



**Technical Report No.: 64.181.22.03424.02 Rev.00**

**Date: 2023-09-21**

Client:	Name:	FOSHAN GUANGTENG NEW ENERGY CO.,LTD
	Address:	Section 2,Yongfeng Industrial Zone Lunjiao, Shunde, 528308 Foshan, Guangdong, People's Republic of China
	Contact person:	Kelvin Xu
Manufacturer:	Name:	FOSHAN GUANGTENG NEW ENERGY CO.,LTD
	Address:	Section 2,Yongfeng Industrial Zone Lunjiao, Shunde, 528308 Foshan, Guangdong, People's Republic of China
Factory:	Name:	FOSHAN GUANGTENG NEW ENERGY CO.,LTD
	Address:	Section 2,Yongfeng Industrial Zone Lunjiao, Shunde, 528308 Foshan, Guangdong, People's Republic of China
Test object:	Product:	DC INVERTER HEAT PUMP
	Model:	GT-SKR020KBDC-M290, GT-SKR020KBDC-S290, GT-SKR030KBDC-M290, GT-SKR030KBDC-S290, GT-SKR040KBDC-M290, GT-SKR040KBDC-S290
	Trade mark:	--
Test specification:	<input checked="" type="checkbox"/>	EN 14825:2022
	<input checked="" type="checkbox"/>	EN 14511-3:2022
	<input checked="" type="checkbox"/>	EN 14511-4:2022 Clause 4
	<input checked="" type="checkbox"/>	EN 12102-1:2022
Purpose of examination:	Test according to the test specification	
	<input checked="" type="checkbox"/>	(EU) No 813/2013
	<input checked="" type="checkbox"/>	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.

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 :	GT-SKR020KBDC-M290, GT-SKR020KBDC-S290, GT-SKR030KBDC-M290, GT-SKR030KBDC-S290, GT-SKR040KBDC-M290, GT-SKR040KBDC-S290
Rated Voltage (V) :	220-240V~
Rated Frequency (Hz) :	50
Rated Power (W) :	3050W for GT-SKR020KBDC-M290, GT-SKR020KBDC-S290; 4130W for GT-SKR030KBDC-M290, GT-SKR030KBDC-S290; 6030W for GT-SKR040KBDC-M290, GT-SKR040KBDC-S290
Rated Current (A) :	13.5A for GT-SKR020KBDC-M290, GT-SKR020KBDC-S290; 18.2A for GT-SKR030KBDC-M290, GT-SKR030KBDC-S290; 26.5A for GT-SKR040KBDC-M290, GT-SKR040KBDC-S290
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) :	R290 / 0.70kg for GT-SKR020KBDC-M290, GT-SKR020KBDC-S290; 1.10kg for GT-SKR030KBDC-M290, GT-SKR030KBDC-S290; 1.20kg for GT-SKR040KBDC-M290, GT-SKR040KBDC-S290
Declared parameters :	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Warmer <input type="checkbox"/> Colder
Sound power level dB(A) :	N/A
Series No :	KSN0120Q2860 for GT-SKR020KBDC-M290; KSN0130Q03918 for GT-SKR030KBDC-M290; KSN0140Q00200 for GT-SKR040KBDC-M290

## 2 Order

### 2.1 Date of Purchase Order, Customer's Reference

Date of Purchase Order: 2022-08-15, 2023-04-07

Customer's Reference: FOSHAN GUANGTENG NEW ENERGY CO.,LTD

### 2.2 Test Sample(s)

• Reception date(s): 2023-01-10, 2023-07-07

• Location(s) of reception:

For Energy 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

For Noise tests:

China Quality Certification Centre South China Laboratory  
(CNAS accredited laboratory with Registration No.CNAS L4903)

Address: No.11, South of Shenghui Road, Nantou, Zhongshan, Guangdong, China

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

### 2.3 Date(s) of Testing

2023-01-10 to 2023-02-25, 2023-07-07 to 2023-09-01

### 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 par-ticulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instruc-tions written in official language of the country. The instructions shall give information re-garding 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) These appliances are Air To Water Heat Pump Unit, each one including a whole compression type refrigerant circuit to heat water in another circuit. These appliances were 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 GT-SKR020KBDC-S290 is same as GT-SKR020KBDC-M290 except for model's name difference. And the tests are carried out at model GT-SKR020KBDC-M290.
6) The model GT-SKR030KBDC-S290 is same as GT-SKR030KBDC-M290 except for model's name difference. And the tests are carried out at model GT-SKR030KBDC-M290.
7) The model GT-SKR040KBDC-S290 is same as GT-SKR040KBDC-M290 except for model's name difference. And the tests are carried out at model GT-SKR040KBDC-M290.
8) This test report 64.181.22.03424.02 Rev.00, dated 2023-09-21 supersedes original test report 64.181.22.03424.01 Rev.00, dated 2023-03-17 to include the following changes and/or additions, which were considered technical modifications:
a) Adding EN 12102-1:2022 test.
b) Adding EN 14511-4:2022 Clause 4 test.

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

Tested by: William Liang, Project Handler
printed name, function & signature

William Liang

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	GT-SKR020KBDC-M290							
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	Colder
<b>1. Test conditions:</b>								
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	$(T_{bivalent-16})/(T_{designh-16})$		Tbiv		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 6.461kW, the power is 1.515kW, the COP is 4.26kW/kW.								
<b>2. Tested data/correction data(Average):</b>								
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	
<b>Electrical Properties</b>								
Voltage	V	229.7	229.8	229.8	229.9	229.7	229.7	
Current input of the unit	A	7.58	3.22	2.55	2.30	8.02	7.58	
Power input of the unit	kW	1.708	0.649	0.491	0.436	1.814	1.708	
Compressor frequency	Hz	80	36	30	30	85	80	

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Appendix I Test results

Test conditions User Side							
Water flow	m <sup>3</sup> /h	1.12	1.12	1.12	1.12	1.12	1.12
Inlet Water temperature	°C	30.13	27.66	25.51**	23.34**	31.59	30.13
Outlet Water temperature	°C	33.97	29.98	27.93**	26.19**	35.28	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	-7.00	2.08	7.01	12.00	-10.00	-7.00
Air inlet temperature, WB	°C	-8.02	1.01	6.00	11.00	-11.01	-8.02
Summary of the results							
Total heating capacity	kW	5.017	3.056	3.174	3.737	4.829	5.017
Effective power input	kW	1.741	0.681	0.524	0.469	1.846	1.741
Coefficient of performance (COP)	kW/kW	2.88	4.48	6.06	7.97	2.62	2.88
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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Appendix I Test results

3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C):	-7			
Pdesignh(kW):	5.672	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	5.672	4.829	2.62	0.90	1.00	2.62
F	5.017	5.017	2.88	0.90	1.00	2.88
A	5.017	5.017	2.88	0.90	1.00	2.88
B	3.054	3.056	4.48	0.90	1.00	4.48
C	1.963	3.174	6.06	0.90	0.62	5.71
D	0.873	3.737	7.97	0.90	0.23	6.00
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.48
SCOP:	kWh/kWh	4.46
QH:	kWh/year	11718
QHE:	kWh/year	2626
$\eta_{s,h}$	%	175.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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Appendix I Test results

<b>Table 2.</b>	<b>Heating mode (Medium temperature application):</b>							<b>P</b>
<b>Model</b>	GT-SKR020KBDC-M290							
<b>Product type</b>	Air to Water	<b>Heating season</b>	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	Colder
<b>1. Test conditions:</b>								
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 <sub>biv</sub>		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 5.743kW, the power is 2.028kW, the COP is 2.83kW/kW.								
<b>2. Tested data/correction data(Average):</b>								
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	
<b>Electrical Properties</b>								
Voltage	V	229.8	229.9	229.8	229.8	229.8	229.8	
Current input of the unit	A	9.44	4.01	3.06	2.75	9.80	9.44	
Power input of the unit	kW	2.151	0.838	0.611	0.534	2.236	2.151	
Compressor frequency	Hz	83	36	30	30	85	83	

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	0.62	0.62	0.62	0.62	0.62	0.62
Inlet Water temperature	°C	44.99	37.74	33.32**	28.79**	48.38	44.99
Outlet Water temperature	°C	52.03	41.98	37.30**	33.74**	55.00*	52.03
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	2.00	7.01	12.00	-10.00	-7.00
Air inlet temperature, WB	°C	-8.00	1.02	6.01	11.00	-10.98	-8.00
Summary of the results							
Total heating capacity	kW	5.023	3.069	2.875	3.583	4.780	5.023
Effective power input	kW	2.162	0.848	0.621	0.545	2.246	2.162
Coefficient of performance (COP)	kW/kW	2.32	3.62	4.63	6.58	2.13	2.32
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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Appendix I Test results

3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	5.678	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	5.678	4.780	2.13	0.90	1.00	2.13
F	5.023	5.023	2.32	0.90	1.00	2.32
A	5.023	5.023	2.32	0.90	1.00	2.32
B	3.058	3.069	3.62	0.90	1.00	3.62
C	1.966	2.875	4.63	0.90	0.68	4.42
D	0.874	3.583	6.58	0.90	0.24	5.02
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.60
SCOP:	kWh/kWh	3.58
QH:	kWh/year	11731
QHE:	kWh/year	3274
$\eta_{s,h}$	%	140.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Appendix I Test results

<b>Table 3.</b>	<b>Heating mode (Low temperature application):</b>							<b>P</b>
<b>Model</b>	GT-SKR030KBDC-M290							
<b>Product type</b>	Air to Water	<b>Heating season</b>	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	Colder
<b>1. Test conditions:</b>								
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 <sub>biv</sub>		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 8.284kW, the power is 1.979kW, the COP is 4.19kW/kW.								
<b>2. Tested data/correction data(Average):</b>								
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	
<b>Electrical Properties</b>								
Voltage	V	229.7	230.0	230.0	230.1	229.7	229.7	
Current input of the unit	A	8.88	3.44	3.32	2.94	10.84	8.88	
Power input of the unit	kW	2.019	0.702	0.670	0.583	2.480	2.019	
Compressor frequency	Hz	80	31	30	30	85	80	

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Appendix I Test results

Test conditions User Side							
Water flow	m³/h	1.42	1.42	1.42	1.42	1.42	1.42
Inlet Water temperature	°C	30.59	27.95	25.67**	23.40**	32.08	30.59
Outlet Water temperature	°C	34.02	30.03	28.35**	26.30**	35.31	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	2.01	7.01	12.00	-10.00	-7.00
Air inlet temperature, WB	°C	-7.99	1.01	6.01	11.00	-11.01	-7.99
Summary of the results							
Total heating capacity	kW	5.669	3.458	4.462	4.835	5.372	5.669
Effective power input	kW	2.057	0.740	0.709	0.621	2.518	2.057
Coefficient of performance (COP)	kW/kW	2.76	4.67	6.30	7.79	2.13	2.76
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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Appendix I Test results

3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	6.409	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	6.409	5.372	2.13	0.90	1.00	2.13
F	5.669	5.669	2.76	0.90	1.00	2.76
A	5.669	5.669	2.76	0.90	1.00	2.76
B	3.451	3.458	4.67	0.90	1.00	4.67
C	2.218	4.462	6.30	0.90	0.50	5.72
D	0.986	4.835	7.79	0.90	0.20	5.60
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.50
SCOP:	kWh/kWh	4.48
QH:	kWh/year	13241
QHE:	kWh/year	2954
$\eta_{s,h}$	%	176.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

Appendix I Test results

Table 4.	Heating mode (Medium temperature application):							P
Model	GT-SKR030KBDC-M290							
Product type	Air to Water	Heating season	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	Colder
<b>1. Test conditions:</b>								
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 <sub>biv</sub>		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 7.200kW, the power is 2.726kW, the COP is 2.64kW/kW.								
<b>2. Tested data/correction data(Average):</b>								
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	
<b>Electrical Properties</b>								
Voltage	V	229.9	229.8	229.9	230.0	229.7	229.9	
Current input of the unit	A	13.42	4.66	3.97	3.56	12.62	13.42	
Power input of the unit	kW	3.081	0.996	0.831	0.728	2.894	3.081	
Compressor frequency	Hz	83	33	30	30	85	83	

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Test conditions User Side							
Water flow	m <sup>3</sup> /h	0.77	0.77	0.77	0.77	0.77	0.77
Inlet Water temperature	°C	45.22	37.81	33.37**	28.82**	48.17	45.22
Outlet Water temperature	°C	52.02	42.01	38.25**	34.35**	55.05*	52.02
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	2.03	7.01	12.00	-10.00	-7.00
Air inlet temperature, WB	°C	-8.01	1.01	6.01	11.00	-11.00	-8.01
Summary of the results							
Total heating capacity	kW	6.108	3.774	4.388	4.969	6.185	6.108
Effective power input	kW	3.107	1.022	0.857	0.754	2.920	3.107
Coefficient of performance (COP)	kW/kW	1.97	3.69	5.12	6.59	2.12	1.97
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	6.905	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	6.905	6.185	2.12	0.90	1.00	2.12
F	6.108	6.108	1.97	0.90	1.00	1.97
A	6.108	6.108	1.97	0.90	1.00	1.97
B	3.718	3.774	3.69	0.90	0.99	3.69
C	2.390	4.388	5.12	0.90	0.54	4.72
D	1.062	4.969	6.59	0.90	0.21	4.82
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.58
SCOP:	kWh/kWh	3.57
QH:	kWh/year	14266
QHE:	kWh/year	3997
$\eta_{s,h}$	%	139.8
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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<b>Table 5.</b>	<b>Heating mode (Low temperature application):</b>							<b>P</b>
<b>Model</b>	GT-SKR040KBDC-M290							
<b>Product type</b>	Air to Water	<b>Heating season</b>	<input checked="" type="checkbox"/>	Average	<input type="checkbox"/>	Warmer	<input type="checkbox"/>	Colder
<b>1. Test conditions:</b>								
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 <sub>biv</sub>		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 12.138kW, the power is 2.814kW, the COP is 4.31kW/kW.								
<b>2. Tested data/correction data(Average):</b>								
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	
<b>Electrical Properties</b>								
Voltage	V	229.8	230.4	230.3	230.3	229.6	229.8	
Current input of the unit	A	13.51	5.74	4.49	3.90	14.41	13.51	
Power input of the unit	kW	3.091	1.199	0.944	0.804	3.303	3.091	
Compressor frequency	Hz	80	36	30	30	85	80	

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Test conditions User Side							
Water flow	m <sup>3</sup> /h	2.10	2.10	2.10	2.10	2.10	2.10
Inlet Water temperature	°C	30.12	27.49	25.46**	23.35**	31.37	30.12
Outlet Water temperature	°C	34.03	29.90	27.91**	26.18**	35.16	34.03
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	2.08	7.00	11.98	-10.00	-7.00
Air inlet temperature, WB	°C	-7.96	1.03	6.00	11.01	-11.01	-7.96
Summary of the results							
Total heating capacity	kW	9.602	5.927	6.019	6.962	9.209	9.602
Effective power input	kW	3.165	1.273	1.017	0.878	3.377	3.165
Coefficient of performance (COP)	kW/kW	3.03	4.66	5.92	7.93	2.73	3.03
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	10.855	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	10.855	9.209	2.73	0.90	1.00	2.73
F	9.602	9.602	3.03	0.90	1.00	3.03
A	9.602	9.602	3.03	0.90	1.00	3.03
B	5.845	5.927	4.66	0.90	0.99	4.66
C	3.757	6.019	5.92	0.90	0.62	5.58
D	1.670	6.962	7.93	0.90	0.24	6.02
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	4.59
SCOP:	kWh/kWh	4.57
QH:	kWh/year	22426
QHE:	kWh/year	4902
$\eta_{s,h}$	%	180.0
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 2)	--	A+++

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<b>Table 6.</b>	<b>Heating mode (Medium temperature application):</b>						<b>P</b>	
<b>Model</b>	GT-SKR040KBDC-M290							
<b>Product type</b>	Air to Water	<b>Heating season</b>	<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 <sub>biv</sub>	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 11.512kW, the power is 3.823kW, 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	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	229.4	230.4	230.3	230.3	229.3	229.4
Current input of the unit	A	17.46	7.06	5.38	4.79	19.06	17.46
Power input of the unit	kW	4.017	1.523	1.158	1.013	4.390	4.017
Compressor frequency	Hz	80	36	30	30	85	80

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Test conditions User Side							
Water flow	m <sup>3</sup> /h	1.22	1.22	1.22	1.22	1.22	1.22
Inlet Water temperature	°C	45.38	37.89	33.40**	28.82**	48.43	45.38
Outlet Water temperature	°C	52.05	42.01	37.54**	33.70**	54.97*	52.05
Test conditions Source Side							
Barometric pressure	kPa	99.85	99.85	99.85	99.80	99.75	99.85
Air inlet temperature, DB	°C	-6.92	2.16	6.99	12.00	-9.97	-6.92
Air inlet temperature, WB	°C	-8.00	1.07	6.01	10.98	-11.03	-8.00
Summary of the results							
Total heating capacity	kW	9.510	5.894	5.924	6.984	9.329	9.510
Effective power input	kW	4.082	1.587	1.222	1.078	4.455	4.082
Coefficient of performance (COP)	kW/kW	2.33	3.71	4.85	6.48	2.09	2.33
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **The inlet and outlet temperatures are been determined according to Cl.11.5.1 of EN 14825:2022.							

Electric power consumptions	Unit	Value
Thermostat-off mode [P <sub>TO</sub> ]	kW	0.023
Standby mode [P <sub>SB</sub> ]	kW	0.008
Crankcase heater [P <sub>CK</sub> ]	kW	0.040
Off mode [P <sub>OFF</sub> ]	kW	0.008

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3.Calculation/conclusion for SCOP:						
Tdesignh(°C):	-10	Tbiv(°C) :	-7			
Pdesignh(kW):	10.750	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	10.750	9.329	2.09	0.90	1.00	2.09
F	9.510	9.510	2.33	0.90	1.00	2.33
A	9.510	9.510	2.33	0.90	1.00	2.33
B	5.788	5.894	3.71	0.90	0.98	3.71
C	3.721	5.924	4.85	0.90	0.63	4.58
D	1.654	6.984	6.48	0.90	0.24	4.90
CR: part load divided by capacity;						

Conclusions:	Unit	Value
SCOPon:	kWh/kWh	3.67
SCOP:	kWh/kWh	3.66
QH:	kWh/year	22209
QHE:	kWh/year	6064
$\eta_{s,h}$	%	143.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

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Table 7a.	Sound power level measurement (Low temperature application)		P
Model	GT-SKR020KBDC-M290		
	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):	30.0 / 35.0	
	Voltage (V):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	1.12	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	48	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	63	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer Fan speed: 700 r/min, compressor frequency: 73Hz.			

Appendix I Test results

Table 7b.	Sound power level measurement (Medium temperature application)	P	
Model	GT-SKR020KBDC-M290		
	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):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	0.62	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	50	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	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: 800 r/min, compressor frequency: 69Hz.			

Appendix I Test results

Table 8a.	Sound power level measurement (Low temperature application)		P
Model	GT-SKR030KBDC-M290		
	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):	30.0 / 35.0	
	Voltage (V):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	1.42	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	52	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	67	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer Fan speed: 900 r/min, compressor frequency: 66Hz.			

Appendix I Test results

Table 8b.	Sound power level measurement (Medium temperature application)	P	
Model	GT-SKR030KBDC-M290		
	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):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	0.77	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	46	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	61	--
Setting of controls: according to user manual.			
Duct connection:--			
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			
Fan speed: 700 r/min, compressor frequency: 62Hz.			

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Table 9a.	Sound power level measurement (Low temperature application)		P
Model	GT-SKR040KBDC-M290		
	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):	30.0 / 35.0	
	Voltage (V):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	2.10	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	50	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	65	--
Setting of controls: according to user manual. Duct connection:-- Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer Fan speed: 850 r/min, compressor frequency: 70Hz.			

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Table 9b.	Sound power level measurement (Medium temperature application)	P	
Model	GT-SKR040KBDC-M290		
	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):	230	
	Frequency (Hz):	50	
	Working condition class :	Class A	
	Acoustical environment :	Hemi-anechoic room	
	Windshield type :	Sponge	
	Measured position amount :	14	
	Water flow (m³/h):	1.22	
Measured quantity	L <sub>WA,indoors</sub> (dB(A))	L <sub>WA,outdoors</sub> (dB(A))	Remark
Sound pressure level $\bar{L}_{p(ST)}$ ****	--	50	--
Measurement distance d *	--	1.0m	--
Sound power level L <sub>WA</sub> ****	--	65	--
Setting of controls: according to user manual.			
Duct connection:--			
Rounding to: *) 1 decimal places; **) 2 decimal places; ***) 3 decimal places; ****) nearest integer			
Fan speed: 850 r/min, compressor frequency: 78Hz.			



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<b>Table 10.</b>	<b>Clause 4 of EN 14511-4:2022</b>	<b>P</b>
<b>Model:</b>	<b>GT-SKR020KBDC-M290</b>	
<b>TEST 1</b>	<b>STARTING TEST (§4.2.1.2 Table 3)</b>	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. T <sub>air</sub> = -25.03°C, T in water = 10.51°C, Flow rate 0.52m <sup>3</sup> /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		

<b>TEST 2</b>	<b>OPERATING TEST (§4.2.1.2 Table 3)</b>	
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 <sub>air</sub> = -25.01°C, T in water = 70.02 °C, Flow rate 0.52m <sup>3</sup> /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		

<b>TEST 3</b>	<b>SHUTTING OFF WATER FLOW (§ 4.5)</b>	
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		

<b>TEST 4</b>	<b>SHUTTING OFF AIR FLOW (§ 4.5)</b>	
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		

<b>TEST 5</b>	<b>COMPLETE POWER SUPPLY FAILURE (§ 4.6)</b>	
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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<b>Table 11.</b>	<b>Clause 4 of EN 14511-4:2022</b>	<b>P</b>
<b>Model:</b>	<b>GT-SKR030KBDC-M290</b>	
<b>TEST 1</b>	<b>STARTING TEST (§4.2.1.2 Table 3)</b>	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. Tair= -25.08°C, T in water = 10.04°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		

<b>TEST 2</b>	<b>OPERATING TEST (§4.2.1.2 Table 3)</b>	
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= -25.10°C, T in water = 70.89 °C, Flow rate 0.61m³/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		

<b>TEST 3</b>	<b>SHUTTING OFF WATER FLOW (§ 4.5)</b>	
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		

<b>TEST 4</b>	<b>SHUTTING OFF AIR FLOW (§ 4.5)</b>	
Requirement: The air flow rate was shuted 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		

<b>TEST 5</b>	<b>COMPLETE POWER SUPPLY FAILURE (§ 4.6)</b>	
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 I Test results**

<b>Table 12.</b>	<b>Clause 4 of EN 14511-4:2022</b>	<b>P</b>
<b>Model:</b>	<b>GT-SKR040KBDC-M290</b>	
<b>TEST 1</b>	<b>STARTING TEST (§4.2.1.2 Table 3)</b>	
Requirement: The "lower" starting operating conditions declared by the manufacturer for the heating mode- i.e. T <sub>air</sub> = -25.02°C, T in water = 9.85°C, Flow rate 1.07m³/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		

<b>TEST 2</b>	<b>OPERATING TEST (§4.2.1.2 Table 3)</b>	
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 <sub>air</sub> = -24.89°C, T in water = 70.45 °C, Flow rate 1.07m³/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		

<b>TEST 3</b>	<b>SHUTTING OFF WATER FLOW (§ 4.5)</b>	
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		

<b>TEST 4</b>	<b>SHUTTING OFF AIR FLOW (§ 4.5)</b>	
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		

<b>TEST 5</b>	<b>COMPLETE POWER SUPPLY FAILURE (§ 4.6)</b>	
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	
<b>Model: <u>GT-SKR020KBDC-M290</u></b>	
<b>DC INVERTER HEAT PUMP</b>	
Model No.	GT-SKR020KBDC-M290
*Heating Capacity Range	2.83~8.00kW
*Heating input Range	0.65~1.84 kW
*Heating COP Range	3.03~5.21 kW/kW
**Heating Capacity Range	2.53~7.19 kW
**Heating input Range	0.89~2.54 kW
**Heating COP Range	2.52~4.32 kW/kW
Power supply	220-240V~/50Hz
Rated current	13.5 A
Rated power input	3050 W
Max exhaust pressure	3.1MPa
Max suction pressure	0.9MPa
Maximum allowable pressure	3.1MPa
Refrigerant	<div style="display: flex; align-items: center;">            R290/0.70kg         </div>
Max water temperature	65°C
Degree of protection	IPX4
Shockproof level	I
Earth requirement	≤0.1Ω
Net weight	80 kg
Dimension	1100*460*800mm
Water connection	1 Inch
Noise level	≤60dB(A)
Working ambient temperature	-25°C~43°C
*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C Dry bulb temperature 7°C, Wet bulb temperature 6°C. **Heating working condition: Inlet water temperature 47°C, Outlet water temperature 55°C Dry bulb temperature 7°C, Wet bulb temperature 6°C.	
Foshan Guangteng New Energy Co., Ltd. Section 2, Yongfeng Industrial Zone, Lunjiao, Shunde, Foshan, Guangdong, China <div style="display: flex; justify-content: center; align-items: center; gap: 20px; margin-top: 10px;">    </div>	

Remark: The model GT-SKR020KBDC-S290 is same as GT-SKR020KBDC-M290 except for model's name difference.

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Appendix II Marking plate

Nameplate	
<b>Model: <u>GT-SKR030KBDC-M290</u></b>	
<b>DC INVERTER HEAT PUMP</b>	
Model No.	GT-SKR030KBDC-M290
*Heating Capacity Range	3.65~10.38 kW
*Heating input Range	0.85~2.42 kW
*Heating COP Range	3.01~5.16 kW/kW
**Heating Capacity Range	3.40~9.63 kW
**Heating input Range	1.19~3.38 kW
**Heating COP Range	2.00~3.42 kW/kW
Power supply	220-240V~/50Hz
Rated current	18.2 A
Rated power input	4130 W
Max exhaust pressure	3.1MPa
Max suction pressure	0.9MPa
Maximum allowable pressure	3.1MPa
Refrigerant	<div style="display: flex; align-items: center;">            R290/1.10kg         </div>
Max water temperature	65°C
Degree of protection	IPX4
Shockproof level	I
Earth requirement	≤0.1Ω
Net weight	85 kg
Dimension	1100*460*800mm
Water connection	1 Inch
Noise level	≤60dB(A)
Working ambient temperature	-25°C~43°C
*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C Dry bulb temperature 7°C, Wet bulb temperature 6°C. **Heating working condition: Inlet water temperature 47°C, Outlet water temperature 55°C Dry bulb temperature 7°C, Wet bulb temperature 6°C.	
Foshan Guangteng New Energy Co., Ltd. Section 2, Yongfeng Industrial Zone, Lunjiao, Shunde, Foshan, Guangdong, China	
  	

Remark: The model GT-SKR030KBDC-S290 is same as GT-SKR030KBDC-M290 except for model's name difference.

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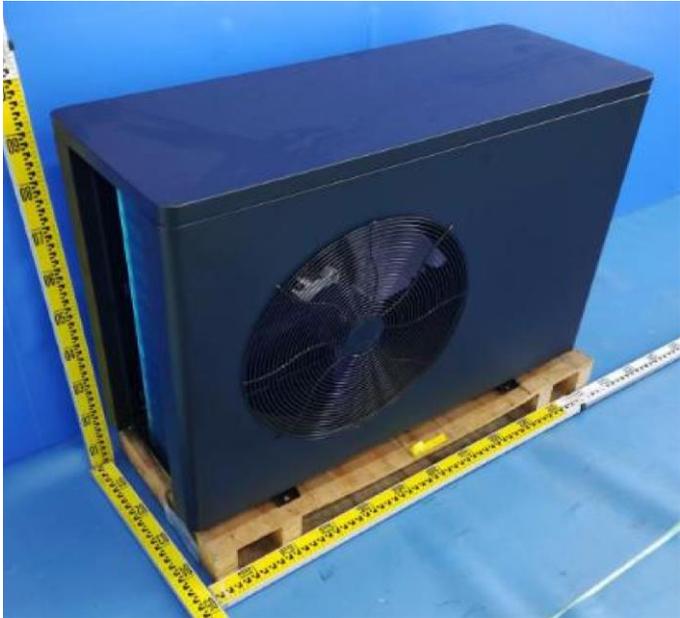
Appendix II Marking plate

Nameplate	
<b>Model: <u>GT-SKR040KBDC-M290</u></b>	
<b>DC INVERTER HEAT PUMP</b>	
Model No.	GT-SKR040KBDC-M290
*Heating Capacity Range	5.10~14.50 kW
*Heating input Range	1.21~3.44 kW
*Heating COP Range	3.03~5.10 kW/kW
**Heating Capacity Range	4.88~13.85 kW
**Heating input Range	1.68~4.78 kW
**Heating COP Range	2.03~3.48 kW/kW
Power supply	220-240V~/50Hz
Rated current	26.5A
Rated power input	6030 W
Max exhaust pressure	3.1MPa
Max suction pressure	0.9MPa
Maximum allowable pressure	3.1MPa
Refrigerant	 R290/1.20kg
Max water temperature	65°C
Degree of protection	IPX4
Shockproof level	I
Earth requirement	≤0.1Ω
Net weight	99 kg
Dimension	1110*470*1010mm
Water connection	1 Inch
Noise level	≤67dB(A)
Working ambient temperature	-25°C~43°C
*Heating working condition: Inlet water temperature 30°C, Outlet water temperature 35°C Dry bulb temperature 7°C, Wet bulb temperature 6°C. **Heating working condition: Inlet water temperature 47°C, Outlet water temperature 55°C Dry bulb temperature 7°C, Wet bulb temperature 6°C.	
Foshan Guangteng New Energy Co., Ltd. Section 2, Yongfeng Industrial Zone, Lunjiao, Shunde, Foshan, Guangdong, China   	

Remark: The model GT-SKR040KBDC-S290 is same as GT-SKR040KBDC-M290 except for model's name difference.

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Appendix III photo documentation

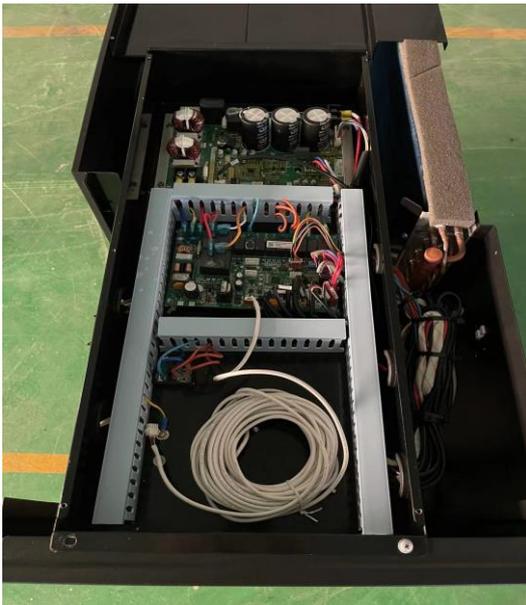
Details of:	Overall view for GT-SKR020KBDC-M290
<p><b>View:</b></p> <p><input type="checkbox"/> General</p> <p><input type="checkbox"/> Front</p> <p><input type="checkbox"/> Rear</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Left</p> <p><input type="checkbox"/> Top</p> <p><input type="checkbox"/> Bottom</p>	

Details of:	Compressor for GT-SKR020KBDC-M290
<p><b>View:</b></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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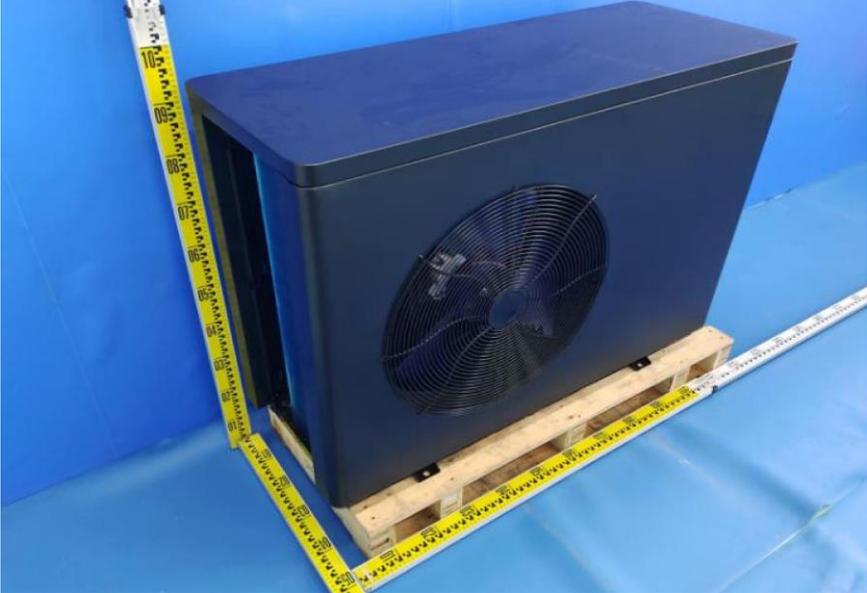
Appendix III photo documentation

Details of:	Fan Motor for GT-SKR020KBDC-M290
<p><b>View:</b></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>The photograph shows a white label for a fan motor. The text on the label includes: RD50HK1 空气调节器用塑封无刷直流电动机 (FAN MOTOR FOR AIR CONDITIONER), DC310V 50W, 0.22A E级(CL), 8极(P) 850r/min, 转向 (ROT.) with an arrow pointing right, and a list of wire colors: 蓝 BLU FG, 红 RED Vm DC310V, 白 WHI Vcc DC15V, 黄 YEL Vsp DC0-6.5V, 黑 BLA GND. It also features a QR code, the company name 江门市力丰电机有限公司 (Jiangmen LT Motor Co., Ltd.), and RoHS compliance information: Q.C.Pass, RoHS, 000279, 20220905.</p>

Details of:	Main Control Board for GT-SKR020KBDC-M290
<p><b>View:</b></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>The photograph shows the internal components of a device, specifically the main control board. The board is populated with various electronic components including capacitors, integrated circuits, and connectors. It is mounted on a metal chassis, and a bundle of white cables is visible in the foreground.</p>

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Appendix III photo documentation

Details of:	Overall view for GT-SKR030KBDC-M290
<p><b>View:</b></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 for GT-SKR030KBDC-M290
<p><b>View:</b></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>	

Doc No.: ITC-TTW0902.02E – Rev.13

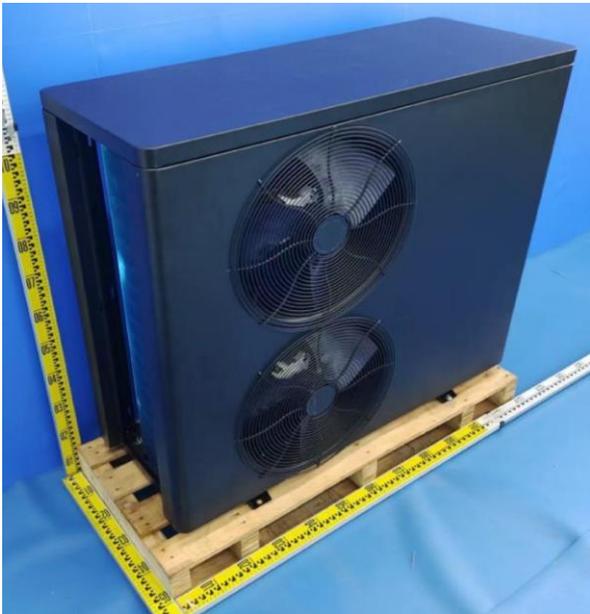
Appendix III photo documentation

Details of:	Fan Motor for GT-SKR030KBDC-M290
<p><b>View:</b></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>The photograph shows a white label for a fan motor. The text on the label includes: RD50HK1 空气调节器用塑封无刷直流电动机 (FAN MOTOR FOR AIR CONDITIONER), DC310V 50W, 0.22A E级(CL), 8极(P) 850r/min, 转向 (ROT.) with a right-pointing arrow, and a color-coded terminal diagram: Blue (BLU) for FG, Red (RED) for Vm DC310V, White (WHI) for Vcc DC15V, Yellow (YEL) for Vsp DC0-6.5V, and Black (BLA) for GND. It also features a CCC certification mark, the manufacturer's name '江门市力丰电机有限公司 (Jiangmen LT Motor Co., Ltd.)', and a QR code. Below the QR code, it lists 'Q.C.Pass', 'RoHS', and the numbers '000279' and '20220905'.</p>

Details of:	Main Control Board for GT-SKR030KBDC-M290
<p><b>View:</b></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>The photograph shows the internal components of a control board housed in a metal chassis. On the left, there is a small LCD display with a green screen and a white bezel. The central part of the board is populated with various electronic components, including integrated circuits, capacitors, and resistors. A network port with a blue Ethernet jack is visible at the top. The board is densely packed with components and connected to various cables.</p>

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Appendix III photo documentation

Details of:	Overall view for GT-SKR040KBDC-M290
<p><b>View:</b></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 for GT-SKR040KBDC-M290
<p><b>View:</b></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 documentation

Details of:	Fan Motor for GT-SKR040KBDC-M290
<p><b>View:</b></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>The photograph shows a white fan motor with a detailed label. The label includes the model number RD34HE1, specifications (DC310V 34W, 0.18A E级(CL), 8极(P) 860r/min), and terminal color coding: Blue (BU) for FG, Red (RD) for Vm DC310V, White (WH) for Vcc DC15V, Yellow (YE) for Vsp DC0-6.5V, and Black (BK) for GND. It also features a QR code, RoHS compliance information (Q.C.Pass, RoHS, 000152, 20220813), and the manufacturer's name in Chinese and English: 江门市力丰电机有限公司 (Jiangmen LT Motor Co., Ltd.).</p>

Details of:	Main Control Board for GT-SKR040KBDC-M290
<p><b>View:</b></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>The photograph shows the internal main control board of the device. It features a green printed circuit board (PCB) populated with various electronic components, including integrated circuits, capacitors, and resistors. Numerous colored wires (red, blue, yellow, black) are connected to the board, and a power supply unit is visible on the left side. The board is housed within a metal enclosure.</p>

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Appendix IV Construction data form

Model: <b>GT-SKR020KBDC-M290</b>		
Part		Technical data
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.
	Type:	WHP07600PSDPC9KQ
	Rated capacity:	7475W
	Serial-number:	W5WN5H066UXD
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	SWEP TECHNOLOGY (SUZHOU) CO., LTD
	Type:	B85Hx20/1P-NSC-M
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526x40.8x119
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchange Equipment Co., Ltd.
	Type:	Hydrophilic aluminum
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	318*715*750
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co., LTD
	Type:	RD50HK1
	Fan type:	3 blade
	Specification:	DC310V; 50W
5. Main control board		
	Manufacture:	SHENZHEN MEGMEET ELECTRICAL CO., LTD.
	Type:	HiPlus2000M-GTR32
	Specification:	220-240V~; 50Hz

Appendix IV Construction data form

Model: <b>GT-SKR030KBDC-M290</b>		
Part		Technical data
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.
	Type:	WHP10200PSDPC9KQ
	Rated capacity:	10200W
	Serial-number:	20211H0001333
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	SWEP TECHNOLOGY (SUZHOU) CO., LTD
	Type:	B85Hx20/1P-NSC-M
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526x40.8x119
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchange Equipment Co., Ltd.
	Type:	Hydrophilic aluminum
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	318*715*750
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co., LTD
	Type:	RD50HK1
	Fan type:	3 blade
	Specification:	DC310V; 50W
5. Main control board		
	Manufacture:	SHENZHEN MEGMEET ELECTRICAL CO., LTD.
	Type:	HiPlus3000M-GTR32
	Specification:	220-240V~; 50Hz

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Appendix IV Construction data form

Model: <u>GT-SKR040KBDC-M290</u>		
Part		Technical data
1. Compressor		
	Manufacture:	SHANGHAI HIGHLY ELECTRICAL APPLIANCES CO., LTD.
	Type:	WHP13300PSDPC8FQ
	Rated capacity:	13300W
	Serial-number:	W6PN5H04G9CS
	Specification:	DC143.5V; R290
2. Condenser		
	Manufacture:	SWEP TECHNOLOGY (SUZHOU) CO., LTD
	Type:	F85Hx30/1P-NSC-M
	Heat exchanger:	Plate heat exchanger
	Dimension(mm):	526x40.8x119
3. Evaporator		
	Manufacture:	Foshan Huize Heat Exchange Equipment Co., Ltd.
	Type:	Hydrophilic aluminum
	Heat exchanger:	Finned-coil heat exchanger
	Dimension(mm):	352*715*950
4. Fan motor		
	Manufacture:	Jiangmen LT Motor Co., LTD
	Type:	RD34HE1
	Fan type:	3 blade
	Specification:	DC310V; 34W
5. Main control board		
	Manufacture:	SHENZHEN MEGMEET ELECTRICAL CO., LTD.
	Type:	HiPlus5000DF4-GT35A
	Specification:	220-240V~; 50Hz



**Appendix V Equipment List**

No.	Type	Manufacture	Model	Equipment ID	Calibration Due Date
1	Heat pump energy efficiency testing system	PINXIN	10HP	2017J00001	2023-11-24
2	Electromagnetic flowmeter	KROHNE	OPTIFLUX4100C	H17221264	2023-12-21
3	20 Channel noise and vibration testing system	RION	SA-02M	CQCSC-BE-0026	2024-01-11
4	Nosie Testing Lab	Beijing Zhongjia Zhirui Technology Co., LTD	ZR-02	CQCSC-BE-0026	2023-11-22
5	Nosie Testing Lab (environmental control system)	Beijing Zhongjia Zhirui Technology Co., LTD	ZR-02	CQCSC-BE-0026	2023-11-22

-- End of Report --

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