



Technical Report No.: 64.181.22.03623.01 Rev.01

Date: 2023-09-04

Client: Name: Guangzhou Hiseer Air Conditioning Co.,Ltd
 Address: Xicheng industry zone, Renhe town, Baiyun district, Guangzhou China
 Contact person: YAN Wei

Manufacturer: Name: Guangzhou Hiseer Air Conditioning Co.,Ltd
 Address: Xicheng industry zone, Renhe town, Baiyun district, Guangzhou China

Factory: Name: Guangzhou Hiseer Air Conditioning Co.,Ltd
 Address: Xicheng industry zone, Renhe town, Baiyun district, Guangzhou China

Test object: Product: Inverter Air source heat pump
 Model: RS10V/L
 Trade mark: Hiseer

Test specification: EN 14825:2022
 EN 14511-3:2022
 EN 14511-4:2022 Clause 4
 EN 12102-1:2022

Purpose of examination: Test according to the test specification
 (EU) No 813/2013
 EU 2016/2282:2016-11-30
 PPP 18025B:2022

Test result: The test results show that the presented product is in compliance with the above listed test specifications.

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question. It does not imply a general statement regarding the quality of products from regular production. For further details please see testing and certification regulation, chapter A-3.4.

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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 :	RS10V/L
Rated Voltage (V) :	380-415V, 3N~
Rated Frequency (Hz) :	50
Rated Power (W) :	3700+4000 (Auxiliary heater)
Rated Current (A) :	16.0
Protection Class :	Class I
Protection Against Moisture :	IP X4
Construction :	Stationary
Supply connection :	<input type="checkbox"/> Non detachable cord <input checked="" type="checkbox"/> Permanent connection to fixed wiring
Operation mode:	<input checked="" type="checkbox"/> Continuous operation; <input type="checkbox"/> Intermittent operation; <input type="checkbox"/> Short time operation;
Refrigerant/charge (kg) :	R32 /1.8 kg
Declared parameters :	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Warmer <input type="checkbox"/> Colder
Sound power level dB(A) :	64
Series No :	SHSBW2209002 for RS10V/L

2 Order

2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2022-06-30, 2023-03-01, 2023-06-02, 2023-08-22

Customer's Reference: Guangzhou Hiseer Air Conditioning Co.,Ltd

2.2 Test Sample(s)

• Reception date(s): 2022-03-04, 2022-08-17, 2023-04-05

• Location(s) of reception:

For Energy test:

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

B1F&2F, No. 3 Chuangqi Building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China

For Noise tests:

For Noise tests: (Reception date(s): 2022-08-18)

The test item is not in accredited scope of our own laboratory (Registration No. CNAS L3584). It was subcontracted to an accredited laboratory with CNAS certificate No. CNAS L0095.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, P.R.China

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

2.3 Date(s) of Testing

2022-08-24 to 2022-10-15, 2023-06-05 to 2023-07-01

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.



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, including a whole compression type refrigerant circuit to heat water in another circuit. The appliance was for cooling and heating water function, this report only for heating capacity test.
2) The main power is supplied by a 5-pole supply cord connecting to fixed wiring.
3) Water enthalpy method was adopted in this report.
4) Standby mode power, off mode power and thermostat-off mode power were tested according to clause 12 of standard EN 14825:2022.
5) The test report 64.181.22.03623.01 Rev.01, dated 2023-09-04, replace original report 64.181.22.03623.01 Rev.00, dated 2022-10-17, and based on test report 64.181.22.03018.01 Rev.01, dated 2023-08-04 to include the following changes and/or additions, which were considered technical modifications:
a) Changing report holder name and address, manufacturer and factory's name and address.
b) After evaluating, no additional test was needed.

TUV SUD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TUV SUD Group

Tested by: Plum Li, Project Handler
printed name, function & signature

Approved by: Gary Sun, Designated Reviewer
printed name, function & signature



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Appendix I Test results

Table 1.	Heating mode (Low temperature application):						P	
Model	RS10V/L							
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	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	$(-7-16)/(T_{designh}-16)$	88	-7(-8)		a / 34			
B	$(+2-16)/(T_{designh}-16)$	54	2(1)		a / 30			
C	$(+7-16)/(T_{designh}-16)$	35	7(6)		a / 27			
D	$(+12-16)/(T_{designh}-16)$	15	12(11)		a / 24			
E	$(TOL-16)/(T_{designh}-16)$		TOL		a / 35.3			
F	$(T_{bivalent}-16)/(T_{designh}-16)$		T _{biv}		a / 34			
G	$(-15-16)/(T_{designh}-16)$	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 9.103kW, the power is 2.039kW, the COP is 4.46kW/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	3:00:00	1:10:00	1:10:00	1:10:00	3:00:00	3:00:00	
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes	
Electrical Properties								
Voltage	V	399.9	400.3	398.8	398.8	399.9	399.9	
Current input of the unit	A	4.56	1.86	1.24	1.08	4.66	4.56	
Power input of the unit	kW	2.934	1.242	0.804	0.694	3.004	2.934	
Compressor frequency	Hz	95	43	30	30	95	95	

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Appendix I Test results

Test conditions User Side							
Water flow	m ³ /h	1.56	1.56	1.56	1.56	1.56	1.56
Inlet Water temperature	°C	28.74	27.16	25.24	23.29	30.38	28.74
Outlet Water temperature	°C	33.49*	30.06	27.59	25.96	34.95	33.49*
Test conditions Source Side							
Barometric pressure	kPa	101.02	101.01	101.04	101.02	101.03	101.02
Air inlet temperature, DB	°C	-6.95	2.00	7.00	12.00	-9.91	-6.95
Air inlet temperature, WB	°C	-7.99	0.99	6.00	10.99	-10.93	-7.99
Summary of the results							
Total heating capacity	kW	8.497	5.182	4.197	4.782	8.168	8.497
Effective power input	kW	2.825	1.173	0.739	0.626	2.899	2.825
Coefficient of performance (COP)	kW/kW	3.01	4.42	5.68	7.64	2.82	3.01
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.016
Standby mode [P _{SB}]	kW	0.016
Crankcase heater [P _{CK}]	kW	0.000
Off mode [P _{OFF}]	kW	0.016

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Appendix I Test results

3.Calculation/conclusion for SCOP :						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	9.605	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	9.605	8.168	2.82	0.00	1.00	2.82
F	8.497	8.497	3.01	0.00	1.00	3.01
A	8.497	8.497	3.01	0.00	1.00	3.01
B	5.172	5.182	4.42	0.00	1.00	4.42
C	3.325	4.197	5.68	0.99	0.79	5.66
D	1.478	4.782	7.64	0.99	0.31	7.47
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.55
SCOP:	kWh/kWh	4.54
Q _H :	kWh/year	19844
Q _{HE} :	kWh/year	4367
η _{s,h}	%	178.7
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Table 2.	Heating mode (Medium temperature application):						P	
Model	RS10V/L							
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	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	$(-7-16)/(T_{designh-16})$	88	-7(-8)		a / 52			
B	$(+2-16)/(T_{designh-16})$	54	2(1)		a / 42			
C	$(+7-16)/(T_{designh-16})$	35	7(6)		a / 36			
D	$(+12-16)/(T_{designh-16})$	15	12(11)		a / 30			
E	$(TOL-16)/(T_{designh-16})$		TOL		a / 55.3			
F	$(T_{bivalent-16})/(T_{designh-16})$		T _{biv}		a / 52			
G	$(-15-16)/(T_{designh-16})$	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 9.954kW, the power is 3.307kW, the COP is 3.01kW/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	3:00:00	1:10:00	1:10:00	1:10:00	1:10:00	3:00:00	
The heat pump defrosts	--	Yes	No	No	No	No	Yes	
Electrical Properties								
Voltage	V	399.3	400.3	398.7	398.8	399.3	399.3	
Current input of the unit	A	5.78	2.52	1.56	1.33	5.94	5.78	
Power input of the unit	kW	3.916	1.707	1.028	0.876	4.028	3.916	
Compressor frequency	Hz	95	48	30	30	93	95	

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Appendix I Test results

Test conditions User Side							
Water flow	m ³ /h	1.09	1.09	1.09	1.09	1.09	1.09
Inlet Water temperature	°C	4.48	37.61	33.21	28.75	48.16	4.48
Outlet Water temperature	°C	51.63	42.01	36.42	32.44	55.08	51.63
Test conditions Source Side							
Barometric pressure	kPa	101.03	101.05	101.10	101.09	101.04	101.03
Air inlet temperature, DB	°C	-6.96	2.01	7.00	12.00	-10.00	-6.96
Air inlet temperature, WB	°C	-8.00	1.01	6.00	11.01	-11.01	-8.00
Summary of the results							
Total heating capacity	kW	8.903	5.491	4.004	4.611	8.602	8.903
Effective power input	kW	3.848	1.639	0.960	0.810	3.954	3.848
Coefficient of performance (COP)	kW/kW	2.31	3.35	4.17	5.69	2.18	2.31
Remark: -							

Electric power consumptions	Unit	Value
Thermostat-off mode [P _{TO}]	kW	0.015
Standby mode [P _{SB}]	kW	0.014
Crankcase heater [P _{CK}]	kW	0.000
Off mode [P _{OFF}]	kW	0.014

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Appendix I Test results

3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	10.064	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	10.064	8.602	2.18	0.00	1.00	2.18
F	8.903	8.903	2.31	0.00	1.00	2.31
A	8.903	8.903	2.31	0.00	1.00	2.31
B	5.419	5.491	3.35	0.00	0.99	3.35
C	3.484	4.004	4.17	0.99	0.87	4.16
D	1.548	4.611	5.69	0.99	0.34	5.58
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.44
SCOP:	kWh/kWh	3.44
Q _H :	kWh/year	20792
Q _{HE} :	kWh/year	6053
η _{s,h}	%	134.4
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

Table 4a.	Sound power level measurement (Medium temperature application)		P
Model	RS10V/L		
	Product type :	Air to Water	
	Outdoor heat exchanger, Air temperature DB/WB (°C):	7.0 /6.0	
	Indoor heat exchanger, Water inlet/outlet temperature (°C):	47.0 /55.0	
	Voltage (V):	399.2	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	0.00	
Measured quantity	L _{WA,indoors} (dB(A))	L _{WA,outdoors} (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	49	--
Measurement radius r *	--	1.0m	--
Sound power level L _{WA} ****	--	64	--
Setting of controls: according to user manual.			
Duct connection:--			
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			
Fan speed: 598 r/min, compressor speed: 70Hz.			

Appendix I Test results

Table 5.	Clause 4 of EN 14511-4:2022	P
Model:	RS10V/L	
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. T _{air} =-25.02°C, T in water = 21.91°C, Flow rate 1,18m ³ /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. T _{air} =-25.00°C, T in water = 38.8° C, Flow rate 1.21m ³ /h. Once these conditions were obtained, the machine was let operate for over 1 hour in auto mode.		
Observation/ Evaluation: During the test, no warning 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 shutted 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 warning 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	
Model:	RS10V/L
Inverter Air Source Heat Pump	
Model:	RS10V/L
Heating capacity at A7/W35°C:	2.6-10.2 kW
Cooling capacity at A35/W7°C:	1.72-6.43 kW
Aux. electric heater:	4 kW
Power supply:	380-415V/3N~/50Hz
Power consumption at A7/W35°C:	0.54-2.46 kW
Nominal running current at A7/W35°C:	2.4-10.9 A
Power consumption at A35/W7°C:	0.57-2.75 kW
Nominal running current at A35/W7°C:	2.6-12.2 A
Rated power consumption:	3.7 (7.7) kW
Rated operating current:	16 (16) A
Refrigerant:	R32
Filling weight:	1.8 kg
Pipe connector:	G1"
Anti electric shock grade:	I
Water proof grade:	IPX4
Nominal flow heating medium:	1.2-2.0 m ³ /h
Max outlet heating medium temperature:	55°C
Max.Operation pressure of low side:	2.8MPa
Max.Operation pressure of high side:	4.2MPa
Max allowable pressure:	4.2MPa
Internal pressure drop at nominal flow:	19kPa
N.W:	112kg
Series No.:	
Manufacture date:	
 	
Importer:xxx Manufacturer:Guangzhou Hiseer air conditioning Co.,Ltd Xicheng industryzone,Renhe town,Baiyun district,Guangzhou China	
MADE IN CHINA	
Remark: -	

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Appendix III photo documentaiton

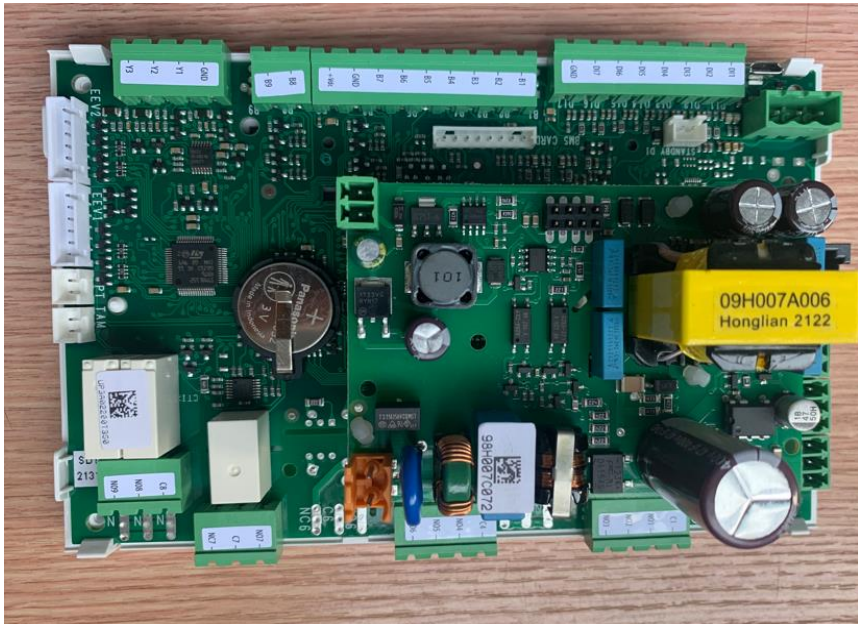
Details of:	Overall view
<p>View:</p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

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

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Appendix III photo documentaiton

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

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

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Appendix III photo documentaiton

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

Appendix IV Construction data form

Part		Technical data
1. Compressor		
	Manufacture:	Panasonic Wanbao appliances compressor (Guangzhou) Co.,Ltd
	Type:	9RD220ZAA2J
	Rated capacity:	8.65kw
	Serial-number:	N/A
	Specification:	DC280V; R32
2. Condenser		
	Manufacture:	Jiangsu Baode Heat-exchanger Equipment Co., Ltd.
	Type:	HBL40-28D
	Heat exchanger:	Brazed plate heat exchanger; Plate spacing 1.3mm
	Dimension(mm):	W X H X D: 119 x 376 x 55 [mm x mm x mm]
3. Evaporator		
	Manufacture:	Guangzhou Aotai refrigeration equipment co.,ltd
	Type:	RS11V/L.CH.00
	Heat exchanger:	Fin spacing 1.8mm; aluminum finned coil heat exchanger
	Dimension(mm):	W X D X H:779*300*966 [mm x mm x mm]
4. Fan motor		
	Manufacture:	Hangzhou Panasonic motor co.,ltd
	Type:	EHDS83BZD
	Fan type:	3 blades
	Specification:	DC310E, 120W, 960r/min
5. Main control board		
	Manufacture:	Carel electronic (Suzhou) co.,ltd
	Type:	UP3A02200T3SO
	Specification:	230VAC; 50/60Hz
6. Water pump		
	Manufacture:	Grundfos
	Type:	UPM3K 25-75 130 AZA
	Specification:	230VAC; 50Hz

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Appendix V Equipment List

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	R&A performance measuring system	GEI	5HP	64-1-90-11-004	2023-12-23
2	Anechoic rooms (hemi-anechoic rooms)	NC-036-2	-	Guangzhou Kinte	2023-10-07
3	AC source Supply	YANGHONG	YF-3600	VGDS-0637	2022-11-07
4	6 channel data logger	—	PXI-1033	VGDY-0257	2023-05-20
5	PULSE system	B & K	3660C	VGDY-0184	2023-04-12
6	Calibrator	B & K	4231	HJ-000095	2023-06-30
7	Long steel tape	—	5m	HJ-000150	2023-01-01
8	Temperature measurement system	—	—	NC-036-1	2023-06-07
9	Atmospheric pressure meter	—	—	HJ-000165	2022-11-22
10	Constant temperature water system	B & K	—	VGDS-0448	2023-04-18
11	Windscreen	B & K	WS002-5	—	—

-- End of Report --