Technical Report No.: 64.181.25.00678.01 Rev.00

Date: 2025-09-03

Client:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
	Contact person:	Mr. Huang Weiping
Manufacturer:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Factory:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Test object:	Product:	Air Source Heat Pump
	Model:	JMU50HC, JMU50HC-B
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	• Testing and evaluation (☐ visual / ☐ partial) according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	JMU50HC, JMU50HC-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord
	☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation;
	☐ Intermittent operation;
	☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 0.65kg
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	JMU50HC250430-001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2025-03-14

Customer's Reference: Guangdong JNOD New Energy Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2025-05-08
- Location(s) of reception:

For Energy and Noise test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2025-05-08 to 2025-05-22

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.

☐ Decision rule according to customer's requirements was applied. It is:

☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.

☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):

• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).

• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).

• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.

☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) The appliance is Air to Water Heat Pump Unit, 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 3-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) The model JMU50HC is the same as the JMU50HC-B except for the model name and the exterior sheet metal appearance. All tests were carried out on the model JMU50HC.

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TÜV SÜD Group

Tested by: Yongxin Huang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	JMU50HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 4.980kW, the power is 1.054kW, the COP is 4.73kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.3	230.2	229.4	229.4	229.3	229.3
Current input of the unit	A	6.72	3.14	1.75	1.48	7.93	6.72
Power input of the unit	kW	1.500	0.618	0.303	0.244	1.774	1.500
Compressor frequency	Hz	80	34	19	17	80	80

Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.86	0.86	0.86	0.86	0.86	0.86
Inlet Water temperature	°C	29.54	27.20	25.15	23.21	31.08	29.54
Outlet Water temperature	°C	34.00	30.00	27.01	25.16	35.30	34.00
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.00	7.07	12.03	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.07	1.00	6.07	11.00	-11.04	-8.07
Summary of the results							
Total heating capacity	kW	4.441	2.783	1.850	1.930	4.202	4.441
Effective power input	kW	1.483	0.599	0.285	0.225	1.750	1.483
Coefficient of performance (COP)	kW/kW	2.99	4.64	6.49	8.56	2.40	2.99
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	5.020	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	5.020	4.202	2.40	0.90	1.00	2.40
F	4.441	4.441	2.99	0.90	1.00	2.99
A	4.441	4.441	2.99	0.90	1.00	2.99
B	2.703	2.783	4.64	0.90	0.97	4.64
C	1.738	1.850	6.49	0.90	0.94	6.49
D	0.772	1.930	8.56	0.90	0.40	7.44

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.79
SCOP:	kWh/kWh	4.78
Q_H:	kWh/year	10372
Q_{HE}:	kWh/year	2172
$\eta_{s,h}$	%	188.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	JMU50HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 4.990kW, the power is 1.729kW, the COP is 2.89kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.3	229.4	229.4	229.3	229.3	229.3
Current input of the unit	A	7.24	3.14	1.98	1.68	8.34	7.24
Power input of the unit	kW	1.618	0.631	0.356	0.289	1.876	1.618
Compressor frequency	Hz	73	31	18	17	73	73

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.54	0.54	0.54	0.54	0.54	0.54
Inlet Water temperature	°C	46.30	38.43	33.62	28.92	49.87	46.30
Outlet Water temperature	°C	51.99	41.90	36.53	31.88	55.39	51.99
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.01	7.01	12.00	-10.01	-7.00
Air **inlet** temperature, WB	°C	-8.02	1.02	6.00	11.00	-11.01	-8.02
Summary of the results							
Total heating capacity	kW	3.567	2.180	1.825	1.859	3.454	3.567
Effective power input	kW	1.607	0.626	0.351	0.283	1.857	1.607
Coefficient of performance (COP)	kW/kW	2.22	3.48	5.21	6.57	1.86	2.22
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	4.032	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	4.032	3.454	1.86	0.90	1.00	1.86
F	3.567	3.567	2.22	0.90	1.00	2.22
A	3.567	3.567	2.22	0.90	1.00	2.22
B	2.171	2.180	3.48	0.90	1.00	3.48
C	1.396	1.825	5.21	0.90	0.76	5.05
D	0.620	1.859	6.57	0.90	0.33	5.48

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.62
SCOP:	kWh/kWh	3.61
Q_H:	kWh/year	8330
Q_{HE}:	kWh/year	2306
$\eta_{s,h}$	%	141.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3a.	Sound power level measurement (Low temperature application)		P
Model	JMU50HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	39	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	53	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 3b.	Sound power level measurement (Medium temperature application)		P
Model	JMU50HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	39	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	54	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 4.	Clause 4 of EN 14511-4:2022	P
Model:	**JMU50HC**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.05°C, T in water = 19.97°C, Flow rate 0.43m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.98 °C, T in water = 68.01 °C, Flow rate 0.43 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Air Source Heat Pump		
Model		JMU50HC
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	2000~5050W
	Power input	350~1070W
	Current input	1.52~4.65A
Heating²	Capacity	2000~5115W
	Power input	500~1650W
	Current input	2.17~7.17A
Cooling	Capacity	1500~4620W
	Power input	500~1650W
	Current input	2.17~7.17A
Max power input		3680W
Max current input		16A
Circuit breaker		25A
Max COP heating		4.68W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/650g
CO_2 equivalent(GWP)		0.00195t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		14L/Min(0.86m³/h)
Water piping connections		G1'
Water pressure drop		10kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Air Source Heat Pump		
Model		JMU50HC-B
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	2000~5050W
	Power input	350~1070W
	Current input	1.52~4.65A
Heating²	Capacity	2000~5115W
	Power input	500~1650W
	Current input	2.17~7.17A
Cooling	Capacity	1500~4620W
	Power input	500~1650W
	Current input	2.17~7.17A
Max power input		3680W
Max current input		16A
Circuit breaker		25A
Max COP heating		4.68W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/650g
CO_2 equivalent(GWP)		0.00195t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		14L/Min(0.86m³/h)
Water piping connections		G1'
Water pressure drop		10kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

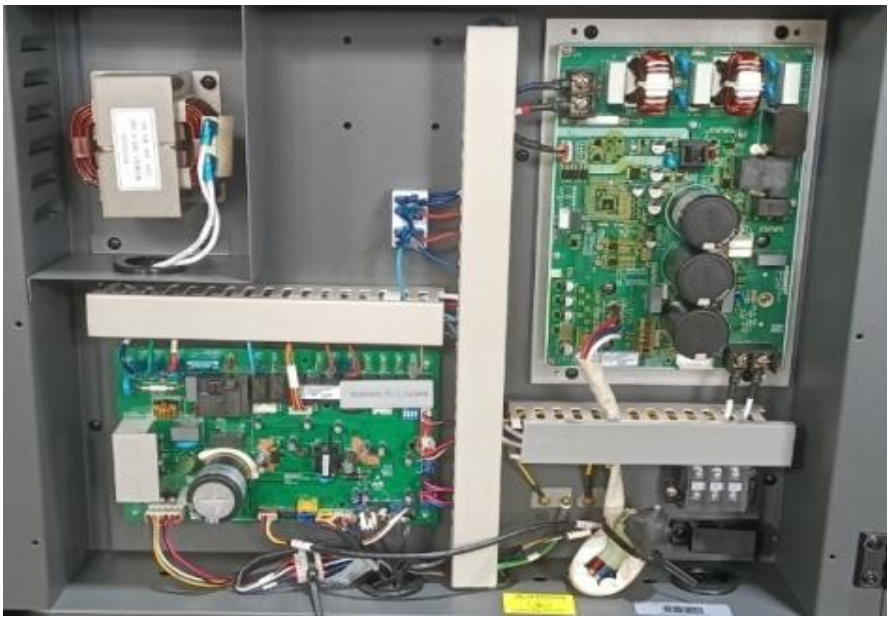
Appendix III photo documentation

Details of:	Overall view for JMU50HC
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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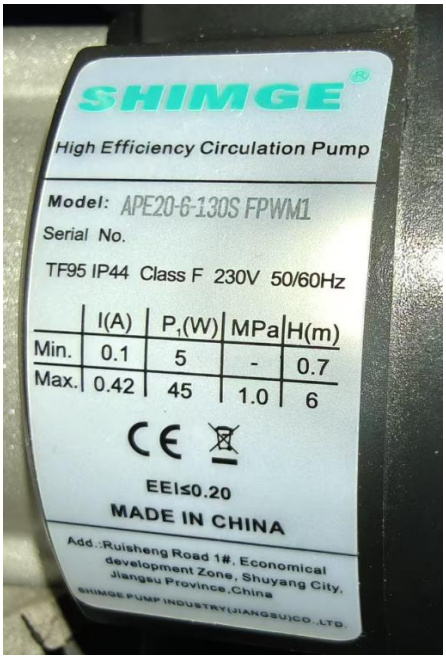
Appendix III photo documentation

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for JMU50HC-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SAHNGHAI HIGHLY ELECTRICAL APPLIANCES CO.,LTD.
	Type:	WHP07600PSDPC9KQ
	Serial-number:	W5WN5H0BWL1G
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Danfoss.,LTD.
	Type:	H39L-EZU-28
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	117×41×331 mm
3. Evaporator		
	Manufacture:	Guangdong Sparkle Air-conditionding Equipment Co.,Ltd.
	Type:	/
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	670×470×750 mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Fan type:	4 blade
	Specification:	DC310V; 85W
5. Main control board		
	Manufacture:	ShenZhen Megmeet Electrical Co.,Ltd.
	Type:	HiPlus12000-VZM
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APE20-6-130S FPWM1
	Specification:	230V~; 50/60Hz

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	/	10HP	2017JO0001	2025-11-07
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2025-11-07
3	Noise Meter and PULSE Sound Power	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	3560-B-010 PULSE	202444CK0032-3	2026-06-26
4	Power Analyzer	HIOKI/ HIOKI E.E. CORPORATION	3334	200844CK0084	2026-06-26
5	Atmospheric Pressure Meter	FENGYANG/TIANJIN FENGYANG INSTRUMENT INDUSTRIAL AND TRADING CO. LTD	DYM3	200944BK0273	2025-11-11
6	1/2" Free-field Microphone	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	4190-L-001	202444CK0032-4 202444CK0032-5 202444CK0032-6 202444CK0032-7 202444CK0032-8 202444CK0032-9 202444CK0032-10 202444CK0032-11 202444CK0032-12	2026-06-26
7	Hygrometer	UNI-T	UT332	201444CK0004SD	2025-11-10
8	Tape Measure	0-3000mm	3m	201444CK0026SD	2025-11-21

-- End of Report --

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Technical Report No.: 64.181.25.00679.01 Rev.00

Date: 2025-09-03

Client:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
	Contact person:	Mr. Huang Weiping
Manufacturer:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Factory:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Test object:	Product:	Air Source Heat Pump
	Model:	JMU70HC, JMU70HC-B
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	• Testing and evaluation (☐ visual / ☐ partial) according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	JMU70HC, JMU70HC-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord
	☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation;
	☐ Intermittent operation;
	☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 0.75kg
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	JMU70HC250430-001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2025-03-14

Customer's Reference: Guangdong JNOD New Energy Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2025-05-16
- Location(s) of reception:

For Energy and Noise test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2025-05-16 to 2025-06-04

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.
☐ Decision rule according to customer's requirements was applied. It is:
☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.
☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):
• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).
• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).
• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.
☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) The appliance is Air to Water Heat Pump Unit, 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 3-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) The model JMU70HC is the same as the JMU70HC-B except for the model name and the exterior sheet metal appearance. All tests were carried out on the model JMU70HC.

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TÜV SÜD Group

Tested by: Yongxin Huang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	JMU70HC							
Product type	Air to Water	Heating season	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 7.029kW, the power is 1.570kW, the COP is 4.48kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.5	229.5	229.4	229.4	229.5	229.5
Current input of the unit	A	10.11	4.31	2.18	1.95	9.89	10.11
Power input of the unit	kW	2.294	0.885	0.397	0.348	2.243	2.294
Compressor frequency	Hz	82	35	19	19	82	82

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.20	1.20	1.20	1.20	1.20	1.20
Inlet Water temperature	°C	29.45	27.16	25.24	23.23	31.12	29.45
Outlet Water temperature	°C	33.97	30.02	27.05	25.38	35.30	33.97
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.03	2.00	7.01	12.00	-10.00	-7.03
Air **inlet** temperature, WB	°C	-7.99	1.01	6.03	11.00	-11.03	-7.99
Summary of the results							
Total heating capacity	kW	6.283	3.987	2.513	2.985	5.806	6.283
Effective power input	kW	2.264	0.858	0.370	0.319	2.213	2.264
Coefficient of performance (COP)	kW/kW	2.77	4.65	6.80	9.35	2.62	2.77
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	7.103	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	7.103	5.806	2.62	0.90	1.00	2.62
F	6.283	6.283	2.77	0.90	1.00	2.77
A	6.283	6.283	2.77	0.90	1.00	2.77
B	3.825	3.987	4.65	0.90	0.96	4.65
C	2.459	2.513	6.80	0.90	0.98	6.80
D	1.093	2.985	9.35	0.90	0.37	7.97

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.80
SCOP:	kWh/kWh	4.79
Q_H:	kWh/year	14675
Q_{HE}:	kWh/year	3062
$\eta_{s,h}$	%	188.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	JMU70HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 6.893kW, the power is 2.438kW, the COP is 2.83kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	228.3	230.0	229.4	229.4	229.5	228.3
Current input of the unit	A	11.42	4.36	2.45	2.23	11.82	11.42
Power input of the unit	kW	2.595	0.929	0.433	0.411	2.698	2.595
Compressor frequency	Hz	77	34	17	18	79	77

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.75	0.75	0.75	0.75	0.75	0.75
Inlet Water temperature	°C	45.81	38.30	33.46	28.84	49.55	45.81
Outlet Water temperature	°C	51.94	42.08	35.88	31.98	55.26	51.94
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.01	7.08	12.01	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.01	1.00	6.08	11.01	-11.04	-8.01
Summary of the results							
Total heating capacity	kW	5.338	3.288	2.101	2.733	4.965	5.338
Effective power input	kW	2.584	0.918	0.421	0.400	2.669	2.584
Coefficient of performance (COP)	kW/kW	2.07	3.58	4.99	6.84	1.86	2.07
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	6.034	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	6.034	4.965	1.86	0.90	1.00	1.86
F	5.338	5.338	2.07	0.90	1.00	2.07
A	5.338	5.338	2.07	0.90	1.00	2.07
B	3.249	3.288	3.58	0.90	0.99	3.58
C	2.089	2.101	4.99	0.90	0.99	4.99
D	0.928	2.733	6.84	0.90	0.34	5.73

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.63
SCOP:	kWh/kWh	3.62
Q_H:	kWh/year	12466
Q_{HE}:	kWh/year	3445
$\eta_{s,h}$	%	141.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3a.	Sound power level measurement (Low temperature application)		P
Model	JMU70HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	37	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	52	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 3b.	Sound power level measurement (Medium temperature application)		P
Model	JMU70HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	40	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	55	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 4.	Clause 4 of EN 14511-4:2022	P
Model:	**JMU70HC**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.01°C, T in water = 20.01°C, Flow rate 0.60m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.93 °C, T in water = 67.50 °C, Flow rate 0.60 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Air Source Heat Pump		
Model		JMU70HC
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	3000~7050W
	Power input	500~1500W
	Current input	2.17~6.52A
Heating²	Capacity	3000~7070W
	Power input	700~2280W
	Current input	3.04~9.91A
Cooling	Capacity	2500~5600W
	Power input	700~2000W
	Current input	3.04~8.69A
Max power input		4140W
Max current input		18A
Circuit breaker		25A
Max COP heating		4.7W/W
Max.Outlet water temp		75℃
Operation ambient temp		-25~43℃
Refrigerant type/change		R290/750g
CO_2 equivalent(GWP)		0.00225t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		20L/Min(1.2m³/h)
Water piping connections		G1'
Water pressure drop		15kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7℃/6℃(DB/WB).Water-in/out temp.30℃/35℃
Heating²:ambient temp.7℃/6℃(DB/WB).Water-in/out temp.47℃/55℃
Cooling:ambient temp.35℃/24℃(DB/WB).Water-in/out temp.12℃/7℃
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Air Source Heat Pump		
Model		JMU70HC-B
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	3000~7050W
	Power input	500~1500W
	Current input	2.17~6.52A
Heating²	Capacity	3000~7070W
	Power input	700~2280W
	Current input	3.04~9.91A
Cooling	Capacity	2500~5600W
	Power input	700~2000W
	Current input	3.04~8.69A
Max power input		4140W
Max current input		18A
Circuit breaker		25A
Max COP heating		4.7W/W
Max.Outlet water temp		75℃
Operation ambient temp		-25~43℃
Refrigerant type/change		R290/750g
CO_2 equivalent(GWP)		0.00225t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		20L/Min(1.2m³/h)
Water piping connections		G1'
Water pressure drop		15kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7℃/6℃(DB/WB).Water-in/out temp.30℃/35℃
Heating²:ambient temp.7℃/6℃(DB/WB).Water-in/out temp.47℃/55℃
Cooling:ambient temp.35℃/24℃(DB/WB).Water-in/out temp.12℃/7℃
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Appendix III photo documentation

Details of:	Overall view for JMU70HC
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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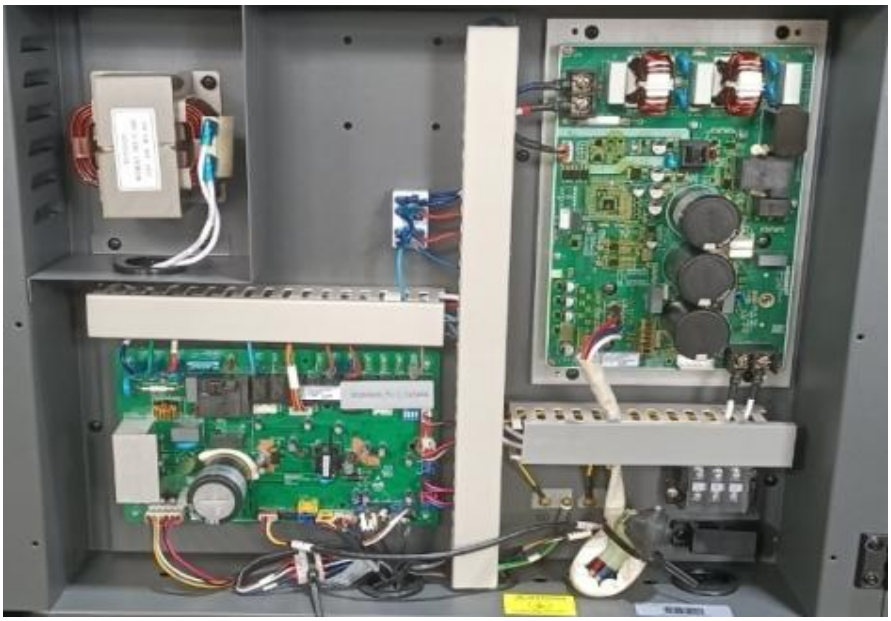
Appendix III photo documentation

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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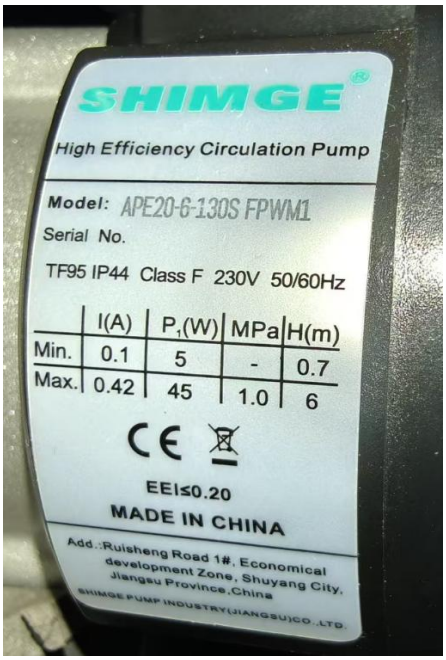
Appendix III photo documentation

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for JMU70HC-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SAHNGHAI HIGHLY ELECTRICAL APPLIANCES CO.,LTD.
	Type:	WHP10200PSDPC9KQ
	Serial-number:	W7XN5H0CL9SP
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Danfoss.,LTD.
	Type:	H39L-EZU-36
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	117×49×331 mm
3. Evaporator		
	Manufacture:	Guangdong Sparkle Air-conditionding Equipment Co.,Ltd.
	Type:	/
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	670×470×750 mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Fan type:	3 blade
	Specification:	DC310V; 85W
5. Main control board		
	Manufacture:	ShenZhen Megmeet Electrical Co.,Ltd.
	Type:	HiPlus12000-VZM
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APE20-6-130S FPWM1
	Specification:	230V~; 50/60Hz

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	/	10HP	2017JO0001	2025-11-07
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2025-11-07
3	Noise Meter and PULSE Sound Power	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	3560-B-010 PULSE	202444CK0032-3	2026-06-26
4	Power Analyzer	HIOKI/ HIOKI E.E. CORPORATION	3334	200844CK0084	2026-06-26
5	Atmospheric Pressure Meter	FENGYANG/TIANJIN FENGYANG INSTRUMENT INDUSTRIAL AND TRADING CO. LTD	DYM3	200944BK0273	2025-11-11
6	1/2" Free-field Microphone	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	4190-L-001	202444CK0032-4 202444CK0032-5 202444CK0032-6 202444CK0032-7 202444CK0032-8 202444CK0032-9 202444CK0032-10 202444CK0032-11 202444CK0032-12	2026-06-26
7	Hygrometer	UNI-T	UT332	201444CK0004SD	2025-11-10
8	Tape Measure	0-3000mm	3m	201444CK0026SD	2025-11-21

-- End of Report --

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Technical Report No.: 64.181.25.00680.01 Rev.00

Date: 2025-09-03

Client:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
	Contact person:	Mr. Huang Weiping
Manufacturer:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Factory:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Test object:	Product:	Air Source Heat Pump
	Model:	JMU90HC, JMU90HC-B
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	• Testing and evaluation (☐ visual / ☐ partial) according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	JMU90HC, JMU90HC-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord
	☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation;
	☐ Intermittent operation;
	☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 0.90kg
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	JMU90HC250430-001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2025-03-14

Customer's Reference: Guangdong JNOD New Energy Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2025-06-05
- Location(s) of reception:

For Energy and Noise test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2025-06-05 to 2025-06-20

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.

☐ Decision rule according to customer's requirements was applied. It is:

☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.

☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):

• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).

• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).

• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.

☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) The appliance is Air to Water Heat Pump Unit, 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 3-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) The model JMU90HC is the same as the JMU90HC-B except for the model name and the exterior sheet metal appearance. All tests were carried out on the model JMU90HC.

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TÜV SÜD Group

Tested by: Yongxin Huang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	JMU90HC							
Product type	Air to Water	Heating season	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 8.809kW, the power is 1.911kW, the COP is 4.61kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.5	229.5	229.5	229.5	229.5	229.5
Current input of the unit	A	11.01	4.74	2.57	2.06	11.27	11.01
Power input of the unit	kW	2.511	0.997	0.487	0.373	2.569	2.511
Compressor frequency	Hz	90	40	23	20	90	90

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.55	1.54	1.54	1.54	1.54	1.55
Inlet Water temperature	°C	30.05	27.48	25.36	23.27	31.52	30.05
Outlet Water temperature	°C	34.00	30.06	27.02	24.94	35.34	34.00
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.01	7.03	12.00	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.01	1.00	6.01	11.00	-11.02	-8.01
Summary of the results							
Total heating capacity	kW	7.104	4.588	2.958	2.950	6.824	7.104
Effective power input	kW	2.508	0.963	0.467	0.331	2.526	2.508
Coefficient of performance (COP)	kW/kW	2.83	4.77	6.34	8.91	2.70	2.83
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	8.031	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	8.031	6.824	2.70	0.90	1.00	2.70
F	7.104	7.104	2.83	0.90	1.00	2.83
A	7.104	7.104	2.83	0.90	1.00	2.83
B	4.324	4.588	4.77	0.90	0.94	4.77
C	2.780	2.958	6.34	0.90	0.94	6.34
D	1.235	2.950	8.91	0.90	0.42	7.82

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.81
SCOP:	kWh/kWh	4.80
Q_H:	kWh/year	16591
Q_{HE}:	kWh/year	3457
$\eta_{s,h}$	%	189.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	JMU90HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 14.013kW, the power is 4.519kW, the COP is 3.10kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	230.0	229.8	230.0	229.5	229.8	230.0
Current input of the unit	A	14.51	6.03	3.11	2.50	14.64	14.51
Power input of the unit	kW	3.327	1.317	0.617	0.469	3.353	3.327
Compressor frequency	Hz	91	42	24	20	93	91

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.92	0.92	0.92	0.92	0.91	0.92
Inlet Water temperature	°C	45.36	37.82	33.28	28.89	48.99	45.36
Outlet Water temperature	°C	52.01	42.05	36.12	31.65	55.25	52.01
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.01	2.02	7.01	11.99	-10.00	-7.01
Air **inlet** temperature, WB	°C	-8.01	1.00	6.02	10.99	-11.01	-8.01
Summary of the results							
Total heating capacity	kW	7.100	4.519	3.020	2.941	6.614	7.100
Effective power input	kW	3.307	1.302	0.597	0.453	3.322	3.307
Coefficient of performance (COP)	kW/kW	2.15	3.47	5.06	6.49	1.99	2.15
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	8.026	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	8.026	6.614	1.99	0.90	1.00	1.99
F	7.100	7.100	2.15	0.90	1.00	2.15
A	7.100	7.100	2.15	0.90	1.00	2.15
B	4.322	4.519	3.47	0.90	0.96	3.47
C	2.778	3.020	5.06	0.90	0.92	5.06
D	1.235	2.941	6.49	0.90	0.42	5.70

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.61
SCOP:	kWh/kWh	3.60
Q_H:	kWh/year	16581
Q_{HE}:	kWh/year	4604
$\eta_{s,h}$	%	141.1
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3a.	Sound power level measurement (Low temperature application)		P
Model	JMU90HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	38	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	53	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 3b.	Sound power level measurement (Medium temperature application)		P
Model	JMU90HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	40	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	55	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 4.	Clause 4 of EN 14511-4:2022	P
Model:	**JMU90HC**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.01°C, T in water = 19.99°C, Flow rate 0.77m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.11 °C, T in water = 69.64 °C, Flow rate 0.77 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Air Source Heat Pump		
Model		JMU90HC
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	3500~9100W
	Power input	645~1935W
	Current input	2.8~8.41A
Heating²	Capacity	3500~8620W
	Power input	900~2780W
	Current input	3.91~12.08A
Cooling	Capacity	2800~7200W
	Power input	900~2570W
	Current input	3.91~11.17A
Max power input		4830W
Max current input		21A
Circuit breaker		25A
Max COP heating		4.65W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/900g
CO_2 equivalent(GWP)		0.0027t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		26L/Min(1.55m³/h)
Water piping connections		G1'
Water pressure drop		20kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Air Source Heat Pump		
Model		JMU90HC-B
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	3500~9100W
	Power input	645~1935W
	Current input	2.8~8.41A
Heating²	Capacity	3500~8620W
	Power input	900~2780W
	Current input	3.91~12.08A
Cooling	Capacity	2800~7200W
	Power input	900~2570W
	Current input	3.91~11.17A
Max power input		4830W
Max current input		21A
Circuit breaker		25A
Max COP heating		4.65W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/900g
CO_2 equivalent(GWP)		0.0027t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		26L/Min(1.55m³/h)
Water piping connections		G1'
Water pressure drop		20kPa
Net dimensions(LxWxH)		700×675×910mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
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note.for outdoor use only.installation&service by licensed mechanic only.

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Appendix III photo documentation

Details of:	Overall view for JMU90HC
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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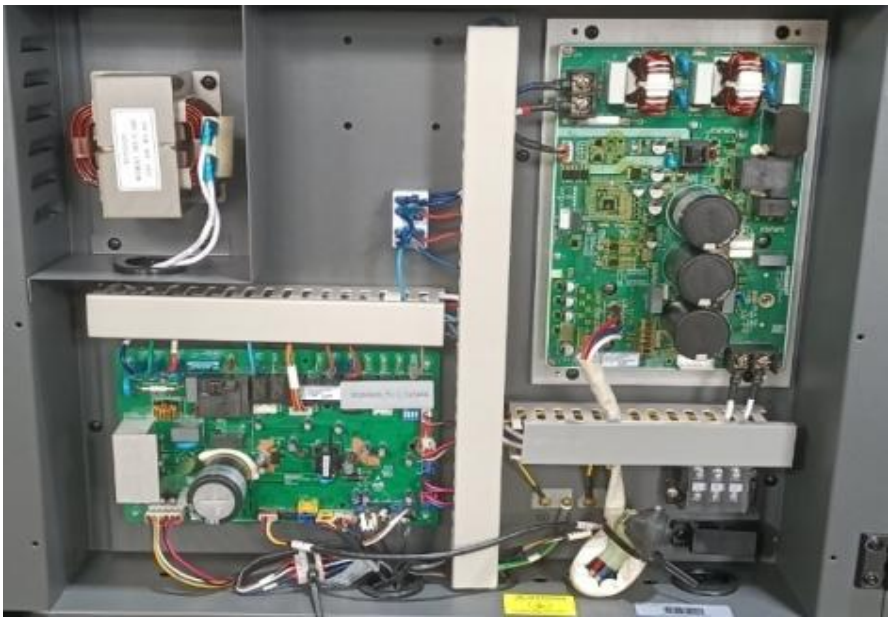
Appendix III photo documentation

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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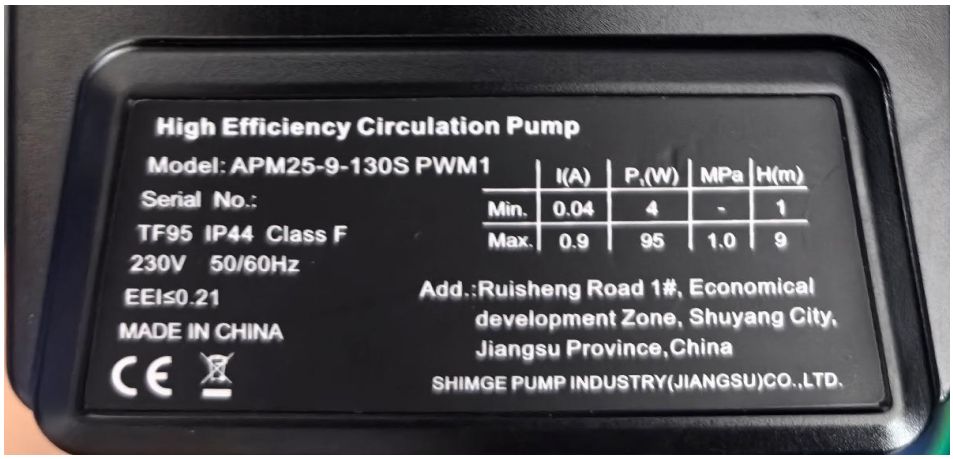
Appendix III photo documentation

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for JMU90HC-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SAHNGHAI HIGHLY ELECTRICAL APPLIANCES CO.,LTD.
	Type:	WHP10200PSDPC9KQ
	Serial-number:	W7XN5H0CL9TN
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Danfoss.,LTD.
	Type:	H39L-EZU-42
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	117×56×331 mm
3. Evaporator		
	Manufacture:	Guangdong Sparkle Air-conditionding Equipment Co.,Ltd.
	Type:	/
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	670×470×750 mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD85HA
	Fan type:	3 blade
	Specification:	DC310V; 85W
5. Main control board		
	Manufacture:	ShenZhen Megmeet Electrical Co.,Ltd.
	Type:	HiPlus12000-VZM
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	/	10HP	2017JO0001	2025-11-07
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2025-11-07
3	Noise Meter and PULSE Sound Power	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	3560-B-010 PULSE	202444CK0032-3	2026-06-26
4	Power Analyzer	HIOKI/ HIOKI E.E. CORPORATION	3334	200844CK0084	2026-06-26
5	Atmospheric Pressure Meter	FENGYANG/TIANJIN FENGYANG INSTRUMENT INDUSTRIAL AND TRADING CO. LTD	DYM3	200944BK0273	2025-11-11
6	1/2" Free-field Microphone	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	4190-L-001	202444CK0032-4 202444CK0032-5 202444CK0032-6 202444CK0032-7 202444CK0032-8 202444CK0032-9 202444CK0032-10 202444CK0032-11 202444CK0032-12	2026-06-26
7	Hygrometer	UNI-T	UT332	201444CK0004SD	2025-11-10
8	Tape Measure	0-3000mm	3m	201444CK0026SD	2025-11-21

-- End of Report --

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Technical Report No.: 64.181.25.00681.01 Rev.00

Date: 2025-09-03

Client:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
	Contact person:	Mr. Huang Weiping
Manufacturer:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Factory:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Test object:	Product:	Air Source Heat Pump
	Model:	JMU120HC, JMU120HC-B
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	• Testing and evaluation (☐ visual / ☐ partial) according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	JMU120HC, JMU120HC-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord
	☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation;
	☐ Intermittent operation;
	☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 1.10kg
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	JMU120HC250430-001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2025-03-14

Customer's Reference: Guangdong JNOD New Energy Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2025-06-27
- Location(s) of reception:

For Energy and Noise test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2025-06-27 to 2025-07-14

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.
☐ Decision rule according to customer's requirements was applied. It is:
☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.
☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):
• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).
• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).
• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.
☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) The appliance is Air to Water Heat Pump Unit, 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 3-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) The model JMU120HC is the same as the JMU120HC-B except for the model name and the exterior sheet metal appearance. All tests were carried out on the model JMU120HC.

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TÜV SÜD Group

Tested by: Yongxin Huang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	JMU120HC							
Product type	Air to Water	Heating season	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 11.949kW, the power is 2.727kW, the COP is 4.38kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	231.6	230.4	230.2	230.0	230.2	231.6
Current input of the unit	A	14.67	6.27	3.24	2.66	14.32	14.67
Power input of the unit	kW	3.359	1.361	0.644	0.509	3.265	3.359
Compressor frequency	Hz	81	37	21	20	81	81

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	2.06	2.06	2.06	2.06	2.06	2.06
Inlet Water temperature	°C	29.96	27.54	25.34	23.30	31.40	29.96
Outlet Water temperature	°C	34.02	30.04	26.98	24.99	35.04	34.02
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-7.00	2.02	7.03	12.00	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.01	1.01	6.00	11.00	-11.00	-8.01
Summary of the results							
Total heating capacity	kW	9.739	5.960	3.883	4.024	8.708	9.739
Effective power input	kW	3.357	1.306	0.582	0.448	3.207	3.357
Coefficient of performance (COP)	kW/kW	2.90	4.56	6.67	8.99	2.72	2.90
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	11.010	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	11.010	8.708	2.72	0.90	1.00	2.72
F	9.739	9.739	2.90	0.90	1.00	2.90
A	9.739	9.739	2.90	0.90	1.00	2.90
B	5.928	5.960	4.56	0.90	0.99	4.56
C	3.811	3.883	6.67	0.90	0.98	6.67
D	1.694	4.024	8.99	0.90	0.42	7.90

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.77
SCOP:	kWh/kWh	4.76
Q_H:	kWh/year	22746
Q_{HE}:	kWh/year	4774
$\eta_{s,h}$	%	187.6
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	JMU120HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 10.864kW, the power is 3.725kW, the COP is 2.92kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	231.2	229.3	230.0	230.0	230.3	231.2
Current input of the unit	A	17.70	7.10	3.81	3.10	18.11	17.70
Power input of the unit	kW	4.050	1.556	0.783	0.614	4.128	4.050
Compressor frequency	Hz	77	36	21	20	77	77

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.18	1.18	1.18	1.18	1.18	1.18
Inlet Water temperature	°C	45.60	37.95	33.40	28.87	49.35	45.60
Outlet Water temperature	°C	52.04	41.90	36.09	31.79	55.16	52.04
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.00	2.01	7.00	12.00	-10.00	-7.00
Air **inlet** temperature, WB	°C	-8.02	1.06	6.01	11.00	-11.01	-8.02
Summary of the results							
Total heating capacity	kW	8.847	5.393	3.688	3.992	7.979	8.847
Effective power input	kW	4.046	1.531	0.759	0.591	4.124	4.046
Coefficient of performance (COP)	kW/kW	2.19	3.52	4.86	6.75	1.93	2.19
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	10.001	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	10.001	7.979	1.93	0.90	1.00	1.93
F	8.847	8.847	2.19	0.90	1.00	2.19
A	8.847	8.847	2.19	0.90	1.00	2.19
B	5.385	5.393	3.52	0.90	1.00	3.52
C	3.462	3.688	4.86	0.90	0.94	4.86
D	1.539	3.992	6.75	0.90	0.39	5.82

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.61
SCOP:	kWh/kWh	3.61
Q_H:	kWh/year	20663
Q_{HE}:	kWh/year	5723
$\eta_{s,h}$	%	141.4
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3a.	Sound power level measurement (Low temperature application)		P
Model	JMU120HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	41	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	56	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 3b.	Sound power level measurement (Medium temperature application)		P
Model	JMU120HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	40	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	55	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 4.	Clause 4 of EN 14511-4:2022	P
Model:	**JMU120HC**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.03°C, T in water = 20.04°C, Flow rate 1.03m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.99 °C, T in water = 68.99 °C, Flow rate 1.05 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Air Source Heat Pump		
Model		JMU120HC
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	4000~12080W
	Power input	850~2570W
	Current input	3.69~11.2A
Heating²	Capacity	4000~11070W
	Power input	1200~3570W
	Current input	5.21~15.5A
Cooling	Capacity	3500~10050W
	Power input	1200~3585W
	Current input	5.21~15.58A
Max power input		5290W
Max current input		23A
Circuit breaker		32A
Max COP heating		4.7W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/1100g
CO_2 equivalent(GWP)		0.0033t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		34L/Min(2.06m³/h)
Water piping connections		G1'
Water pressure drop		25kPa
Net dimensions(LxWxH)		1130*630*935mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Air Source Heat Pump		
Model		JMU120HC-B
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	4000~12080W
	Power input	850~2570W
	Current input	3.69~11.2A
Heating²	Capacity	4000~11070W
	Power input	1200~3570W
	Current input	5.21~15.5A
Cooling	Capacity	3500~10050W
	Power input	1200~3585W
	Current input	5.21~15.58A
Max power input		5290W
Max current input		23A
Circuit breaker		32A
Max COP heating		4.7W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/1100g
CO_2 equivalent(GWP)		0.0033t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		34L/Min(2.06m³/h)
Water piping connections		G1'
Water pressure drop		25kPa
Net dimensions(LxWxH)		1130*630*935mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

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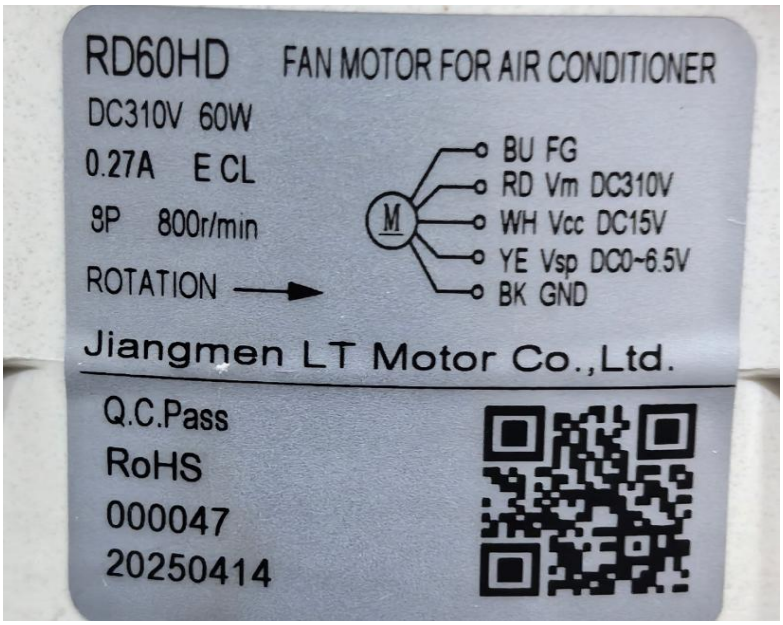
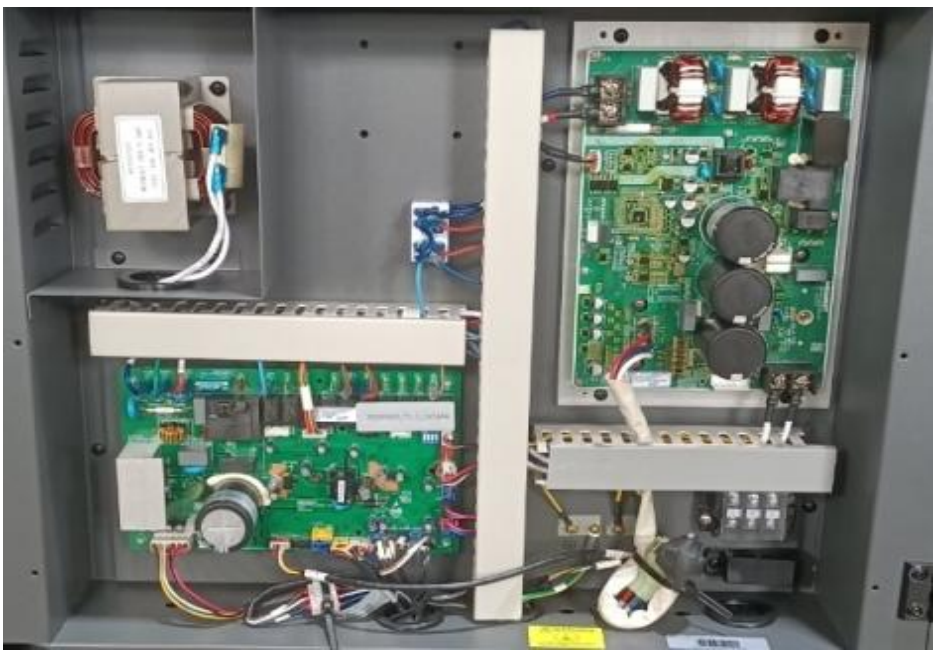
Appendix III photo documentation

Details of:	Overall view for JMU120HC
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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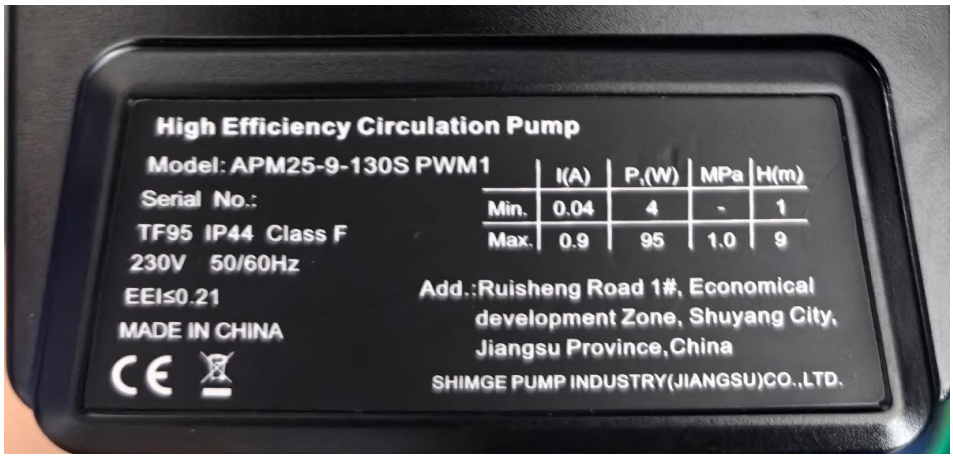
Appendix III photo documentation

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for JMU120HC-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SAHNGHAI HIGHLY ELECTRICAL APPLIANCES CO.,LTD.
	Type:	WHP13300PSDPC8FQ
	Serial-number:	W6PN5H09LT6U
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	Danfoss.,LTD.
	Type:	H39L-EZU-54
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	117×69×331 mm
3. Evaporator		
	Manufacture:	Guangdong Sparkle Air-conditionding Equipment Co.,Ltd.
	Type:	/
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	1100×450×800 mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD60HD
	Fan type:	4 blade
	Specification:	DC310V; 60W
5. Main control board		
	Manufacture:	ShenZhen Megmeet Electrical Co.,Ltd.
	Type:	HiPlus12000-VZM
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	/	10HP	2017JO0001	2025-11-07
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2025-11-07
3	Noise Meter and PULSE Sound Power	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	3560-B-010 PULSE	202444CK0032-3	2026-06-26
4	Power Analyzer	HIOKI/ HIOKI E.E. CORPORATION	3334	200844CK0084	2026-06-26
5	Atmospheric Pressure Meter	FENGYANG/TIANJIN FENGYANG INSTRUMENT INDUSTRIAL AND TRADING CO. LTD	DYM3	200944BK0273	2025-11-11
6	1/2" Free-field Microphone	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	4190-L-001	202444CK0032-4 202444CK0032-5 202444CK0032-6 202444CK0032-7 202444CK0032-8 202444CK0032-9 202444CK0032-10 202444CK0032-11 202444CK0032-12	2026-06-26
7	Hygrometer	UNI-T	UT332	201444CK0004SD	2025-11-10
8	Tape Measure	0-3000mm	3m	201444CK0026SD	2025-11-21

-- End of Report --

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Technical Report No.: 64.181.25.00676.01 Rev.00

Date: 2025-09-03

Client:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
	Contact person:	Mr. Huang Weiping
Manufacturer:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Factory:	Name:	Guangdong JNOD New Energy Technology Co., Ltd.
	Address:	5th Building WISDOM CREATE WEALTH Industrial Park, Xingtan, Shunde 528325, Foshan, Guangdong, People's Republic of China
Test object:	Product:	Air Source Heat Pump
	Model:	JMU150HC, JMU150HC-B
	Trade mark:	--
Test specification:	☑	EN 14825:2022
	☑	EN 14511-3:2022
	☑	EN 12102-1:2022
	☑	EN 14511-4:2022 Clause 4
Purpose of examination:	• Testing and evaluation (☐ visual / ☐ partial) according to the test specification	
	☑	(EU) No 813/2013
	☑	EU 2016/2282:2016-11-30
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.	

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1 Description of the test object

1.1 Function

Manufacturer's specification for intended use:

The appliance is air to water heat pump.

Manufacturer's specification for predictive use:

According to user manual

1.2 Consideration of the foreseeable use

☐ Not applicable

☑ Covered through the applied standard

☐ Covered by the following comment

☐ Covered by attached risk analysis

1.3 Technical Data

Model :	JMU150HC, JMU150HC-B
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	see the nameplate
Rated Current (A) :	see the nameplate
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	☐ Non detachable cord
	☑ Permanent connection to fixed wiring
Operation mode:	☑ Continuous operation;
	☐ Intermittent operation;
	☐ Short time operation;
Refrigerant/charge (kg) :	R290 / 1.40kg
Declared parameters :	☑ Average ☐ Warmer ☐ Colder
Sound power level dB(A) :	N/A
Series No :	JMU150HC250430-001

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2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2025-03-14

Customer's Reference: Guangdong JNOD New Energy Technology Co., Ltd.

2.2 Test Sample(s)

- Reception date(s): 2025-07-14
- Location(s) of reception:

For Energy and Noise test:

Guangzhou Customs District Technology Center
(CNAS accredited laboratory with Registration No.CNAS L2322)

Address: No.3, Desheng East Road, Daliang, Shunde District, Foshan, Guangdong, China

- Condition of test sample(s): completed and can be normal operation

2.3 Date(s) of Testing

2025-07-14 to 2025-07-30

2.4 Location(s) of Testing

Same as 2.2

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test Results

☒ Decision rule according to ILAC-G8:09/2019 clause 4.2.1 Binary statement for simple acceptance rule or IEC Guide 115:2023, clause 4.3 Simple acceptance was applied.

☐ Decision rule according to customer's requirements was applied. It is:

☐ Decision rule according to ILAC-G8:09/2019 clause 4.2.2 Binary statement with guard band - guard band length = 95 % extended measurement uncertainty, was applied.

☐ Decision rule (based on ILAC-G8:09/2019 clause 4.2.3 Non-binary statement with guard band, guard band length = 95 % extended measurement uncertainty) for an upper specification limit (A lower limit or specification with an up-per and a lower limit is treated similarly.):

• Compliance with the requirement: If a specification limit is not breached by a measurement result plus the expanded uncertainty with a 95% coverage probability, then compliance with the specification will be stated (e. g. Pass).

• Non-compliance with the requirement: If a specification limit is exceeded by the measurement result minus the expanded uncertainty with a 95% coverage probability, then non-compliance with the specification will be stated (e. g. Fail).

• Inconclusive result: If a measurement result plus/minus the expanded uncertainty with a 95 % coverage probability overlaps the limit it will be stated that it is not possible to state compliance or non-compliance.

☐ There are no statements to conformity or no results with measurand stated in this report, no decision rule has been applied.

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3.1 Positive Test Results

See Appendix I

4 Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

5 Documentation

- Appendix I: Test results
- Appendix II: Marking plate
- Appendix III: photo documentation
- Appendix IV: Construction data form
- Appendix V: Test equipment list

6 Test History

1) The appliance is Air to Water Heat Pump Unit, 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 3-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) The model JMU150HC is the same as the JMU150HC-B except for the model name and the exterior sheet metal appearance. All tests were carried out on the model JMU150HC.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group

Tested by: Yongxin Huang, Project Handler

printed name, function & signature

Approved by: Plum Li, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode (Low temperature application):							P
Model	JMU150HC							
Product type	Air to Water	Heating season	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 34
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 30
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 27
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 24
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 35.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 34
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 30/35 conditions, the capacity is 14.813kW, the power is 3.218kW, the COP is 4.60kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W34 (88%)	A2/W30 (54%)	A7/W27 (35%)	A12/W24 (15%)	A(-10)/ W35.3 (100%)	A(-7)/ W34 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.2	229.3	229.3	229.3	229.3	229.2
Current input of the unit	A	20.95	7.95	3.71	3.37	20.60	20.95
Power input of the unit	kW	4.774	1.740	0.777	0.692	4.696	4.774
Compressor frequency	Hz	81	36	20	20	81	81

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	2.58	2.58	2.58	2.58	2.58	2.58
Inlet Water temperature	°C	29.71	27.34	25.32	23.25	31.42	29.71
Outlet Water temperature	°C	33.94	29.98	27.03	25.28	35.25	33.94
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.01	101.02	101.01	101.02
Air **inlet** temperature, DB	°C	-6.99	2.01	7.02	11.98	-10.00	-6.99
Air **inlet** temperature, WB	°C	-7.98	0.99	5.98	11.00	-11.01	-7.98
Summary of the results							
Total heating capacity	kW	12.657	7.863	5.060	6.026	11.464	12.657
Effective power input	kW	4.716	1.661	0.700	0.615	4.640	4.716
Coefficient of performance (COP)	kW/kW	2.68	4.73	7.23	9.81	2.47	2.68
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	14.308	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	14.308	11.464	2.47	0.90	1.00	2.47
F	12.657	12.657	2.68	0.90	1.00	2.68
A	12.657	12.657	2.68	0.90	1.00	2.68
B	7.704	7.863	4.73	0.90	0.98	4.73
C	4.953	5.060	7.23	0.90	0.98	7.23
D	2.201	6.026	9.81	0.90	0.37	8.35

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.89
SCOP:	kWh/kWh	4.88
Q_H:	kWh/year	29561
Q_{HE}:	kWh/year	6052
$\eta_{s,h}$	%	192.4
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

Table 2.	Heating mode (Medium temperature application):							P
Model	JMU150HC							
Product type	Air to Water	**Heating season**	☑	Average	☐	Warmer	☐	Colder

1. Test conditions:

Condition	Part Load Ratio in %		Outdoor heat exchanger	Indoor heat exchanger
	Formula	Average climates	Inlet dry (wet) bulb temperature (°C)	Inlet/outlet water temperatures (°C)
A	(-7-16)/(Tdesignh-16)	88	-7(-8)	a / 52
B	(+2-16)/ (Tdesignh-16)	54	2(1)	a / 42
C	(+7-16)/(Tdesignh-16)	35	7(6)	a / 36
D	(+12-16)/(Tdesignh-16)	15	12(11)	a / 30
E	(TOL-16)/ (Tdesignh-16)		TOL	a / 55.3
F	(Tbivalent-16)/(Tdesignh-16)		Tbiv	a / 52
G	(-15-16)/(Tdesignh-16)	N/A	-15	N/A

Remark: a) With the water flow rate as determined at the standard rating conditions given in EN14511-2 at 47/55 conditions, the capacity is 13.828kW, the power is 4.851kW, the COP is 2.85kW/kW.

2.Tested data/correction data(Average):

General test conditions/ Part-Load	Unit	A(-7)/W52 (88%)	A2/W42 (54%)	A7/W36 (35%)	A12/W30 (15%)	A(-10)/ W55.3 (100%)	A(-7)/ W52 (88%)
	--	A	B	C	D	E	F
Data collection period	hh: min:sec	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00	1:10:00
The heat pump defrosts	--	No	No	No	No	No	No
Electrical Properties							
Voltage	V	229.2	229.3	229.3	229.3	229.2	229.2
Current input of the unit	A	23.47	9.14	4.53	3.92	25.86	23.47
Power input of the unit	kW	5.355	2.050	0.983	0.832	5.901	5.355
Compressor frequency	Hz	77	35	20	20	81	77

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.51	1.51	1.51	1.51	1.51	1.51
Inlet Water temperature	°C	45.33	37.78	33.32	28.82	48.81	45.33
Outlet Water temperature	°C	52.00	41.89	36.05	32.13	55.27	52.00
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air **inlet** temperature, DB	°C	-7.02	2.05	7.01	12.00	-10.09	-7.02
Air **inlet** temperature, WB	°C	-8.06	1.07	6.00	11.00	-11.03	-8.06
Summary of the results							
Total heating capacity	kW	11.680	7.206	4.747	5.792	11.311	11.680
Effective power input	kW	5.300	2.021	0.915	0.802	5.859	5.300
Coefficient of performance (COP)	kW/kW	2.20	3.57	5.19	7.22	1.93	2.20
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.006
Standby mode [P_{SB}]	kW	0.006
Crankcase heater [P_{CK}]	kW	0.035
Off mode [P_{OFF}]	kW	0.006

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Appendix I Test results

3.Calculation/conclusion for SCOP:			
Tdesignh(°C):	-10	Tbiv(°C) :	-7
Pdesignh(kW):	13.203	TOL(°C) :	-10

Test result A, B, C, D, E, F conditions:

Condition	Part load	Measured capacity	Measured COP	Cdh	CR	COP at part load
E	13.203	11.311	1.93	0.90	1.00	1.93
F	11.680	11.680	2.20	0.90	1.00	2.20
A	11.680	11.680	2.20	0.90	1.00	2.20
B	7.109	7.206	3.57	0.90	0.99	3.57
C	4.570	4.747	5.19	0.90	0.96	5.19
D	2.031	5.792	7.22	0.90	0.35	6.09

CR: part load divided by capacity;

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.71
SCOP:	kWh/kWh	3.71
Q_H:	kWh/year	27277
Q_{HE}:	kWh/year	7355
$\eta_{s,h}$	%	145.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 3a.	Sound power level measurement (Low temperature application)		P
Model	JMU150HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		35.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9

Measured quantity	$L_{WA,indoors}$ (dB(A))	$L_{WA,outdoors}$ (dB(A))	Remark
Sound pressure level `$L_{p(ST)}$****	--	46	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	61	--

Setting of controls: according to user manual.
Duct connection:--
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer

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Appendix I Test results

Table 3b.	Sound power level measurement (Medium temperature application)		P
Model	JMU150HC		
	Product type :		Air to Water
	Outdoor heat exchanger, Air temperature DB/WB (°C):		7.0 / 6.0
	Indoor heat exchanger, Water outlet temperature (°C):		55.0
	Voltage (V):		230
	Frequency (Hz):		50
	Working condition class :		Class A
	Acoustical environment :		Hemi-anechoic room
	Windshield type :		Sponge
	Measured position amount :		9
Measured quantity	**$L_{WA,indoors}$ (dB(A))**	**$L_{WA,outdoors}$ (dB(A))**	**Remark**
Sound pressure level `$L_{p(ST)}$****	--	46	--
Measurement distance d *	--	1.0m	--
Sound power level L_{wA}****	--	61	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			

Appendix I Test results

Table 4.	Clause 4 of EN 14511-4:2022	P
Model:	**JMU150HC**	
TEST 1	STARTING TEST (§4.2.1.2 Table 3)	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.98°C, T in water = 19.50°C, Flow rate 1.29m³/h have been set and obtained. At those conditions, the machine was switched on.		
Observation/ Evaluation: It started without any problem and worked for 30 minutes without showing any warning or alarm. During the test the machine operated in auto mode. No damage was recorded on the machine during and after the test.		
Test Response: Pass		

TEST 2	OPERATING TEST (§4.2.1.2 Table 3)
Requirement: From the machine "lower" starting conditions - i.e. - the machine was brought to the lower operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -24.98 °C, T in water = 69.97 °C, Flow rate 1.29 m³/h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 3	SHUTTING OFF WATER FLOW (§ 4.5)
Requirement: The water flow rate was shuted off through manual and automatic valves of the test rig. The machine switched off and only the flow switch Protection appeared on the user interface of indoor unit.	
Observation/ Evaluation: Perform error reset operation, once the water flow rate was restored, the machine restarted automatically and worked for 30 minutes normally. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 4	SHUTTING OFF AIR FLOW (§ 4.5)
Requirement: The air flow rate was shutted off through a plastic sheet and a panel. The machine never turned off. It continued to operate with continuous frosting and defrosting cycles. After more than half an hour, the air flow rate was restored and the machine started to operate normally.	
Observation/ Evaluation: During the test, no waring or alarm were showed. No damage was recorded on the machine during and after the test.	
Test Response: Pass	

TEST 5	COMPLETE POWER SUPPLY FAILURE (§ 4.6)
Requirement: The power supply was cut off for about 5 seconds.	
Observation/ Evaluation: The unit restarted automatically within about 3 minutes after the power supply was reactivated.	
Test Response: Pass	

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Appendix II Marking plate

Nameplate

Air Source Heat Pump		
Model		JMU150HC
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	5000~15040W
	Power input	1000~3200W
	Current input	4.34~13.9A
Heating²	Capacity	4500~14260W
	Power input	1500~4600W
	Current input	6.52~20A
Cooling	Capacity	4000~13250W
	Power input	1500~4730W
	Current input	6.52~20.56A
Max power input		7360W
Max current input		32A
Circuit breaker		32A
Max COP heating		4.7W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/1400g
CO_2 equivalent(GWP)		0.0042t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		43L/Min(2.58m³/h)
Water piping connections		G1'
Water pressure drop		30kPa
Net dimensions(LxWxH)		1130*630*935 mm

Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
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note.for outdoor use only.installation&service by licensed mechanic only.

Air Source Heat Pump		
Model		JMU150HC-B
Power Supply		220-240V~ 50Hz
Heating¹	Capacity	5000~15040W
	Power input	1000~3200W
	Current input	4.34~13.9A
Heating²	Capacity	4500~14260W
	Power input	1500~4600W
	Current input	6.52~20A
Cooling	Capacity	4000~13250W
	Power input	1500~4730W
	Current input	6.52~20.56A
Max power input		7360W
Max current input		32A
Circuit breaker		32A
Max COP heating		4.7W/W
Max.Outlet water temp		75˚C
Operation ambient temp		-25~43˚C
Refrigerant type/change		R290/1400g
CO_2 equivalent(GWP)		0.0042t
Operation pressure(High/Low side)		3.0Mpa/0.85Mpa
Max.allowable pressure		3.0Mpa
Anti-electric shock class		Class I
Degree of protection		IPX4
Rated water flow		43L/Min(2.58m³/h)
Water piping connections		G1'
Water pressure drop		30kPa
Net dimensions(LxWxH)		1130*630*935 mm

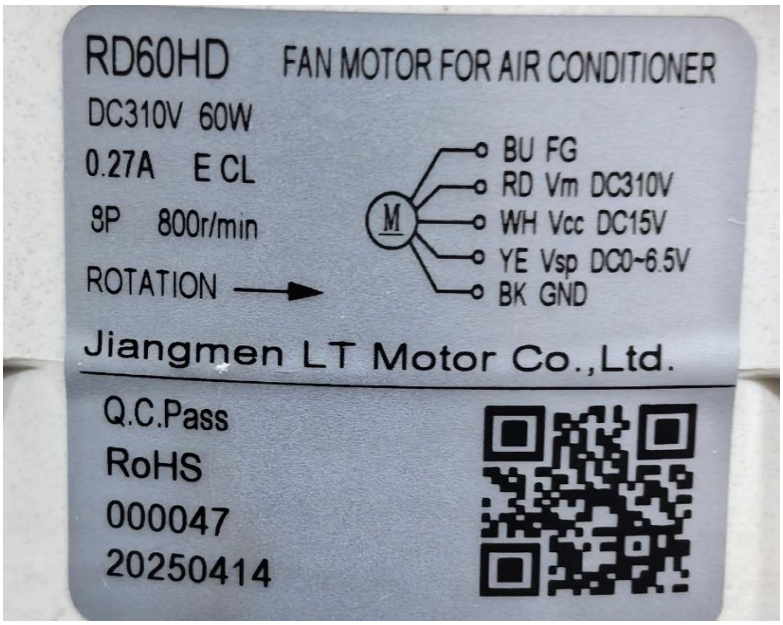
Rated test conditions:
Heating¹:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.30˚C/35˚C
Heating²:ambient temp.7˚C/6˚C(DB/WB).Water-in/out temp.47˚C/55˚C
Cooling:ambient temp.35˚C/24˚C(DB/WB).Water-in/out temp.12˚C/7˚C
Guangdong JNOD New Energy Technology Co., LTD.
note.for outdoor use only.installation&service by licensed mechanic only.

Appendix III photo documentation

Details of:	Overall view for JMU150HC
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

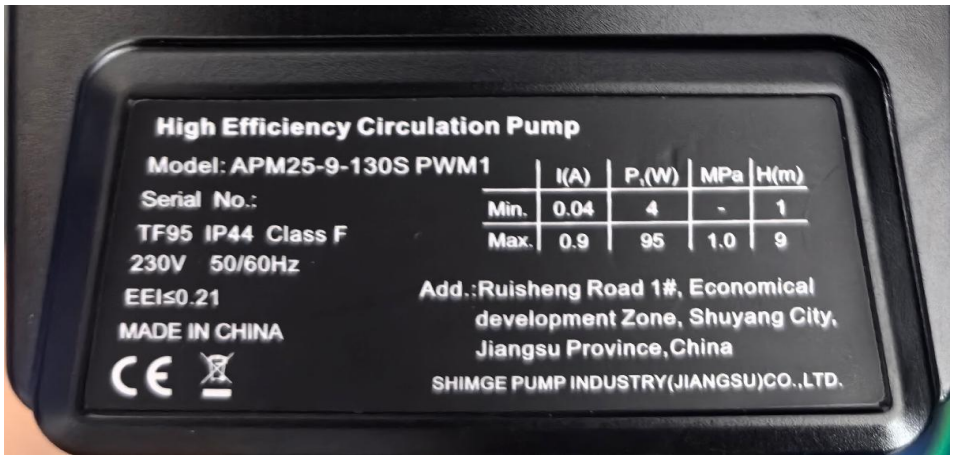
Details of:	Compressor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Fan Motor
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Main Control Board
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Appendix III photo documentation

Details of:	Water Pump
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Overall view for JMU150HC-B
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	SAHNGHAI HIGHLY ELECTRICAL APPLIANCES CO.,LTD.
	Type:	WHP32900VSKTQ9JK
	Serial-number:	W82N1E03705E
	Specification:	DC221V; R290
2. Condenser		
	Manufacture:	Danfoss.,LTD.
	Type:	H39L-EZU-70
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	117×86×331 mm
3. Evaporator		
	Manufacture:	Guangdong Sparkle Air-conditionding Equipment Co.,Ltd.
	Type:	/
	Heat exchanger:	Finned heat exchanger
	Dimension(mm):	1100×450×800 mm
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co.,Ltd.
	Type:	RD60HD
	Fan type:	4 blade
	Specification:	DC310V; 60W
5. Main control board		
	Manufacture:	ShenZhen Megmeet Electrical Co.,Ltd.
	Type:	HiPlus12000-VZM
	Specification:	220-240V~; 50/60Hz
6. Water pump		
	Manufacture:	SHIMGE PUMP INDUSTRY(JIANGSU)CO.,LTD.
	Type:	APM25-9-130S PWM1
	Specification:	230V~; 50/60Hz

Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	/	10HP	2017JO0001	2025-11-07
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2025-11-07
3	Noise Meter and PULSE Sound Power	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	3560-B-010 PULSE	202444CK0032-3	2026-06-26
4	Power Analyzer	HIOKI/ HIOKI E.E. CORPORATION	3334	200844CK0084	2026-06-26
5	Atmospheric Pressure Meter	FENGYANG/TIANJIN FENGYANG INSTRUMENT INDUSTRIAL AND TRADING CO. LTD	DYM3	200944BK0273	2025-11-11
6	1/2" Free-field Microphone	B&K / Brüel & Kjær Sound & Vibration Measurement A/S.	4190-L-001	202444CK0032-4 202444CK0032-5 202444CK0032-6 202444CK0032-7 202444CK0032-8 202444CK0032-9 202444CK0032-10 202444CK0032-11 202444CK0032-12	2026-06-26
7	Hygrometer	UNI-T	UT332	201444CK0004SD	2025-11-10
8	Tape Measure	0-3000mm	3m	201444CK0026SD	2025-11-21

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