passed

EN 14511-3

passed

EN 14511-4 clause 4.6

passed

EN 14825

passed

Prüfbedingung
Test condition

Verbrauch (Consumption)

A7 / W22-27 C

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|---------------------------------------|-----------------|--------------------------|-------------------------------|-------------------------------|
| 1 Pto | W | 14.8 | ± 0.3 | ± 2.00% |
| 2 Psb | W | - | ± - | ± - |
| 3 Poff | W | - | ± - | ± - |
| 4 Pck | W | - | ± - | ± - |
| 5 Prüfdauer (test duration) | hh:mm:ss | 0:05:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 14:04:20 | 04.03.2024 | 2024-03-04 |
| Prüfende (end of test) | hh:mm:ss | 14:09:20 | 04.03.2024 | 2024-03-04 |

6 **Bemerkung** (remark)

7 **Prüfer** (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14825

passed

Prüfbedingung
Test condition

A12 / W19-24 D

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 3152 | ± 50 | ± 1.59% |
| a Heizleistung (heating capacity) | W | 3155 | ± 50 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 12.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 8.87 | ± 0.34 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 89.1 | ± 2.7 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 22.41 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 27.40 | ± 0.04 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 544.7 | ± 2.7 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -2.53 | ± -0.06 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 365 | ± 7 | ± 1.93% |
| Wirkleistung (power input) | W | 369 | ± 7 | |
| Spannung (voltage) | V | 232.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 0.75 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 520 | ± 7 | |
| Leistungsfaktor cosp (power factor) | - | 0.71 | ± 0.01 | |
| 3 COP (COP) | - | 8.628 | ± 0.216 | ± 2.50% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 21.0 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 17:11:10 | 01.03.2024 | 2024-03-01 |
| Prüfende (end of test) | hh:mm:ss | 18:21:10 | 01.03.2024 | 2024-03-01 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 26 Hz
- Ventilatorumdrehzahl / fan speed = 350 rpm
- EXV = 160 P
- Pumpendrehzahl / pump speed = 25 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

Verbrauch (Consumption)

A12 / W19-24 D

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|---------------------------------------|-----------------|--------------------------|-------------------------------|-------------------------------|
| 1 Pto | W | 15.0 | ± 0.3 | ± 2.00% |
| 2 Psb | W | 14.6 | ± 0.3 | ± 2.00% |
| 3 Poff | W | 14.6 | ± 0.3 | ± 2.00% |
| 4 Pck | W | - | ± - | ± - |
| 5 Prüfdauer (test duration) | hh:mm:ss | 2:24:10 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 06:40:50 | 04.03.2024 | 2024-03-04 |
| Prüfende (end of test) | hh:mm:ss | 09:05:00 | 04.03.2024 | 2024-03-04 |

6 **Bemerkung** (remark)

7 **Prüfer** (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14825

passed

Prüfbedingung
Test condition

A12 / W22-30 D

Prüfnummer
Test number

LW-652-24-11

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 3382 | ± 43 | ± 1.27% |
| a Heizleistung (heating capacity) | W | 3385 | ± 43 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | 12.00 | ± 0.07 | |
| Luftaustrittstemperatur (air outlet temperature) | °C | 9.23 | ± 0.35 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 89.1 | ± 2.7 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 26.49 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 33.75 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 401.4 | ± 2.0 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -3.36 | ± -0.08 | |
| d Abtaudauer (period of defrosting) | min | - | | |
| Heizdauer (period of heating) | min | - | | |
| Relative Abtaudauer (relative duration of defrosting period) | % | - | | |
| Abtauleistung (defrosting output) | W | - | ± - | ± - |
| e Niederdruck (low pressure) | bara | - | ± - | |
| Sauggasttemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgasttemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 534 | ± 8 | ± 1.56% |
| Wirkleistung (power input) | W | 537 | ± 8 | |
| Spannung (voltage) | V | 232.4 | ± 0.4 | |
| Stromaufnahme (current consumption) | A | 0.94 | ± 0.04 | |
| Scheinleistung (apparent output) | VA | 653 | ± 8 | |
| Leistungsfaktor cosp (power factor) | - | 0.82 | ± 0.01 | |
| 3 COP (COP) | - | 6.337 | ± 0.128 | ± 2.01% |
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.8 | ± 1.5 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:10:00 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 10:27:10 | 01.03.2024 | 2024-03-01 |
| Prüfende (end of test) | hh:mm:ss | 11:37:10 | 01.03.2024 | 2024-03-01 |

6 Bemerkung (remark)

- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump
- Kompressorfrequenz / compressor speed = 30 Hz
- Ventilator Drehzahl / fan speed = 400 rpm
- EXV = 140 P
- Pumpendrehzahl / pump speed = 25 %

7 Prüfer (supervisor) R. Rankwiler

Prüfnorm (test standard)

EN 14511-2 passed
EN 14511-3 passed
EN 14511-4 clause 4.6 passed
EN 14825 passed

Prüfbedingung
Test condition

Verbrauch (Consumption)

Prüfnummer
Test number

LW-652-24-11

A12 / W22-30 D

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|---------------------------------------|-----------------|--------------------------|-------------------------------|-------------------------------|
| 1 Pto | W | 14.8 | ± 0.3 | ± 2.00% |
| 2 Psb | W | 14.7 | ± 0.3 | ± 2.00% |
| 3 Poff | W | 14.7 | ± 0.3 | ± 2.00% |
| 4 Pck | W | - | ± - | ± - |
| 5 Prüfdauer (test duration) | hh:mm:ss | 2:04:10 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 11:51:10 | 01.03.2024 | 2024-03-01 |
| Prüfende (end of test) | hh:mm:ss | 13:55:20 | 01.03.2024 | 2024-03-01 |

6 **Bemerkung** (remark)

7 **Prüfer** (supervisor) R. Rankwiler

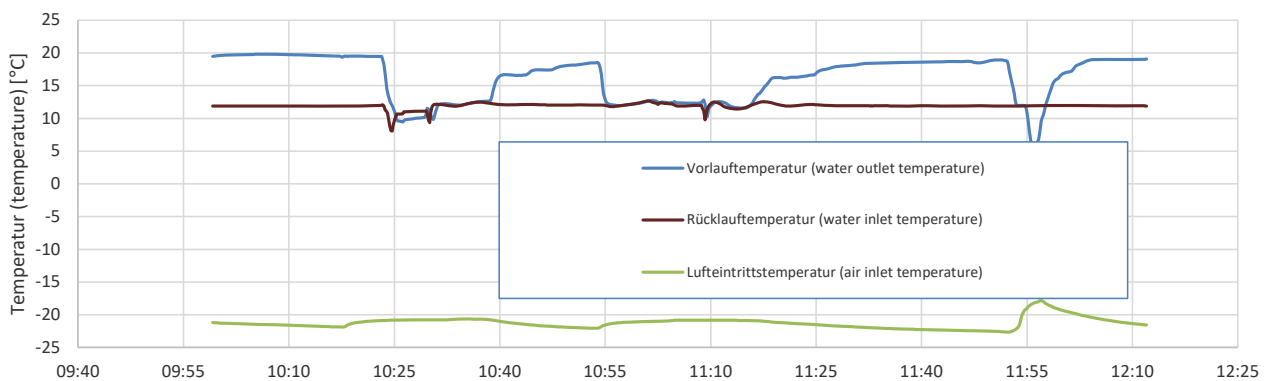
Prüfnorm (test standard)

EN 14825

passed

Einsatzgrenze
Usage limit**A-22 / Wxx-18**Prüfnummer
Test number**LW-652-24-11**

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 1889 | ± 26 | ± 1.36% |
| a Heizleistung (heating capacity) | W | 1889 | ± 26 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -21.25 | ± 0.04 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 76.5 | ± 2.3 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 11.92 | ± 0.04 | |
| Vorlauftemperatur (water outlet temperature) | °C | 16.21 | ± 0.04 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 385.1 | ± 1.5 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -54.38 | ± -1.36 | |
| d Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 825 | ± 8 | ± 1.00% |
| Wirkleistung (power input) | W | 825 | ± 8 | |
| 3 COP (COP) | - | 2.290 | ± 0.039 | ± 1.69% |



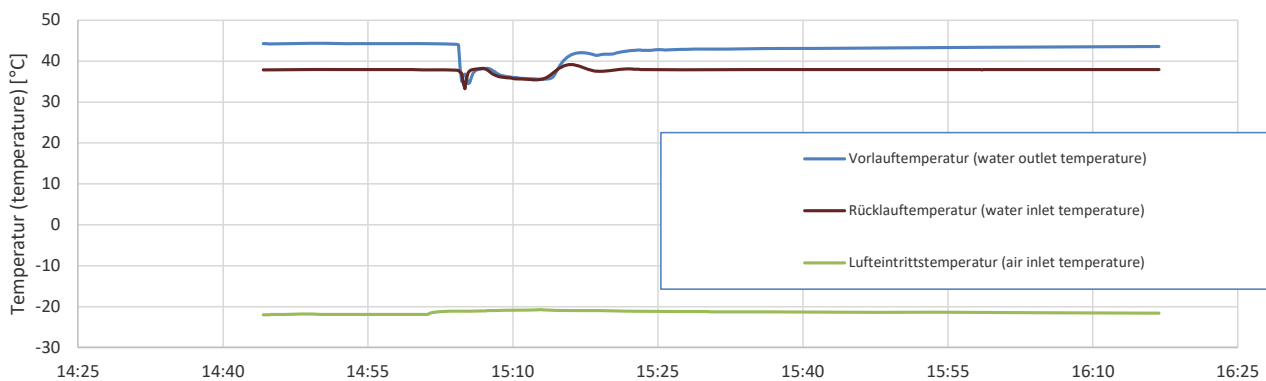
| | | | | |
|--|----------|----------|------------|------------|
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.5 | ± 2.0 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 02:12:50 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 10:00:00 | 28.02.2024 | 2024-02-28 |
| Prüfende (end of test) | hh:mm:ss | 12:12:50 | 28.02.2024 | 2024-02-28 |

6 Bemerkung (remark)
- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump

7 Prüfer (supervisor) R. Rankwiler **Prüfnorm** (test standard) EN 14511-3 passed
EN 14511-4 clause 4.2.1 passed
EN 14511-4 clause 4.6 passed

Einsatzgrenze
Usage limit**A-22 / Wxx-42.5**Prüfnummer
Test number**LW-652-24-11**

| Messgrößen Measured variables | Einheit Unit | Mittelwert Mean value | abs. Fehler absolute error | rel. Fehler relative error |
|--|--------------------|--------------------------|-------------------------------|-------------------------------|
| 1 Heizleistung (heating capacity) inkl. Umwälzpumpe (included circulation pump) | W | 2184 | ± 28 | ± 1.29% |
| a Heizleistung (heating capacity) | W | 2184 | ± 28 | |
| b Lufteintrittstemperatur (air inlet temperature) | °C | -21.39 | ± 0.04 | |
| Luftdruck (air pressure) | hPa | 972 | ± 19 | |
| Relative Luftfeuchtigkeit (relative humidity) | % | 75.7 | ± 2.3 | |
| c Rücklauftemperatur (water inlet temperature) | °C | 37.79 | ± 0.05 | |
| Vorlauftemperatur (water outlet temperature) | °C | 42.58 | ± 0.05 | |
| Massenstrom (mass flow) | kg h ⁻¹ | 408.8 | ± 1.6 | |
| Hydraulischer Druckabfall (hydraulic pressure drop) | kPa | -66.91 | ± -1.67 | |
| d Niederdruck (low pressure) | bara | - | ± - | |
| Sauggastemperatur (suction gas temperature) | °C | - | ± - | |
| Hochdruck (high pressure) | bara | - | ± - | |
| Heissgastemperatur (hot gas temperature) | °C | - | ± - | |
| Flüssigkeitstemperatur (condenser outlet temperature) | °C | - | ± - | |
| 2 Wirkleistung total (total power input) inkl. Umwälzpumpe (included circulation pump) | W | 1597 | ± 16 | ± 1.00% |
| Wirkleistung (power input) | W | 1597 | ± 16 | |
| 3 COP (COP) | - | 1.367 | ± 0.022 | ± 1.63% |



| | | | | |
|--|----------|----------|------------|------------|
| 4 Umgebungstemperatur (ambient temperature) | °C | 20.8 | ± 2.0 | |
| 5 Prüfdauer (test duration) | hh:mm:ss | 01:32:40 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 14:45:00 | 28.02.2024 | 2024-02-28 |
| Prüfende (end of test) | hh:mm:ss | 16:17:40 | 28.02.2024 | 2024-02-28 |

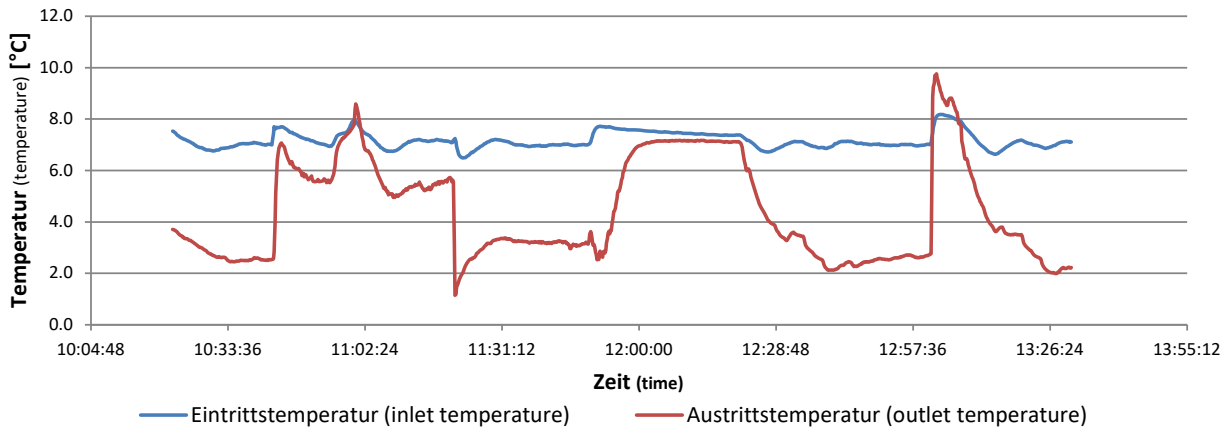
6 Bemerkung (remark)
- Messung wurde mit integrierter UWP durchgeführt / Measurement is carry out with internal installation pump

7 Prüfer (supervisor) R. Rankwiler**Prüfnorm** (test standard)

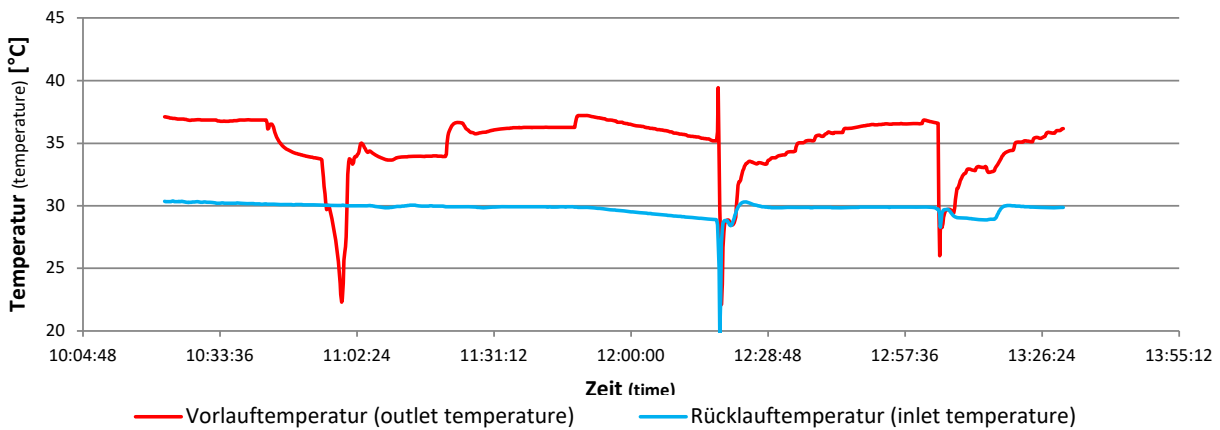
EN 14511-3 passed
 EN 14511-4 clause 4.2.1 passed
 EN 14511-4 clause 4.6 passed

| | Einheit Unit | Bemerkungen Remarks |
|--|-----------------|--|
| 1 Quelle ein/aus (Lüfter ausgeschaltet) source on/off (fan off) | hh:mm | 10:42 - 11:18 Prüfung bestanden (test passed) |
| 2 Senke ein/aus (Umwälzpumpe ausgeschaltet) sink on/off (circulation pump off) | hh:mm | 11:48 - 12:18 Prüfung bestanden (test passed) |
| 3 Netz ein/aus (Stromausfall) electric circuit on/off (power outage) | hh:mm | 13:01 Prüfung bestanden (test passed) |

Quellentemperatur (source temperature)



Senkentemperatur (sink temperature)



| | | | | |
|---------------------------------------|----------|----------|------------|------------|
| 4 Prüfdauer (test duration) | hh:mm:ss | 03:08:50 | | |
| Prüfbeginn (beginning of test) | hh:mm:ss | 10:22:00 | 04.03.2024 | 2024-03-04 |
| Prüfende (end of test) | hh:mm:ss | 13:30:50 | 04.03.2024 | 2024-03-04 |

5 Bemerkung (remark)

6 Prüfer (supervisor) R. Rankwiler, Messtechniker **Prüfnorm (test standard)** EN 14511-4 cause 4.4 passed
EN 14511-4 cause 4.5 passed

Bilddokumentation / Pictorial documentation

Prüfnummer (Test number) LW-652-24-11h

Prüfobjekt (Test type) Wienkra SEV-HPS1-06/O & SEV-MHPS3-06/I

Auftraggeber (Customer) Wienkra Sp. Z o o
Kotlarska 34
PL - 31-539 Kraków

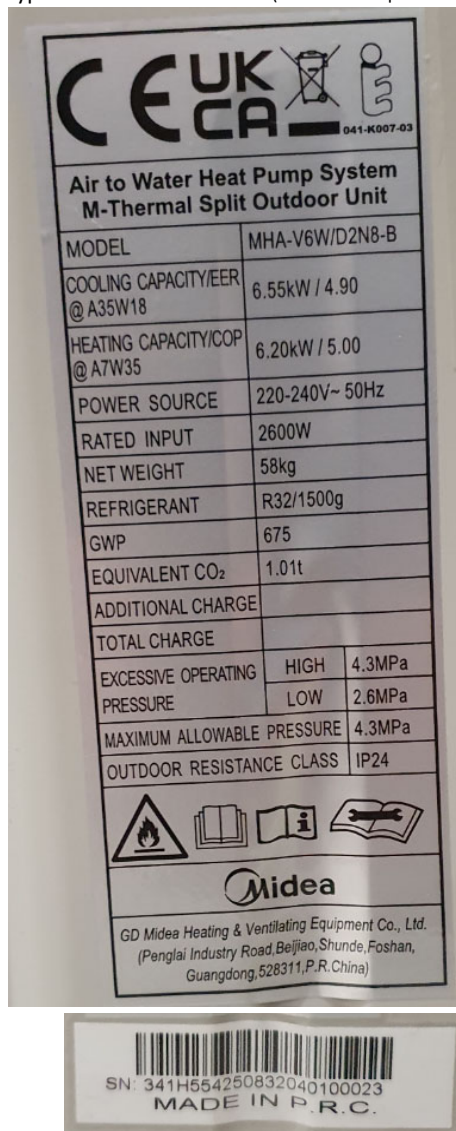
Seriennummer (Serial number) 341H554250332040100023 & 341H08501102C020100035

Identifikation / Identification

Typenschild Inneneinheit (Identification plate indoor unit)



Typenschild Ausseneinheit (Identification plate outdoor unit)



Gesamtansicht Inneneinheit (General view IDU)



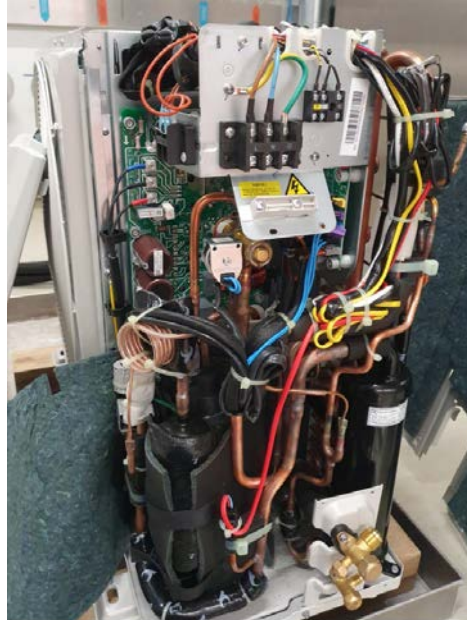
Gesamtansicht Ausseneinheit (General view ODU)



Inneneinheit offen (IDU open)



Ausseneinheit offen (ODU open)

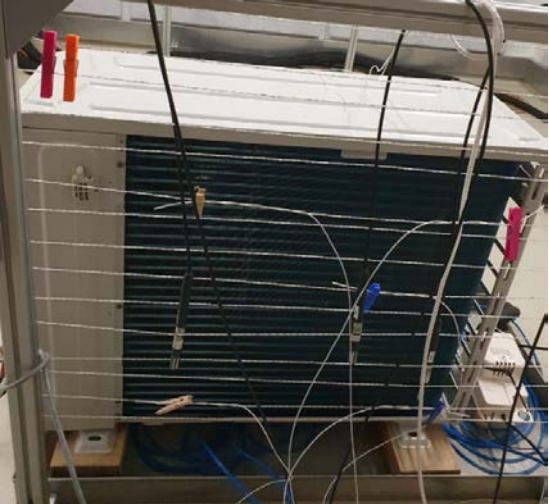


Bedienelement (control element)



Hauptkomponenten / Main components

Verdampfer (Evaporator)



Kondensator (Condenser)



Kompressor (Compressor)



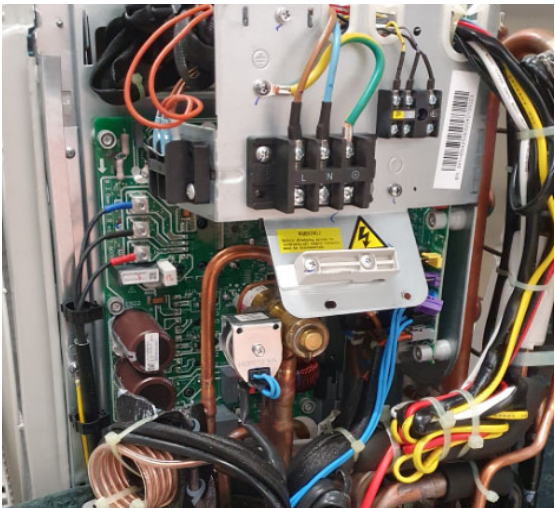
Expansionsventil (expansion valve)



Elektrische Einheit IDU (Electrical unit IDU)



Elektrische Einheit ODU (Electrical unit ODU)



Maschinenspezifische Angaben / Machine specific details

| | | | |
|--|-----------------------|--|---|
| Bauart Verdampfer (Construction of evaporator) | Lamellenwärmetauscher | | |
| Bauart Kondensator (Construction of condenser) | Plattenwärmetauscher | | |
| Kompressortyp (Compressor type) | Scroll | Anzahl Kompressor (Number of compressor) | 1 |
| Gebälseart (Construction of fan) | Axial | Anzahl Gebläse (Number of fan) | 1 |
| Bauart Expansionsventil (EXV type) | Elektronisch | | |
| Abmessungen (B x H x T) in mm Dimensions (w x h x d) | IDU | ODU | |
| | 530 x 360 x 1050 | 1050 x 800 x 500 | |
| Transportgewicht in kg (Innen- und Ausseneinheit) Transportweight (indoor and outdoor unit) | | 130kg | |

Authorization Letter

This declaration of conformity is issued under the sole responsibility of

Manufacturer's Name: GD Midea HEATING&VENTILATING Equipment Co.,Ltd.

Manufacturer's Address: Midea Industrial City, Shunde, Foshan, Guangdong, P.R. China

We declare that the following product we produced for WIENKRA SP. Z O.O. are identical to our following models

| Master company(Midea) model | SEVRA model |
|-----------------------------|---------------------|
| HB-A100/CGN8-B | SEV-MHPS3-10/I |
| HB-A160/CGN8-B | SEV-MHPS3-16/I |
| HB-A60/CGN8-B | SEV-MHPS3-06/I |
| HB-A60/CGN8-B | SEV-MHPS1-06/I |
| HBT-A100/190CD30GN8-B | SEV-MHPT-3-10-190/I |
| HBT-A160/240CD30GN8-B | SEV-MHPT-3-16-240/I |
| HBT-A100/240CD30GN8-B | SEV-MHPT-3-10-240/I |
| MHA-V4W/D2N8-B | SEV-HPS1-04/O |
| MHA-V6W/D2N8-B | SEV-HPS1-06/O |
| MHA-V8W/D2N8-B | SEV-HPS1-08/O |
| MHA-V10W/D2N8-B | SEV-HPS1-10/O |
| MHA-V12W/D2N8-B | SEV-HPS1-12/O |
| MHA-V12W/D2RN8-B | SEV-HPS3-12/O |
| MHA-V16W/D2N8-B | SEV-HPS1-16/O |
| MHA-V14W/D2N8-B | SEV-HPS1-14/O |
| MHA-V16W/D2RN8-B | SEV-HPS3-16/O |
| MHA-V14W/D2RN8-B | SEV-HPS3-14/O |
| MHC-V4W/D2N8-B | SEV-HPM01-04 |
| MHC-V6W/D2N8-B | SEV-HPM01-06 |
| MHC-V8W/D2N8-B | SEV-HPM01-08 |
| MHA-V8W/D2N8-B | SEV-HPS1-08/O |
| MHC-V10W/D2N8-B | SEV-HPM01-10 |
| MHC-V12W/D2RN8-B | SEV-HPM03-12 |
| MHC-V14W/D2RN8-B | SEV-HPM03-14 |
| MHC-V16W/D2RN8-B | SEV-HPM03-16 |
| MHC-V18W/D2RN8 | SEV-HPM03-18 |
| MHC-V22W/D2RN8 | SEV-HPM03-22 |
| MHC-V26W/D2RN8 | SEV-HPM03-26 |
| MHC-V30W/D2RN8 | SEV-HPM03-30 |

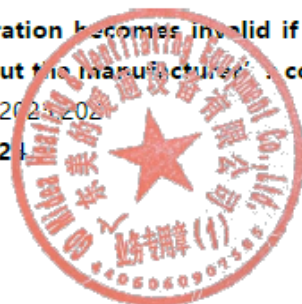
Company name: **WIENKRA SP. Z O.O.**

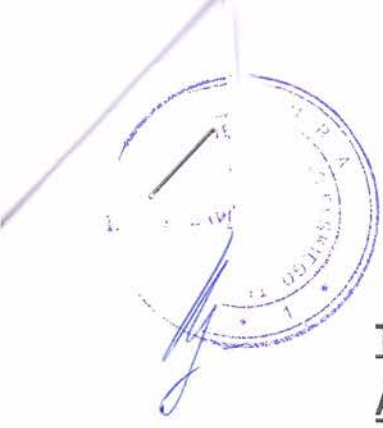
Tradename /-mark: SEVRA

Note: This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer's consent.

Production year: 2023-2024

Date : 05/06/2024





Dr Ewa Basiura | Tłumacz przysięgły języka angielskiego
ul. Młaskotów 7/2 | 30-117 Kraków | 604 387 640

**TŁUMACZENIE UWIERZYTELNIONE Z JĘZYKA
ANGIELSKIEGO (z załączonego dokumentu)---***W*

*lewym, górnym rogu dokumentu dwa logo: Swiss
Accreditation sas.admin.ch STS0499 | ilac-MRA/-*

*W prawym, górnym rogu logo: WPZ
Wärmepumpen-Testzentrum/-*

*Laboratorium badawcze akredytowane przez Swiss
Accreditation Service/-*

*Umowa wielostronna w sprawie uznawania
certyfikatów badań/-*

Nr akredytacji: STS 0499/-

Nr badania: LW-652-24-11h, Wersja 1/-

**Certyfikat badania – Pompa ciepła powietrze-
woda/-**

*Klient: Wienkra Sp. z o.o., Kotlarska 34, PL-31-539
Kraków/-*

Data badania: 21.02.2024 - 05.03.2024/-

*Producent: MBT/ GD Midea Heating & Ventilating
Equipment Co., Ltd/-*

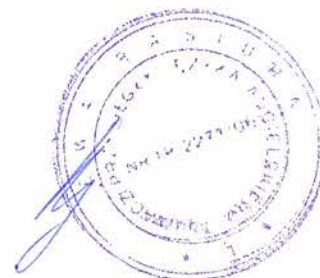
*Marka / Model: Wienkra SEV-HPS1-06/O i SEV-
MHPS3-06/I/-*

*Numer seryjny: 341H554250332040100023 i
341H08501102C020100035/-*

Typ konstrukcji: pompa ciepła split/-

Czynnik chłodniczy: R32, GWP(100) = 675/-

Wydajność czynnika chłodniczego: 1.500 kg/-



Pomiary zgodnie z następującymi normami: EN 14511:2022 i EN 14825:2022, EN 12102-1:2022 i EN ISO 9614-1:2010, Rozporządzenie testowe EHPA V2.4-/-

Niniejszy certyfikat badania nie może być powielany inaczej niż w całości bez pisemnej zgody laboratorium badawczego.-/-

Niniejsze pomiary, niepewności są podane na następnej stronie i stanowią część certyfikatu.-/-

Pieczętka i data: 05.06.2024-/-

Miejsce pomiaru: Wärmepumpen-Testzentrum WPZ, Werdenbergstrasse 4, CH - 9471 Buchs (Szwajcaria)-/-

Osoba nadzorująca: R. Rankwiler, Messtechniker-/-
Kierownik Laboratorium: M. Eschmann, Dipl. Ing. FH-/-

Stopka: OST - Ostschweizer Fachhochschule,
Wärmepumpen-Testzentrum WPZ,
Werdenbergstrasse 4, CH - 9471 Buchs SG, +41 58
257 34 02, www.wpz.ch | Strona 1 z 2-/-

U góry strony 2 dokumentu logo jak na stronie 1-/-

Wyniki | LW-652-24-11h / Wersja 1-/-

| | Warunki testowe- | Wydajność grzewcza kW- | Moc wejściowa kW- | COP- | Cdh- | CR- | Tvl-Tout-Tout-°C- |
|---|---|------------------------|-------------------|------|------|------|-------------------|
| 1 | A7W30-35- | 6,268 | 1,269 | 4,94 | - | - | - |
| 2 | A7W26-31. Temperatura biwalentna cieplejsza- | 3,837 | 0,654 | 5,87 | - | - | - |
| 3 | A-15W27.6-32.6 Temperatura biwalentna chłodniejsza- | 4,533 | 1,800 | 2,52 | - | - | - |
| 4 | A2W22-27 chłodniejsza- | 2,598 | 0,504 | 5,15 | - | - | - |
| A | A-7W29-34- | 5,677 | 1,859 | 3,05 | - | 1,00 | 33,7 |



| | | | | | | | |
|---|-------------|-------|-------|------|-------|------|------|
| C | A2W25-30- | 3,692 | 0,780 | 4,74 | - | 1,00 | 29,8 |
| D | A7W22-27- | 2,632 | 0,402 | 6,55 | 0,963 | 0,89 | 27,6 |
| D | A12W10-24- | 3,152 | 0,365 | 8,63 | 0,959 | 0,33 | 27,4 |
| E | A-10W30-35- | 5,292 | 1,850 | 2,86 | - | 1,00 | 35,0 |
| F | A-7W29-34- | 5,677 | 1,859 | 3,05 | - | 1,00 | 33,7 |

| | | | |
|---------------------------------------|----------------|----------------|------|
| Klimat- | | Przeciętny- | |
| Temperatura zastosowania- | | Niska (35 °C)- | |
| SCOP _{cn} - | 4,88 | SCOP- | 4,87 |
| Etykieta- | A+++ / 191,9 % | | |
| Pdesignh [kW]- | 6,8 | | |
| Q _H [kWh]- | 14048,8 | | |
| Temperatura punktu bivalentnego [°C]- | -7 | | |

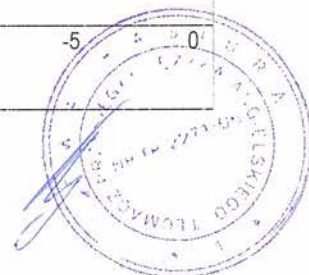
| | Warunki testowe- | Wydajność grzewcza kW- | Moc wejściowa kW- | COP- | Cdh- | CR- | T _{vl} - T _{out} - T _{out} - °C- |
|---|------------------|------------------------|-------------------|------|-------|------|--|
| 1 | A7W47-55- | 5,858 | 1,994 | 2,94 | - | - | - |
| A | A-7W44-52- | 4,929 | 2,239 | 2,20 | - | 1,00 | 51,9 |
| B | A2W34-42- | 2,940 | 0,874 | 3,36 | - | 1,00 | 42,0 |
| C | A7W28-36- | 2,786 | 0,610 | 4,57 | 0,962 | 0,71 | 37,5 |
| D | A12W22-30- | 3,382 | 0,534 | 6,34 | 0,972 | 0,26 | 33,8 |
| E | A-10W47-55- | 4,381 | 2,317 | 1,89 | - | 1,00 | 55,1 |
| F | A-7W44-52- | 4,929 | 2,239 | 2,20 | - | 1,00 | 51,9 |
| 1 | - | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - | - |

| | | | |
|---------------------------------------|-------------|------------------|------|
| Klimat- | | Przeciętny- | |
| Temperatura zastosowania- | | Średnia (55 °C)- | |
| SCOP _{cn} - | 3,48 | SCOP- | 3,47 |
| Etykieta- | A++ / 136 % | | |
| Pdesignh [kW]- | 5,7 | | |
| Q _H [kWh]- | 11776,2 | | |
| Temperatura punktu bivalentnego [°C]- | -7 | | |

Pto W 15,0 | P_{sb} W 14,6 | P_{ck} W - | P_{off} W 14,6/-

Zakres działania-/-

| | | | |
|----------------------|------------------|-----------------------------|--------------------------|
| Warunki temperatury- | A-22 / Wxx-18- | Temperatura zasilania [°C]- | 50 |
| | A-22 / Wxx-42,5- | | 40 |
| | - | | 30 |
| | - | | 20 |
| | - | | 10 |
| | - | | 0 |
| | - | | -25 |
| | | | Temperatura źródła [°C]- |



Na powyższym diagramie naniesiona strzałka umiejscowiona w zakresie pomiędzy ok. 18 a 45 (w stosunku do osi pionowej) i na poziomie ok. -23 (w stosunku do osi poziomej)-/-

Test bezpieczeństwa zgodnie z: EN 14511-4 artykuł 4.5 – zaliczony, EN 14511-4 artykuł 4.6 – zaliczony-/-

Poziom mocy akustycznej przy A7/W47-55-/-

Pomiar wewnątrz pomieszczeń: 33,1 dB(A)-/-

Pomiar na zewnątrz: 46,1 dB(A)-/-

Uwaga: test odpowiadający LW-652-24-11 MHA-V6W/D2N8-B i HB-A60/CD30GN8-B-/-

LW-652-24-11h / Wersja 1 | Strona 2 z 2-/-

Repertorium Nr 564/2024

Jako tłumacz przysięgły języka angielskiego oświadczam, że powyższe tłumaczenie jest zgodne z przedstawionym mi dokumentem.

Kraków, dnia 14 czerwca 2024 roku.






der Schweizerischen Akkreditierungsstelle akkreditierte Prüfstelle
laboratoire d'essai accrédité par le Service d'Accréditation Suisse
Testing Laboratory accredited by the Swiss Accreditation Service

Akkreditierungs-Nr.
No. d'accréditation STS 0499
Accreditation No.

The Swiss Testing Service is one of the signatories to the EAL
Multilateral Agreement for the recognition of test certificates

Prüfnummer
No. d'essai LW-652-24-11h
Test No. Version 1

Prüfzertifikat - Luft/Wasser-Wärmepumpe
Certificat d'essai - Pompes à chaleur air-eau
Test certificate - Air to water heat pump

Auftraggeber Wienkra Sp. Z o o Datum der Prüfung:
Client Kotlarska 34 Date du test 21.02.2024 - 05.03.2024
Customer PL - 31-539 Kraków Date of test

Manufacturer MBT/ GD Midea Heating & Ventilating Equipment Co.,Ltd Bauart Splitwärmepumpe
Brand / Model Wienkra SEV-HPS1-06/O & SEV-MF-PS3-06/I Type de construction machine de split
Serial Number SN: 341H554250332040103023 & 341H08501102C020100035 Type of construction split heat pump

Kältemittel R32 GWP(133) = 675 Kältemittelfüllmenge 1.500 kg
Réfrigérant Quantité de réfrigérant
Refrigerant Capacity of refrigerant

Prüfung wurde gemäss den folgenden Normen durchgeführt EN 14511:2022 and EN 14825:2022
Mesures exécutées conformément aux normes EN 12102-1:2022 and EN ISO 9614-1:2010
Measurements according to the following standards EHPA test regulation V2.4

Dieses Prüfzertifikat darf ohne schriftliche Zustimmung der Prüfstelle nicht auszugsweise vervielfältigt werden.
Ce certificat d'essai ne doit pas être reproduit, sinon en entier, sans l'autorisation écrite du laboratoire d'essai.
This test certificate shall not be reproduced except in full, without written approval of the testing laboratory.

Messresultate und Messunsicherheiten sind auf der folgenden Seite aufgeführt und sind Teil des Zertifikates.
Les résultats et les incertitudes de mesure sont donnés aux page suivante et font partie du certificat.
This measurements, the uncertainties are given on the following page and are part of the certificate.

Stempel und Datum 05.06.2024 Messort Wärmepumpen-Testzentrum WPZ
Timbre et date Site de mesure Werdenbergstrasse 4
Stamp and date Measuring site CH - 9471 Buchs (Switzerland)

Prüfer R. Rankwiler, Messtechniker
Contrôleur Chef du Laboratoire
Supervisor Head of the Laboratory
M. Eschmann, Dipl. Ing. FH

| | Prüfbedingung Condition d'essai Test condition | Heizleistung Puis. chauff. moy. Heating capacity kW | elek. Leistung Puis. elec. moy. Input power kW | COP | C _{ch} | CR | T _{VL} T _{OUT} T _{OUT} °C |
|---|--|--|---|------|-----------------|------|---|
| 1 | A7W30-35 | 6.268 | 1.269 | 4.94 | - | - | - |
| 2 | A7W26-31 T _{biv} warmer | 3.837 | 0.654 | 5.87 | - | - | - |
| 3 | A-15W27.6-32.6 T _{biv} colder | 4.535 | 1.800 | 2.52 | - | - | - |
| 4 | A2W22-27 B colder | 2.598 | 0.504 | 5.15 | - | - | - |
| A | A-7W29-34 | 5.677 | 1.859 | 3.05 | - | 1.00 | 33.7 |
| B | A2W25-30 | 3.692 | 0.780 | 4.74 | - | 1.00 | 29.8 |
| C | A7W22-27 | 2.632 | 0.402 | 6.55 | 0.963 | 0.89 | 27.6 |
| D | A12W10-24 | 3.152 | 0.365 | 8.63 | 0.959 | 0.33 | 27.4 |
| E | A-10W30-35 | 5.292 | 1.850 | 2.86 | - | 1.00 | 35.0 |
| F | A-7W29-34 | 5.677 | 1.859 | 3.05 | - | 1.00 | 33.7 |

| climate | average |
|----------------------------|----------------|
| Temperature application | low (35 °C) |
| SCOP _{er} | 4.88 |
| Labeling | A+++ / 191.9 % |
| P _{designh} [kW] | 6.8 |
| Q _h [kWh] | 14048.8 |
| T _{bivalent} [°C] | -7 |

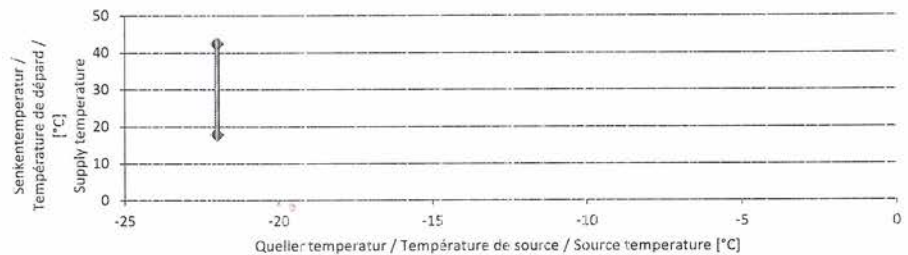
| | Prüfbedingung Condition d'essai Test condition | Heizleistung Puis. chauff. moy. Heating capacity kW | elek. Leistung Puis. elec. moy. Input power kW | COP | C _{ch} | CR | T _{VL} T _{OUT} T _{OUT} °C |
|---|--|--|---|------|-----------------|------|---|
| 1 | A7W47-55 | 5.858 | 1.994 | 2.94 | - | - | - |
| A | A-7W44-52 | 4.929 | 2.239 | 2.20 | - | 1.00 | 51.9 |
| B | A2W34-42 | 2.940 | 0.874 | 3.36 | - | 1.00 | 42.0 |
| C | A7W28-36 | 2.786 | 0.610 | 4.57 | 0.962 | 0.71 | 37.5 |
| D | A12W22-30 | 3.382 | 0.534 | 6.34 | 0.972 | 0.26 | 33.8 |
| E | A-10W47-55 | 4.381 | 2.317 | 1.89 | - | 1.00 | 55.1 |
| F | A-7W44-52 | 4.929 | 2.239 | 2.20 | - | 1.00 | 51.9 |
| 1 | - | - | - | - | - | - | - |
| 2 | - | - | - | - | - | - | - |
| 3 | - | - | - | - | - | - | - |
| 4 | - | - | - | - | - | - | - |

| climate | average |
|----------------------------|----------------|
| Temperature application | medium (55 °C) |
| SCOP _{er} | 3.48 |
| Labeling | A++ / 136 % |
| P _{designh} [kW] | 5.7 |
| Q _h [kWh] | 11776.2 |
| T _{bivalent} [°C] | -7 |

P_{to} W 15.0 P_{sb} W 14.6 P_{ck} W - P_{off} W 14.6

Einsatzgrenzen / Limites d'utilisation / Operating range:

Temperaturbedingungen A-22 / Wxx-18
 Conditions du température A-22 / Wxx-42.5
 Temperature conditions -
 -
 -
 -



Sicherheitsprüfung nach EN 14511-4 clause 4.5 bestanden / passé avec succès / passed
 Test de sécurité aux EN 14511-4 clause 4.6 bestanden / passé avec succès / passed
 Safety test according to

Schallleistungspegel bei / Niveau de puissance acoustique au / Sound power level at A7/W47-55

Innenmessung Aussenmessung
 Mesure intérieure dB(A) 33.1 Mesure extérieure dB(A) 46.1
 Indoor measurement Outdoor measurement

Hinweis / Remarque / Notice

- test correspondent to LW-652-24-11 MHA-VEW/D2N3-B & HB-A60/CD30GN8-B

OŚWIADCZENIE

Producent Sevra - Wienkra Sp. z o.o. oświadcza, iż pompy ciepła

| | | |
|----|-------------------------|--|
| 1. | Jed. Zew: SEV-HPS1-04/O | Jed. Wew. Podtyp: Bez zasobnika CWU: SEV-MHPS3-06/I Z zasobnikiem: CWU 190l: SEV-MHPT-3-10-190/I |
| 2. | Jed. Zew: SEV-HPS1-06/O | Jed. Wew. Podtyp: Bez zasobnika CWU: SEV-MHPS3-06/I Z zasobnikiem: CWU 190l: SEV-MHPT-3-10-190/I |
| 3. | | |
| 4. | | |
| 5. | | |

Należą do jednego podtypu w danym typoszeregu i spełniają łącznie następujące warunki:

- identyczna konstrukcja obiegu chłodniczego, ten sam czynnik chłodniczy/roboczy;
- ten sam producent, typ i liczba sprężarek;
- ten sam typ elementu rozprężnego;
- ten sam typ skraplacza;
- ten sam typ parownika;
- ten sam typ procesu odszraniania;
- ten sam sterownik i zasada sterowania wydajnością;

- ten sam producent, typ i liczba wentylatorów parownika (w przypadku powietrznych pomp ciepła) i zasada sterowania wydajnością (stała, zmienna lub stopniowana regulacja prędkości obrotowej);
- urządzenia z i bez zaworu czterodrogowego nie mogą być zaliczone do tego samego typoszeregu.

Kraków, 20.06.2024

Miejscowość, data



Podpis osoby upoważnionej

WIENKRA

Renata Sempka

Prezes Zarządu

WIENKRA - Kraków, ul. Kotlarska 34
tel. 12 426 55 00, fax 12 422 55 02