

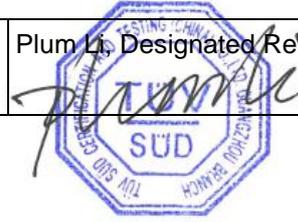


TEST REPORT PPP 18025B:2022 TUV SUD Test Report for ErP for Heat Pump Space Heater using electricity Ecodesign requirement for space heaters and combination heaters Implementation measure EU No. 813/2013	
Report No.:	64.181.23.00828.01 Rev.00
Date of issue:	2023-04-07
Project handler:	William Liang
Testing laboratory:	TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
Address:	B1F&2F, No. 3 Chuangqi Building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China
Testing location:	For Energy test: No.3, No. 9, Huasheng Beiroad, Xicheng industry zone, Renhe town, Baiyun district, Guangzhou, China For Noise tests: ShengHuiNan Road No.11, Nantou Town, Zhongshan City, Guangdong Province, China.
Client:	Guangzhou Hiseer Air Conditioning Co.,Ltd
Client number:	118448
Address:	No. 9, Huasheng Beiroad, Xicheng industry zone, Renhe town, Baiyun district, Guangzhou, China
Contact person:	Mr. ZHOU Fuhua
Standard:	This TUV SUD test report form is based on the following requirements (EU) 813/2013: 2013-08-02 (EU) 2016/2282: 2016-11-30 OJ (2014/C 207/02): 2014-07-03 Testing method: EN 14825:2022 EN 12102-1:2022
TRF number and revision:	TRF PPP 18025B:2022 rev.:00:2022-10
eDoc_ID:	--
TRF originated by:	TÜV SÜD Product Service, Mr. Gary Sun
Copyright blank test report:	This test report is based on the content of the standard (see above). The test report considered selected clauses of the a.m. standard(s) and experience gained with product testing. It was prepared by TUV SUD Product Service. TUV SUD Group takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.
General disclaimer:	This test report may only be quoted in full. Any use for advertising purposes must be granted in writing. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production.
Scheme:	<input type="checkbox"/> TUV Mark <input type="checkbox"/> without certification <input checked="" type="checkbox"/> AoC/CoC for EU-Directive / EU-Regulation: 2009/125/EC
Non-standard test method:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, see details under <i>Summary of testing</i>
National deviations:	N/A
Number of pages (Report):	28

Test Report PPP 18025B:2022



Number of pages (Attachments):		6	
Compiled by (+ signature)	William Liang, Project Handler <i>William Liang</i>	Approved by (+ signature)	Plum Li, Designated Review <i>Plum Li</i>



Test sample:	Inverter Air Source Heat Pump
Type of test object:	Air to water heat pump
Trademark:	Hiseer
Model and/ or type reference:	HS15V-DPNNW
Rating(s):	380-415V 3N~ 50Hz; Rated power: 6500W; Rated current: 11,5A; IPX4; R290.
Test sample series No:	215022330001
Manufacturer:	Guangzhou Hiseer Air Conditioning Co., Ltd
Manufacturer number:	118448
Address:	No. 9, Huasheng Beiroad, Xicheng industry zone, Renhe town, Baiyun district, Guangzhou, China
Name and address of factory(ies)	
Factory's name: Guangzhou Hiseer Air Conditioning Co.,Ltd Factory's address: No. 9, Huasheng Beiroad, Xicheng industry zone, Renhe town, Baiyun district, Guangzhou, China	
Sub-contractors / tests (clause):	Noise test
Name:	CHINA QUALITY CERTIFICATION CENTER SOUTH CHINA LABORATORY
Order description:	<input checked="" type="checkbox"/> Complete test according to TRF
	<input type="checkbox"/> Partial test according to manufacturer's specifications
	<input type="checkbox"/> Preliminary test
	<input type="checkbox"/> Spot check
	<input type="checkbox"/> Others:
Date of order:	2023-01-16
Date of receipt of test item:	2023-02-20
Date(s) of performance of test:	2023-02-20 to 2023-04-07
Test item particulars:	
Product type:	<input checked="" type="checkbox"/> Heat pump space heater
	<input type="checkbox"/> Heat pump combination heater
	<input type="checkbox"/> Split type
	<input type="checkbox"/> All in one
	<input type="checkbox"/> others:
Capacity control:	<input checked="" type="checkbox"/> Variable capacity
	<input type="checkbox"/> Fixed capacity
	<input type="checkbox"/> Staged capacity

Power source:	<input type="checkbox"/> Single phase <input checked="" type="checkbox"/> Three phase
Heat source type:	<input checked="" type="checkbox"/> air/water heat pump <input type="checkbox"/> water/water heat pump <input type="checkbox"/> brine/water heat pump
Low-temperature heat pump:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water outlet type:	<input type="checkbox"/> Fixed outlet <input checked="" type="checkbox"/> Variable outlet
Equipped with a supplementary heater:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Storage volume (l):	N/A
Load profile (if for combination heater):	<input type="checkbox"/> 3XS <input type="checkbox"/> XXS <input type="checkbox"/> XS <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> L <input type="checkbox"/> XL <input type="checkbox"/> XXL <input type="checkbox"/> 3XL <input type="checkbox"/> 4XL
Control type:	<input type="checkbox"/> Smart control (smart: 1) <input checked="" type="checkbox"/> Non-smart control (smart: 0)
Refrigerant:	R290
Refrigerant load:	1,15kg
Sound power level $L_{WA}(dB(A))$ indoor unit (dB(A)): -- outdoor unit (dB(A)): 58	
Characteristic data Dimensions Indoor unit (L xW xH)(mm): N/A Outdoor unit (L xW xH)(mm): 1060*420*1350mm Weight Indoor unit (kg): N/A Outdoor unit (kg): 132kg	

Purpose of the product (description of intended use):

These appliances are air to water heat pump outdoor unit intended for space cooling/heating water or domestic hot water in normal use, and shall be installed by qualified person according to user manual and national regulation.

The appliance were medium temperature application.

Characteristic data (not shown on the marking plate):

N/A

Attachments:

Attachment No.1: Pictures of the product (on page 23-25 of 28)

Attachment No.2: Key components table (on page 26-27 of 28)

Attachment No.3: Test equipment list (on page 28 of 28)

If additional information is necessary, please provide

N/A

Copy of marking plate:

Inverter Air Source Heat Pump

Model:	HS15V-DPNNW
Heating capacity at A7/W35°C:	4.95-15.2 kW
Cooling capacity at A35/W7°C:	3.65-10.3 kW
Power supply:	380-415V/3N~/50Hz
Nominal power consumption at heating:	1.08-3.35 kW
Nominal running current at heating:	1.9-5.89 A
Nominal power consumption at cooling:	1.15-3.98 kW
Nominal running current at cooling:	2.1-7.0 A
Rated power input:	6.5 kW
Rated current:	11.5A
Refrigerant:	R290
Filling weight:	1.15 kg
Nominal flow heating medium:	1.5-2.62 m ³ /h
Max outlet heating medium temperature:	70°C
Permissible operating pressure:	3.0MPa
Max allowable pressure:	4.2MPa
Internal pressure drop at nominal flow:	23kPa
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
N.W:	132kg
Series No.:	
Manufacture date:	
*The nominal condition is following EN14511 at dry bulb/wet bulb air temperature: 7°C /6°C, inlet water/outlet water temperature: 30°C /35°C	



Remark:

The height of WEEE marking shall be at least 7mm, the height of flame symbol without color placed on the nameplate shall be at least 10mm, the height of the flame symbol with color placed on the appliance shall be at least 30mm, the height of the symbols for reading the user manual, the repair manual and the installation manual shall be at least 10mm.

Pictures of the product:

Overall view



Remark: More pictures refer to attachment no. 1.

Summary of testing:

- deviation(s) found
- no deviations found

The product meets the Stage 1 (26 September 2015), Stage 2 (26 September 2017) and stage 3 (26 September 2018) requirement of the implementation measure.

Remark:

Requirement (Annex II)	Stage 1	Stage 2
	26 September 2015	26 September 2017
Seasonal space heating energy efficiency	Clause 1(a)	Clause 1(b)
Energy efficiency of combination heaters	Clause 2(a)	Clause 2(b)
Sound power level	Clause 3	No change
Product information related to heat pump space heater	Clause 4	No change

Note: stage 3 is not applicable to electric using only products

Additional information:

- 1) The appliance is air to water heat pump, including a whole compression type refrigerant circuit to heat water in another circuit. The appliance was for cooling and heating water function, this report only for heating capacity test.
- 2) The main power is supplied by a 5-pole supply cord connecting to fixed wiring.
- 3) Water enthalpy method was adopted in this report.
- 4) Standby mode power, off mode power and thermostat-off mode power were tested according to clause 12 of standard EN 14825:2022.
- 5) According the test result, the product meets the Stage 2 (26 September 2017).

Additional information on non-standard test method(s)

Sub clause: N/A

Page: N/A

Rational: N/A

General remarks:

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced except in full without the written approval of the testing laboratory.

Measurement uncertainty budgets have been determined for applicable test methods and are available upon request.

Possible test case verdicts:

test case does not apply to the test object: N/A (not applicable / not included in the order)

test object does meet the requirement: P (Pass)

test object does not meet the requirement: F (Fail)

Possible suffixes to the verdicts:

- suffix for detailed information for the client: - C (Comment)

- suffix for important information for factory inspection: - M (Manufacturing)

Clause	Requirement – Test	Measuring result – Remark	Verdict
	EC Regulation 813/2013		--
Article 1	Subject matter and scope		P
1.	This Regulation establishes ecodesign requirements for the placing on the market and/or putting into service of space heaters and combination heaters with a rated heat output \leq 400 kW, including those integrated in packages of space heater, temperature control and solar device or packages of combination heater, temperature control and solar device as defined in Article 2 of Commission Delegated Regulation (EU) No 811/2013.		P
2.	This Regulation shall not apply to:		N/A
(a)	Heaters specifically designed for using gaseous or liquid fuels predominantly produced from biomass;		N/A
(b)	Heaters using solid fuels;		N/A
(c)	Heaters within the scope of Directive 2010/75/EU of the European Parliament and of the Council;		N/A
(d)	Heaters generating heat only for the purpose of providing hot drinking or sanitary water;		N/A
(e)	Heaters for heating and distributing gaseous heat transfer media such as vapour or air;		N/A
(f)	Cogeneration space heaters with a maximum electrical capacity of 50kW or above;		N/A
(g)	Heat generators designed for heaters and heater housings to be equipped with such heat generators placed on the market before 1 January 2018 to replace identical heat generators and identical heater housings. The replacement product or its packaging shall clearly indicate the heater for which it is intended.		N/A

Annex II	Ecodesign requirements		P
1	Requirements for seasonal space heating energy efficiency (η_s)		P
(a)	From 26 September 2015 the seasonal space heating energy efficiency shall not fall below the following values:	Tested $\eta_s(\%)$: Limit $\eta_s(\%)$:	N/A
	- Heat pump space heaters , with the exception of low-temperature heat pumps: 100%;		N/A
	- Low-temperature heat pumps : 115%.		N/A
(b)	From 26 September 2017 the seasonal space heating energy efficiency of heat pump space heaters and heat pump combination heaters shall not fall below the following values:		P

Clause	Requirement – Test	Measuring result – Remark	Verdict																						
	- Heat pump space heaters, with the exception of low-temperature heat pumps: 110%;	See table 2: Tested $\eta_s(\%)$:156,6%	P																						
	- Low-temperature heat pumps: 125%.	See table 2a: Tested $\eta_s(\%)$:196,2%	for reference																						
2	Requirements for water heating energy efficiency (η_{wh})		N/A																						
(a)	(a) From 26 September 2015 the water heating energy efficiency of combination heaters shall not fall below the following values: $\eta_{wh}(\%)$:	Load profile: Tested $\eta_{wh}(\%)$: Limited $\eta_{wh}(\%)$:	N/A																						
	<table border="1"> <tr> <td>Declared load profile</td> <td>3XS</td> <td>XXS</td> <td>XS</td> <td>S</td> <td>M</td> <td>L</td> <td>XL</td> <td>XXL</td> <td>3XL</td> <td>4XL</td> </tr> <tr> <td>η_{wh}</td> <td>22%</td> <td>23%</td> <td>26%</td> <td>26%</td> <td>30%</td> <td>30%</td> <td>30%</td> <td>32%</td> <td>32%</td> <td>32%</td> </tr> </table>	Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	η_{wh}	22%	23%	26%	26%	30%	30%	30%	32%	32%	32%		N/A
Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL															
η_{wh}	22%	23%	26%	26%	30%	30%	30%	32%	32%	32%															
(b)	(a) From 26 September 2017 the water heating energy efficiency of combination heaters shall not fall below the following values: $\eta_{wh}(\%)$:	Load profile: Tested $\eta_{wh}(\%)$: Limited $\eta_{wh}(\%)$:	N/A																						
	<table border="1"> <tr> <td>Declared load profile</td> <td>3XS</td> <td>XXS</td> <td>XS</td> <td>S</td> <td>M</td> <td>L</td> <td>XL</td> <td>XXL</td> <td>3XL</td> <td>4XL</td> </tr> <tr> <td>η_{wh}</td> <td>32%</td> <td>32%</td> <td>32%</td> <td>32%</td> <td>36%</td> <td>37%</td> <td>38%</td> <td>60%</td> <td>64%</td> <td>64%</td> </tr> </table>	Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	η_{wh}	32%	32%	32%	32%	36%	37%	38%	60%	64%	64%		N/A
Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL															
η_{wh}	32%	32%	32%	32%	36%	37%	38%	60%	64%	64%															
3	Requirements for sound power level (L_{WA})		P																						
	From 26 September 2015 the sound power level of heat pump space heater and heat pump combination heaters shall not exceed the following values:		P																						
	<table border="1"> <tr> <td>Rated heat output</td> <td>$L_{WA,indoors}$</td> <td>$L_{WA,outdoors}$</td> </tr> <tr> <td>≤ 6 kW</td> <td>≤ 60 dB</td> <td>≤ 65 dB</td> </tr> <tr> <td>>6 kW and ≤ 12 kW</td> <td>≤ 65 dB</td> <td>≤ 70 dB</td> </tr> <tr> <td>> 12 kW and ≤ 30 kW</td> <td>≤ 70 dB</td> <td>≤ 78 dB</td> </tr> <tr> <td>> 30 kW and ≤ 70 kW</td> <td>≤ 80 dB</td> <td>≤ 88 dB</td> </tr> </table>	Rated heat output	$L_{WA,indoors}$	$L_{WA,outdoors}$	≤ 6 kW	≤ 60 dB	≤ 65 dB	>6 kW and ≤ 12 kW	≤ 65 dB	≤ 70 dB	> 12 kW and ≤ 30 kW	≤ 70 dB	≤ 78 dB	> 30 kW and ≤ 70 kW	≤ 80 dB	≤ 88 dB	Rated heat output: 12,5 kW Tested: $L_{WA,indoors}$ (dB): N/A $L_{WA,outdoors}$ (dB): 58 dB	P							
Rated heat output	$L_{WA,indoors}$	$L_{WA,outdoors}$																							
≤ 6 kW	≤ 60 dB	≤ 65 dB																							
>6 kW and ≤ 12 kW	≤ 65 dB	≤ 70 dB																							
> 12 kW and ≤ 30 kW	≤ 70 dB	≤ 78 dB																							
> 30 kW and ≤ 70 kW	≤ 80 dB	≤ 88 dB																							
4	Requirements for product information		P																						
	From 26 September 2015 the following product information on heater shall be provided:		P																						
(a)	The instruction manuals for installers and end-users, free access websites of manufacturers, their authorised representatives and importers shall contain the following elements:		P																						
	- For heat pump space heaters and heat pump combination heaters, the technical parameters set out in Table 2 of clause 5 in Annex II , measured and calculated in accordance with Annex III;		P																						

Clause	Requirement – Test	Measuring result – Remark	Verdict
(b)	The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:		P
	-The elements specified in point(a);		P
	-For heat pump space heaters and heat pump combination heaters where the information relating to a specific model comprising a combination of indoor and outdoor units has been obtained by calculation on the basis of design and/or extrapolation from other combinations, the details of such calculations and/or extrapolations, and of any tests undertaken to verify the accuracy of the calculations, including details of the mathematical model for calculating the performance of such combinations and details of the measurements taken to verify this model.		P

ANNEX III	Measurements and calculations		P
1.	For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods. They shall meet the conditions and technical parameters set out in points 2 to 5.	Standards considered: See OJ (2014/C 207/02): 2014-07-03	P
2.	General conditions for Measurements and calculations		P
(a)	For the purposes of the measurements set out in point 2 to 5, the indoor ambient temperature shall be set at 20°C±1°C.		N/A
(b)	For the purposes of the calculations set out in point 3 to 5, consumption of electricity shall be multiplied by a conversion coefficient CC of 2,5.		P
(c)	Emissions of nitrogen oxides shall be measured as the sum of nitrogen monoxide and nitrogen dioxide, and expressed in nitrogen dioxide.		NA
(d)	For heaters equipped with supplementary heaters, the measurement and calculation of rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and emissions of nitrogen oxides shall take account of the supplementary heater.		P
(e)	Declared values for rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and		P

Clause	Requirement – Test	Measuring result – Remark	Verdict																																	
	emissions of nitrogen oxides shall be rounded to the nearest integer.																																			
(f)	Any heat generator designed for a heater, and heater housing to be equipped with such a heat generator, shall be tested with an appropriate heater housing and heat generator respectively.		P																																	
3.	Seasonal space heating energy efficiency of boiler space heaters, boiler combination heater and cogeneration space heaters		N/A																																	
4	Seasonal space heating energy efficiency of heat pump space heaters and heat pump combination heaters		P																																	
(a)	For establishing the rated coefficient of performance COP_{rated} or rated primary energy ratio PER_{rated} , the sound power level or emissions of nitrogen oxides, the operating conditions shall be the standard rating conditions set out in Table 3 of ANNEX III and the same declared capacity for heating shall be used;		P																																	
	<p>Table 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Heat source</th> <th>Outdoor heat exchanger</th> <th colspan="4">Indoor heat exchanger</th> </tr> <tr> <th>Inlet dry bulb (Web bulb) temperature</th> <th colspan="2">Heat pump space heaters and heat pump combination heaters, except low-temperature heat pump</th> <th colspan="2">Low-temperature heat pump</th> </tr> <tr> <th>Outdoor air</th> <td>+7°C(+6°C)</td> <th>Inlet temperature</th> <th>Outlet temperature</th> <th>Inlet temperature</th> <th>Outlet temperature</th> </tr> </thead> <tbody> <tr> <th>Exhaust air</th> <td>+20°C(+12°C)</td> <td rowspan="3">+47°C</td> <td rowspan="3">+55°C</td> <td rowspan="3">+30°C</td> <td rowspan="3">+35°C</td> </tr> <tr> <th>--</th> <td>Inlet/outlet temperature</td> </tr> <tr> <th>Water</th> <td>+10°C/+7°C</td> </tr> <tr> <th>Brine</th> <td>0°C/-3°C</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Heat source	Outdoor heat exchanger	Indoor heat exchanger				Inlet dry bulb (Web bulb) temperature	Heat pump space heaters and heat pump combination heaters, except low-temperature heat pump		Low-temperature heat pump		Outdoor air	+7°C(+6°C)	Inlet temperature	Outlet temperature	Inlet temperature	Outlet temperature	Exhaust air	+20°C(+12°C)	+47°C	+55°C	+30°C	+35°C	--	Inlet/outlet temperature	Water	+10°C/+7°C	Brine	0°C/-3°C						P
Heat source	Outdoor heat exchanger		Indoor heat exchanger																																	
	Inlet dry bulb (Web bulb) temperature	Heat pump space heaters and heat pump combination heaters, except low-temperature heat pump		Low-temperature heat pump																																
Outdoor air	+7°C(+6°C)	Inlet temperature	Outlet temperature	Inlet temperature	Outlet temperature																															
Exhaust air	+20°C(+12°C)	+47°C	+55°C	+30°C	+35°C																															
--	Inlet/outlet temperature																																			
Water	+10°C/+7°C																																			
Brine	0°C/-3°C																																			
(b)	The active mode coefficient of performance SCOP_{on} or active mode primary energy ratio SPER_{on} shall be calculated on the basis of the part load for heating Ph(T_j) , the supplementary capacity for heating sup(T_j) (if applicable) and the bin-specific coefficient of performance COP_{bin}(T_j) or bin-specific primary energy ratio PER_{bin}(T_j) , weighted by the bin-hours for which the bin conditions apply, using the following conditions:		P																																	

Clause	Requirement – Test	Measuring result – Remark	Verdict									
	-The reference design conditions set out in Table 4; -The European reference heating season under average climate conditions set out in Table 5 of ANNEX III; -If applicable, the effects of any degradation of energy efficiency caused by cycling depending on the type of control of the heating capacity;		P									
	Table 4 <table border="1" data-bbox="311 638 1225 817" style="margin-left: 20px;"> <thead> <tr> <th>Reference design temperature</th> <th>Bivalent temperature</th> <th>Operation limit temperature</th> </tr> </thead> <tbody> <tr> <td>T_{design}</td> <td>T_{biv}</td> <td>TOL</td> </tr> <tr> <td>-10 (-11)°C</td> <td>Maximum +2°C</td> <td>Maximum -7°C</td> </tr> </tbody> </table>	Reference design temperature	Bivalent temperature	Operation limit temperature	T _{design}	T _{biv}	TOL	-10 (-11)°C	Maximum +2°C	Maximum -7°C		P
Reference design temperature	Bivalent temperature	Operation limit temperature										
T _{design}	T _{biv}	TOL										
-10 (-11)°C	Maximum +2°C	Maximum -7°C										
(c)	The reference annual heat demand Q_H shall be the design load for heating P_{designh} multiplied by the annual equivalent active mode hours H_{HE} of 2066; $Q_H = P_{designh} * H_{HE}$		P									
(d)	The annual energy consumption Q_{HE} shall be calculated as the sum of:		P									
	-The ratio of the reference annual heating demand Q_H and the active mode coefficient of performance SCOP_{on} or active mode primary energy ratio SPER_{on} and		P									
	-The energy consumption for off, thermostat-off, standby, and crankcase heater mode during the heating season; $Q_{HE} = Q_H + SCOP_{on}(SPER_{on}) + P_{TO} + P_{SB} + P_{CK} + P_{OFF}$		P									
(e)	The seasonal coefficient of performance SCOP or seasonal primary energy ratio SPER shall be calculated as the ratio of the reference annual heat demand Q_H and the annual energy consumption Q_{HE} ; $SCOP(SPERS) = Q_H / Q_{HE}$		P									
(f)	The seasonal space heating energy efficiency η_s shall be calculated as the seasonal coefficient of performance SCOP divided by the conversion coefficient CC or the seasonal primary energy ratio SPER , corrected by contributions accounting for temperature controls and, for water-/brine-to-water heat pump space heaters and heat pump combination heaters, the electricity consumption of one or more ground water pumps. $\eta_s = SCOP / CC - \sum F(i)$ $\eta_s = SPER / CC - \sum F(i)$		P									

Clause	Requirement – Test	Measuring result – Remark	Verdict
5	Water heating energy efficiency of combination heaters		N/A
(a)	The water heating energy efficiency η_{wh} of a combination heater shall be calculated as the ratio between the reference energy Q_{ref} of the declared load profile and the energy required for its generation under the following conditions:		N/A
(b)	measurements shall be carried out using the load profiles set out in Table 7;		N/A
	measurements shall be carried out using a 24-hour measurement cycle as follows: — 00:00 to 06:59: no water draw-off; — from 07:00: water draw-offs according to the declared load profile; — from end of last water draw-off until 24:00: no water draw-off;		N/A
(c)	the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile;		N/A
(d)	for heat pump combination heaters, the following additional conditions apply:		N/A
	— heat pump combination heaters shall be tested under the conditions set out in Table 3;		N/A
	— heat pump combination heaters which use ventilation exhaust air as the heat source shall be tested under the conditions set out in Table 6.		N/A
Additional requirements from Commission communication (2014/C 207/02): 2014-07-03			P
5	Additional elements for calculations related to the seasonal space heating energy efficiency of heat pump space heaters and heat pump combination heaters		P
5.1	Calculation of the seasonal space heating energy efficiency		P
	The seasonal space heating energy efficiency η_s is defined as		P
(a)	for heat pump space heaters and heat pump combination heaters using electricity : $\eta_s = (100/CC) \times COP - \sum F(i)$		P
(b)	for heat pump space heaters and heat pump combination heaters using fuels:		N/A
	F(i) are corrections calculated according to point 5.2 and expressed in %. SCOP and SPER shall be calculated according to the tables in 5.3, and are expressed in %.		N/A
5.2	Calculation of F(i)		P

Clause	Requirement – Test	Measuring result – Remark	Verdict																														
(a)	For heat pump space heaters and heat pump combination heaters, the correction is $F(1) = 3\%$.		P																														
(b)	The correction $F(2)$ accounts for a negative contribution to the seasonal space heating energy efficiency by electricity consumption of ground water pump(s) expressed in %. For water-/brine-to-water heat pump space heaters and heat pump combination heaters, the correction is $F(2) = 5\%$.		N/A																														
5.3	Hours for the calculation of SCOP or SPER		P																														
	For the calculation of SCOP or SPER the following reference number of hours that the units work in active mode, thermostat off mode, standby mode, off more and crankcase heater mode shall be used:		P																														
	Number of hours used for heating only <table border="1" data-bbox="311 846 1281 1238"> <thead> <tr> <th></th> <th>On mode</th> <th>Thermostat-off mode</th> <th>Standby mode</th> <th>Off mode</th> <th>Crankcase heater mode</th> </tr> <tr> <th></th> <th>H_{HE}</th> <th>H_{TO}</th> <th>H_{SB}</th> <th>H_{OFF}</th> <th>H_{CK}</th> </tr> </thead> <tbody> <tr> <td>Average climate (h/y)</td> <td>2066</td> <td>178</td> <td>0</td> <td>3672</td> <td>3850</td> </tr> <tr> <td>Warmer climate (h/y)</td> <td>1336</td> <td>754</td> <td>0</td> <td>4416</td> <td>5170</td> </tr> <tr> <td>Colder climate (h/Y)</td> <td>2465</td> <td>106</td> <td>0</td> <td>2208</td> <td>2314</td> </tr> </tbody> </table>		On mode	Thermostat-off mode	Standby mode	Off mode	Crankcase heater mode		H_{HE}	H_{TO}	H_{SB}	H_{OFF}	H_{CK}	Average climate (h/y)	2066	178	0	3672	3850	Warmer climate (h/y)	1336	754	0	4416	5170	Colder climate (h/Y)	2465	106	0	2208	2314		N/A
	On mode	Thermostat-off mode	Standby mode	Off mode	Crankcase heater mode																												
	H_{HE}	H_{TO}	H_{SB}	H_{OFF}	H_{CK}																												
Average climate (h/y)	2066	178	0	3672	3850																												
Warmer climate (h/y)	1336	754	0	4416	5170																												
Colder climate (h/Y)	2465	106	0	2208	2314																												
	Number of hours used for reversible heat pumps <table border="1" data-bbox="311 1285 1281 1677"> <thead> <tr> <th></th> <th>On mode</th> <th>Thermostat-off mode</th> <th>Standby mode</th> <th>Off mode</th> <th>Crankcase heater mode</th> </tr> <tr> <th></th> <th>H_{HE}</th> <th>H_{TO}</th> <th>H_{SB}</th> <th>H_{OFF}</th> <th>H_{CK}</th> </tr> </thead> <tbody> <tr> <td>Average climate (h/y)</td> <td>2066</td> <td>178</td> <td>0</td> <td>0</td> <td>178</td> </tr> <tr> <td>Warmer climate (h/y)</td> <td>1336</td> <td>754</td> <td>0</td> <td>0</td> <td>754</td> </tr> <tr> <td>Colder climate (h/Y)</td> <td>2465</td> <td>106</td> <td>0</td> <td>0</td> <td>106</td> </tr> </tbody> </table> <p>H_{HE}, H_{TO}, H_{SB}, H_{CK}, H_{OFF} = Number of hours the unit is considered to work in respectively, active mode, thermostat off mode, standby mode, crankcase heater mode and off mode.</p>		On mode	Thermostat-off mode	Standby mode	Off mode	Crankcase heater mode		H_{HE}	H_{TO}	H_{SB}	H_{OFF}	H_{CK}	Average climate (h/y)	2066	178	0	0	178	Warmer climate (h/y)	1336	754	0	0	754	Colder climate (h/Y)	2465	106	0	0	106		P
	On mode	Thermostat-off mode	Standby mode	Off mode	Crankcase heater mode																												
	H_{HE}	H_{TO}	H_{SB}	H_{OFF}	H_{CK}																												
Average climate (h/y)	2066	178	0	0	178																												
Warmer climate (h/y)	1336	754	0	0	754																												
Colder climate (h/Y)	2465	106	0	0	106																												

Test record:

Table 1	Part load test (Medium temperature application):							P
Model:	HS15V-DPNNW				Fixed outlet <input type="checkbox"/> , variable outlet <input checked="" type="checkbox"/>			
General test conditions	Unit	A	B	C	D	E	F	G
Part-Load	%	88,46	53,85	34,62	15,38	100	88,46	--
Voltage	V	400,6	399,4	399,5	407,4	396,8	400,6	--
Frequency	Hz	50	50	50	50	50	50	--
Total power input	kW	4,223	1,813	1,158	1,044	4,260	4,223	--
Test conditions for outdoor side heat exchange for air to water								
Inlet dry bulb temperature	°C	-6,99	2,00	7,00	12,01	-10,00	-6,99	--
Inlet wet bulb temperature	°C	-8,00	0,94	6,06	11,09	-10,97	-8,00	--
Test conditions for outdoor side heat exchange for water/brine to water								
Inlet/outlet temperature	°C	N/A	N/A	N/A	N/A	N/A	N/A	--
Water/brine flow rate	m ³ /h	N/A	N/A	N/A	N/A	N/A	N/A	--
Test conditions for water side heat exchange								
Inlet water temperature	°C	44,41	37,40	33,00	28,70	48,50	44,41	--
Outlet water temperature	°C	51,99	42,02	36,94	33,32	55,32	51,99	--
Water flow rate	m ³ /h	1,27	1,27	1,27	1,27	1,27	1,27	--
Test results:								
Total heating capacity	kW	11,017	6,691	5,705	6,686	9,892	11,017	--
Effective power input	kW	4,130	1,720	1,065	0,951	4,168	4,130	--
Coefficient of performance	-	2,67	3,89	5,36	7,03	2,37	2,67	--
Compressor frequency	Hz	85	41	30	30	85	85	--
Supplementary information: With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 11,653kW, the power is 3,333kW, COP is 3,50 kW/kW.								

Table 2	Calculation for seasonal space heating energy efficiency (Medium temperature application):					P
Model:	HS15V-DPNNW		Heat pump only <input type="checkbox"/> , reversible heat pump <input checked="" type="checkbox"/>			
T _{designh} (°C):	-10					
P _{designh} (kW):	12,454					
T _{biv} (°C):	-7					
TOL(°C):	-10					
	Part load (kW)	Measured ca- capacity (kW)	COP at measured capacity	C _c	CR _u	COP at part load
E	12,454	9,892	2,37	0,00	1,00	2,37
F	11,017	11,017	2,67	0,00	1,00	2,67
A	11,017	11,017	2,67	0,00	1,00	2,67
B	6,706	6,691	3,89	0,00	1,00	3,89
C	4,311	5,705	5,36	0,90	0,76	5,19
D	1,916	6,686	7,03	0,90	0,29	5,63
Low power mode power consumption						
Thermostat-off mode [P _{TO}] W		Standby mode [P _{SB}]		Crankcase heater [P _{CK}]		Off mode [P _{OFF}]
0,002		0,002		0		0,002
SCOP _{on} : 3,99						
SCOP: 3,99						
Correction F(1) = 3%						
Correction F(2) = 5% (for water/brine to water heat pump)						
η _s : 156,6%						
Seasonal space heating energy efficiency classes: A+++ (According to (EU) No 811/2013 Table 1)						
Supplementary information: CR _u : part load divided by capacity.						

Test record for Low temperature application (Optional)

Table 1a	Part load test (Low temperature application)							P
Model:	HS15V-DPNNW				Fixed outlet <input type="checkbox"/> , variable outlet <input checked="" type="checkbox"/>			
General test conditions	Unit	A	B	C	D	E	F	G
Part-Load	%	88,46	53,85	34,62	15,38	100	88,46	--
Voltage	V	396,5	403,5	394,7	396,9	396,3	396,5	--
Frequency	Hz	50	50	50	50	50	50	--
Total power input	kW	3,478	1,620	0,989	0,922	3,468	3,478	--
Test conditions for outdoor side heat exchange for air to water								
Inlet dry bulb temperature	°C	-7,00	2,00	7,00	12,00	-10,00	-7,00	--
Inlet wet bulb temperature	°C	-8,07	1,06	6,03	11,02	-11,03	-8,07	--
Test conditions for outdoor side heat exchange for water/brine to water								
Inlet/outlet temperature	°C	N/A	N/A	N/A	N/A	N/A	N/A	--
Water/brine flow rate	m ³ /h	N/A	N/A	N/A	N/A	N/A	N/A	--
Test conditions for water side heat exchange								
Inlet water temperature	°C	29,29	27,09	25,20	23,20	30,69	29,29	--
Outlet water temperature	°C	33,97	30,04	27,58	25,76	34,97	33,97	--
Water flow rate	m ³ /h	2,12	2,12	2,12	2,12	2,12	2,12	--
Test results:								
Total heating capacity	kW	11,358	7,134	5,766	6,217	10,369	11,358	--
Effective power input	kW	3,338	1,479	0,849	0,781	3,328	3,338	--
Coefficient of performance	-	3,40	4,82	6,79	7,96	3,12	3,40	--
Compressor frequency	Hz	85	42	30	30	85	85	--
Supplementary information:								
1. With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 12,219 kW, the power is 2,434 kW, COP is 5,02 kW/kW.								



Table 2a		Calculation for seasonal space heating energy efficiency (Low temperature application)					P
Model:	HS15V-DPNNW		Heat pump only <input type="checkbox"/> , reversible heat pump <input checked="" type="checkbox"/>				
T _{designh} (°C):		-10					
P _{designh} (kW):		12,839					
T _{biv} (°C):		-7					
TOL(°C):		-10					
	Part load (kW)	Measured ca- capacity (kW)	COP at measured capacity	C _c	CR _u	COP at part load	
E	12,839	10,369	3,12	0,00	1,00	3,12	
F	11,358	11,358	3,40	0,00	1,00	3,40	
A	11,358	11,358	3,40	0,00	1,00	3,40	
B	6,913	7,134	4,82	0,00	0,97	4,82	
C	4,444	5,766	6,79	0,90	0,77	6,59	
D	1,975	6,217	7,96	0,90	0,32	6,55	
Low power mode power consumption							
Thermostat-off mode [P _{TO}] W		Standby mode [P _{SB}]	Crankcase heater [P _{CK}]	Off mode [P _{OFF}]			
0.002		0.002	0	0.002			
SCOP _{on} : 4,98							
SCOP: 4,98							
Correction F(1) = 3%							
Correction F(2) = 5% (for water/brine to water heat pump)							
η _s : 196,2%							
Seasonal space heating energy efficiency classes: A+++ (According (EU) No 811/2013 Table 2)							
Supplementary information: CR _u : part load divided by capacity.							



Table 3: Water heating energy efficiency (η_{wh})		N/A	
Model :	/	Declared load profile:	
	Heat source, Air temperature DB/WB (°C):	/	
	Ambient temperature of storage tank (°C):		
	Voltage (V):		
	Frequency (Hz):		
Measured quantity		Result	Remark
Standby heat loss P_{stby}^{***} (kW)			
Reference energy Q_{ref}^{***} (kWh)			
Daily electricity consumption Q_{elec}^{***} (kWh)			
Weekly electricity consumption with smart controls $Q_{elec,week,smart}^{***}$ (kWh)			
Weekly electricity consumption without smart controls $Q_{elec,week}^{***}$ (kWh)			
Smart control factor SCF *			
Smart control compliance smart			
Ambient correction term Q_{cor}^*			
Water heating energy efficiency (smart=0) η_{wh}^*			
Water heating energy efficiency (smart=1) η_{wh}^*			
Supplementary information: Number of brine pump considered: Setting of controls: Duct connection: Note: η_{wh} , Q_{ref} , Q_{elec} are calculated acc. to (EU) 814/2013 Annex IV § 3.a and OJ (2014/C 207/03) Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			



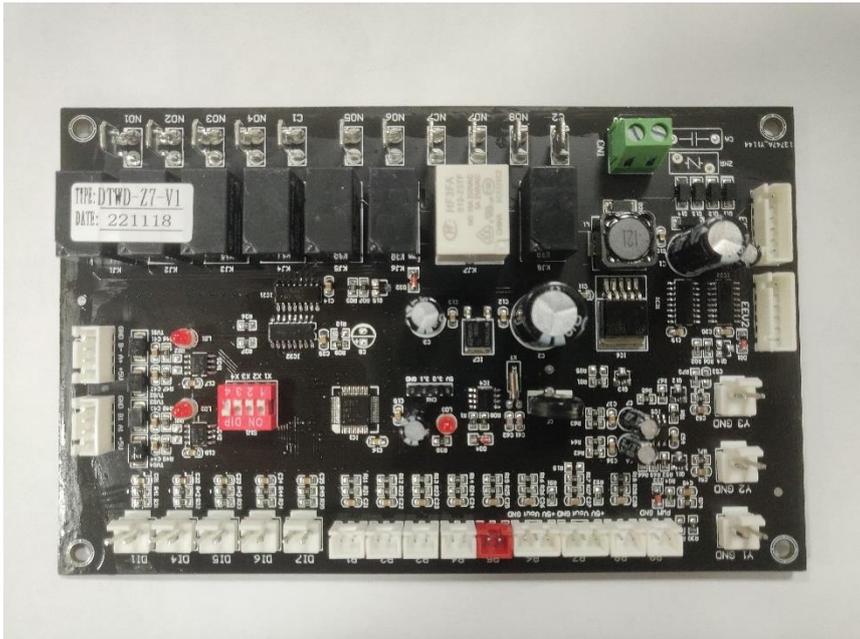
Table 4:		Sound power level measurement		P
Model :	HS15V-DPNNW			
	Heat source, Air temperature DB/WB (°C):	7,0/6,0		
	Water inlet/outlet temperature(°C):	47,0/54,9		
	Voltage (V):	400,1V 3N ~		
	Frequency (Hz):	50 Hz		
	Working condition class.....:	Class A		
	Acoustical environment.....:	Hemi-anechoic room		
	Windshield type.....:	Sponge		
	Measured position amount	14		
Measured quantity		LWA,indoors	LWA,outdoors	Remark
Sound pressure level \bar{L}_{pf}^{****}		--	43	--
Spheres radius r *		--	1,0m	--
Sound power level L_{wA}^{****}		--	58	--
Supplementary information: Setting of controls: according to user manual. Duct connection: No duct. Fan speed: 650 r/min, compressor speed: 65Hz. Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer				

Attachment No.1: Pictures of the product

Details of:	Appearance
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	Compressor
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	Fan Motor
<p>View:</p> <input type="checkbox"/> General <input type="checkbox"/> Front <input type="checkbox"/> Rear <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Top <input type="checkbox"/> Bottom	 <p>RESIN PACK BRUSHLESS DC MOTOR 塑封无刷直流电动机 ZKSP-100-8-31 DC310V 121W 930r/min E级 8极 转向 (ROT.) ← 广东威灵电机制造有限公司 GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD. Q.C.Pass RoHS 20221226 000003 2A01 ZKSP-100-8-31(SZ)</p>

Details of:	Main Control Board
<p>View:</p> <input type="checkbox"/> General <input type="checkbox"/> Front <input type="checkbox"/> Rear <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Top <input type="checkbox"/> Bottom	 <p>TYPE: DTWD-Z7-V1 DATE: 221118</p>

Details of:	Water Pump
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Attachment No.2: Key Components Table

Part		Technical data
1. Compressor		
	Manufacture:	Shanghai Highly (Group) Co., Ltd.
	Type:	WHP13300PSDPC8FQ
	Rated capacity:	13.3kW
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture	Multistack Thermal Co., Ltd.
	Type	MTB080HP-45-Q(H)
	Bauart Construction	Brazed plate heat exchanger
	Number of plate	45
	Plate spacing	1.95mm
	Water pip specification	G1-1/4"
	Max. permissible pressure	45bar
	Dimension	W X H X D: 126.6 x 541.8 x109 [mm x mm x mm]
3. Evaporator		
	Manufacture	Foshan Nanhai Tansda Refrigeration Equipment Co., Ltd.
	Type	HS15V.CH.00
	Fan type	3 wings, 470mm diameter
	Bauart Construction	aluminum finned coil heat exchanger
	Fin spacing	1.8mm
	Max. permissible pressure	45bar
	Dimension	W x D x H: 901*325*1302[mm x mm x mm]
4. Fan motor		
	Manufacture:	GUANGDONG WELLING MOTOR MANUFACTURING CO., LTD
	Type:	ZKSP-100-8-31
	Specification:	DC310V; 121 [W]; Class E
5. Main control board		
	Manufacture:	Foshan Huishengcai Electric Co., Ltd.
	Type:	DTWD-Z7-V1



	Specification:	24V~ 50/60Hz
6. Water pump		
	Manufacture:	Shimge Pump(Jiangsu) Co.,Ltd
	Type:	APF25-10-130E FPWM1
	Specification:	230V~ 50Hz; IP44

**Attachment No.3: Equipment List**

Type	Manufacture	Model	Equipment ID	Calibration Due Date
R&A performance measuring system	--	20kW	No.03	2023-05-20
Flowmeter	YOKOGAWA	AXF025G	S5J607346925	2023-05-20
Flowmeter	YOKOGAWA	AXF015G	S5MA02253239	2023-05-20
Anechoic rooms (hemi-anechoic rooms)	CQCSC-BE-0026	-	CHEARI	2023-11-23

-- End of report ---