

Technical Report No.: 64.181.21.05050.01 Rev.00

Date: 2021-09-xx

Client: Report holder's name: Guangzhou Sprsun New Energy Technology Development Co., Ltd
 Report holder's Address: No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China
 Contact person of report holder: YE XIN
 Manufacturer's name: Guangzhou Sprsun New Energy Technology Development Co., Ltd
 Manufacturer's address: No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China

Factory: Factory's name: Guangzhou Sprsun New Energy Technology Development Co., Ltd
 Factory's address: No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng District,Guangzhou,511338, China

Test object: Product: EVI DC Inverter Air Source Heat Pumps
 Model: CGK-030V3L,CGK-050V3L,CGK-060V3L
 Trade name: SPRSUN

Test specification: EN 14825:2018
 (EU) No 813/2013

Purpose of examination: Test according to the test specification
 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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Doc No.: ITC-TTW0902.02E – Rev.10

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 :	CGK-030V3L,CGK-050V3L,CGK-060V3L
Rated Voltage (V) :	380-415, 3N~
Rated Frequency (Hz) :	50
Rated Power (W) :	3900W for CGK-030V3L, 6100W for CGK-050V3L, 6900W for CGK-060V3L
Rated Current (A) :	8.25A for CGK-030V3L, 12.86A for CGK-050V3L, 14.48A for CGK-060V3L
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 (g) :	R32 /1500g for CGK-030V3L, 2800g for CGK-050V3L&CGK-060V3L
Declared parameters :	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Warmer <input type="checkbox"/> Colder
Sound power level dB(A) :	N/A
Series No :	KRZJ09A20300700187 for CGK-030V3L, KRZJ09A20500700177 for CGK-050V3L, KRZJ09A20600700167 for CGK-060V3L

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2 Order

2.1 Date of Purchase Order, Customer's Reference

2021-XX- YE XIN

2.2 Test Sample(s)

- Reception date(s): 2021-XX-XX,

- Location(s) of reception:

For Energy test:

GZ-Lans Experimental Technology Co., Ltd. Laboratory

Address: No.16, Juncheng Road, Huangpu district, Guangzhou, China

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

2.3 Date(s) of Testing

2021-XX-
XX, to 2021-XX-XX

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

3.1 Positive Test Results

See Appendix I

4 Remark

N/A

4.1 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 Summary

- 1) The appliance is DC Inverter Type Air To Water 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 5-pole supply cable not with plug which not supply by manufactory.
- 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 14825:2018.

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

Tested by: William Liang, Project Handler

printed name, function & signature

Approved by: Tony Xie, Designated Reviewer

printed name, function & signature

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Appendix I Test results

Table 1.	Heating mode(Low temperature application):						P
Model	CGK-030V3L						
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	A	W		Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)	
A	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 34	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 30	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 27	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	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	N/A	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.							
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes
Complete Cycles	--	2	0	0	0	1	2
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02
Voltage	V	401.5	388.7	398.7	396.8	403.9	401.5
Current input of the unit	A	5.31	2.54	2.26	2.07	5.61	5.31
Power input of the unit	kW	2.207	0.880	0.753	0.591	2.497	2.207
Test conditions indoor unit							
Inlet Water temperature, DB	°C	28.28	26.77	23.51	19.95	29.31	28.28
Outlet Water temperature, DB	°C	33.17	29.91	27.05	24.00	34.28	33.17

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.11	7.02	12.00	-9.86	-6.99
Air inlet temperature, WB	°C	-8.10	1.10	6.01	11.00	-10.83	-8.10
Summary of the results							
Total heating capacity	kW	6.351	4.007	4.643	5.186	6.331	6.351
Effective power input	kW	2.222	0.896	0.768	0.606	2.512	2.222
Coefficient of performance (COP)	--	2.86	4.47	6.05	8.56	2.52	2.86
Compressor frequency	Hz	68	30	30	30	78	68
Water flow	m³/h	1.12	1.12	1.12	1.12	1.12	1.12
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	7.179	TOL(°C)		-10			
Test result A, B, C, D, E, F conditions:							
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load	
E	7.179	6.331	2.52	0.00	1.00	2.52	
F	6.351	6.351	2.86	0.00	1.00	2.86	
A	6.351	6.351	2.86	0.00	1.00	2.86	
B	3.866	4.007	4.47	0.00	0.96	4.47	
C	2.485	4.643	6.05	0.99	0.54	5.99	
D	1.104	5.186	8.56	0.99	0.21	8.25	
CR: part load divided by capacity;							

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Appendix I Test results

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	0.040
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.62
SCOP:	kWh/kWh	4.61
Q_H :	kWh/year	14832
Q_{HE} :	kWh/year	3220
$\eta_{s,h}$	%	181.3
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	CGK-030V3L						
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	A	W	C	Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)	
A	$(-7-16)/(T_{designh}-16)$	88	N/A	N/A	-7(-8)	a / 52	
B	$(+2-16)/(T_{designh}-16)$	54	N/A	N/A	2(1)	a / 42	
C	$(+7-16)/(T_{designh}-16)$	35	N/A	N/A	7(6)	a / 36	
D	$(+12-16)/(T_{designh}-16)$	15	N/A	N/A	12(11)	a / 30	
E	$(TOL-16)/(T_{designh}-16)$				TOL	a / 55.3	
F	$(T_{bivalent}-16)/(T_{designh}-16)$				Tbiv	a / 52	
G	$(-15-16)/(T_{designh}-16)$	N/A	N/A	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.							
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes
Complete Cycles	--	2	0	0	0	2	2
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02
Voltage	V	398.5	401.9	406.4	408.6	402.2	398.5
Current input of the unit	A	8.15	3.43	3.15	2.65	8.09	8.15
Power input of the unit	kW	3.513	1.314	1.122	0.879	3.662	3.513
Test conditions indoor unit							
Inlet Water temperature, DB	°C	45.43	38.38	31.88	25.51	48.63	45.43
Outlet Water temperature, DB	°C	51.14	41.88	36.01	30.04	54.02	51.14

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.09	7.01	12.00	-9.97	-6.99
Air inlet temperature, WB	°C	-8.34	1.00	6.00	11.00	-10.88	-8.34
Summary of the results							
Total heating capacity	kW	7.331	4.417	5.206	5.784	6.800	7.331
Effective power input	kW	3.530	1.331	1.139	0.896	3.678	3.530
Coefficient of performance (COP)	--	2.08	3.32	4.57	6.46	1.85	2.08
Compressor frequency	Hz	78	35	35	35	78	78
Water flow	m³/h	1.12	1.12	1.12	1.12	1.12	1.12
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	8.287	TOL(°C)		-10			
Test result A, B, C, D, E, F conditions:							
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load	
E	8.287	6.800	1.85	0.00	1.00	1.85	
F	7.331	7.331	2.08	0.00	1.00	2.08	
A	7.331	7.331	2.08	0.00	1.00	2.08	
B	4.462	4.417	3.32	0.00	1.00	3.32	
C	2.869	5.206	4.57	0.99	0.55	4.53	
D	1.275	5.784	6.46	0.99	0.22	6.24	
CR: part load divided by capacity;							

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Appendix I Test results

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	0.040
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.41
SCOP:	kWh/kWh	3.41
Q_H :	kWh/year	17122
Q_{HE} :	kWh/year	5025
$\eta_{s,h}$	%	133.3
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix I Test results

Table 1.	Heating mode(Low temperature application):						P
Model	CGK-050V3L						
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	A	W		Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)	
A	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 34	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 30	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 27	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	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	N/A	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.							
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes
Complete Cycles	--	2	0	0	0	1	2
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02
Voltage	V	396.2	399.2	402.5	401.2	402.3	396.2
Current input of the unit	A	8.35	3.66	3.41	2.88	8.38	8.35
Power input of the unit	kW	3.721	1.516	1.249	1.001	3.821	3.721
Test conditions indoor unit							
Inlet Water temperature, DB	°C	27.75	26.66	23.11	19.62	29.64	27.75
Outlet Water temperature, DB	°C	32.64	29.92	26.92	23.99	34.28	32.64

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.99	2.01	7.01	12.00	-9.94	-6.99
Air inlet temperature, WB	°C	-8.18	1.00	6.00	11.00	-10.89	-8.18
Summary of the results							
Total heating capacity	kW	10.785	7.196	8.380	9.577	10.221	10.785
Effective power input	kW	3.751	1.545	1.279	1.031	3.850	3.751
Coefficient of performance (COP)	--	2.88	4.66	6.55	9.29	2.65	2.88
Compressor frequency	Hz	70	30	30	30	70	70
Water flow	m³/h	1.90	1.90	1.90	1.90	1.90	1.90
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	12.191	TOL(°C)		-10			
Test result A, B, C, D, E, F conditions:							
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load	
E	12.191	10.221	2.65	0.00	1.00	2.65	
F	10.785	10.785	2.88	0.00	1.00	2.88	
A	10.785	10.785	2.88	0.00	1.00	2.88	
B	6.565	7.196	4.66	0.00	0.91	4.66	
C	4.220	8.380	6.55	0.99	0.50	6.49	
D	1.876	9.577	9.29	0.99	0.20	8.92	
CR: part load divided by capacity;							

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Appendix I Test results

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	0.047
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.83
SCOP:	kWh/kWh	4.82
Q_H :	kWh/year	25187
Q_{HE} :	kWh/year	5228
$\eta_{s,h}$	%	189.7
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	CGK-050V3L						
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	A	W	C	Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)	
A	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 52	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 42	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 36	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	12(11)	a / 30	
E	$(TOL-16)/(T_{designh-16})$				TOL	a / 55.3	
F	$(T_{bivalent-16})/(T_{designh-16})$				Tbiv	a / 52	
G	$(-15-16)/(T_{designh-16})$	N/A	N/A	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.							
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes
Complete Cycles	--	2	0	0	0	1	2
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02
Voltage	V	398.5	405.0	402.5	401.5	404.0	398.5
Current input of the unit	A	11.07	4.52	4.06	3.51	11.66	11.07
Power input of the unit	kW	5.137	1.903	1.609	1.282	5.447	5.137
Test conditions indoor unit							
Inlet Water temperature, DB	°C	45.64	38.85	32.45	25.75	48.84	45.64
Outlet Water temperature, DB	°C	50.83	41.92	36.09	29.99	54.19	50.83

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Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.92	2.02	7.14	12.01	-9.88	-6.92
Air inlet temperature, WB	°C	-8.12	1.00	6.00	11.00	-11.05	-8.12
Summary of the results							
Total heating capacity	kW	11.513	6.725	8.099	9.329	11.743	11.513
Effective power input	kW	5.165	1.932	1.637	1.310	5.475	5.165
Coefficient of performance (COP)	--	2.23	3.48	4.95	7.12	2.14	2.23
Compressor frequency	Hz	70	30	30	30	70	70
Water flow	m³/h	1.92	1.92	1.92	1.92	1.92	1.92
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	13.015	TOL(°C)		-10			
Test result A, B, C, D, E, F conditions:							
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load	
E	13.015	11.743	2.14	0.00	1.00	2.14	
F	11.513	11.513	2.23	0.00	1.00	2.23	
A	11.513	11.513	2.23	0.00	1.00	2.23	
B	7.008	6.725	3.48	0.00	1.00	3.48	
C	4.505	8.099	4.95	0.99	0.56	4.91	
D	2.002	9.329	7.12	0.99	0.21	6.87	
CR: part load divided by capacity;							

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Appendix I Test results

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	0.047
Off mode [P_{OFF}]	kW	0.016

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.57
SCOP:	kWh/kWh	3.56
Q_H :	kWh/year	26889
Q_{HE} :	kWh/year	7547
$\eta_{s,h}$	%	139.5
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix I Test results

Table 1.	Heating mode(Low temperature application):					P	
Model	CGK-060V3L						
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	A	W		Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)	
A	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 34	
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 30	
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 27	
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	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	N/A	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.							
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes
Complete Cycles	--	1	0	0	0	1	1
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02
Voltage	V	402.3	400.2	398.9	402.5	400.5	402.3
Current input of the unit	A	8.57	3.77	3.55	2.94	9.11	8.57
Power input of the unit	kW	4.106	1.603	1.378	1.129	4.228	4.106
Test conditions indoor unit							
Inlet Water temperature, DB	°C	27.60	26.58	22.94	19.52	29.17	27.60
Outlet Water temperature, DB	°C	32.37	29.95	26.89	24.02	34.21	32.37

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.97	2.01	7.00	12.00	-10.00	-6.97
Air inlet temperature, WB	°C	-8.20	1.00	6.00	11.00	-11.12	-8.20
Summary of the results							
Total heating capacity	kW	11.074	7.849	9.184	10.409	11.705	11.074
Effective power input	kW	4.135	1.633	1.407	1.158	4.257	4.135
Coefficient of performance (COP)	--	2.68	4.81	6.53	8.99	2.75	2.68
Compressor frequency	Hz	78	33**	33	33	78	78
Water flow	m³/h	2.00	2.00	2.00	2.00	2.00	2.00
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data. **In part condition, 33Hz is lowest compressor frequency.							

3.Calculation/conclusion for SCOP(Average):

Tdesignh(°C)	-10	Tbiv(°C)	-7
Pdesignh(kW)	12.519	TOL(°C)	-10

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

Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load
E	12.519	11.705	2.75	0.00	1.00	2.75
F	11.074	11.074	2.68	0.00	1.00	2.68
A	11.074	11.074	2.68	0.00	1.00	2.68
B	6.741	7.849	4.81	0.99	0.86	4.80
C	4.333	9.184	6.53	0.99	0.47	6.45
D	1.926	10.409	8.99	0.99	0.19	8.61

CR: part load divided by capacity;

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Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.017
Standby mode [P_{SB}]	kW	0.017
Crankcase heater [P_{CK}]	kW	0.034
Off mode [P_{OFF}]	kW	0.017

Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	4.85
SCOP:	kWh/kWh	4.84
Q_H :	kWh/year	25863
Q_{HE} :	kWh/year	5346
$\eta_{s,h}$	%	190.5
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	CGK-060V3L							
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	A	W	C	Inlet dry (wet) bulb temperature °C	Inlet/outlet water temperatures (°C)		
A	$(-7-16)/(T_{designh-16})$	88	N/A	N/A	-7(-8)	a / 52		
B	$(+2-16)/(T_{designh-16})$	54	N/A	N/A	2(1)	a / 42		
C	$(+7-16)/(T_{designh-16})$	35	N/A	N/A	7(6)	a / 36		
D	$(+12-16)/(T_{designh-16})$	15	N/A	N/A	12(11)	a / 30		
E	$(TOL-16)/(T_{designh-16})$				TOL	a / 55.3		
F	$(T_{bivalent-16})/(T_{designh-16})$				Tbiv	a / 52		
G	$(-15-16)/(T_{designh-16})$	N/A	N/A	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.								
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	4:00:00	2:00:00	2:00:00	2:00:00	4:00:00	4:00:00	
The heat pump defrosts	--	Yes	No	No	No	Yes	Yes	
Complete Cycles	--	2	0	0	0	2	2	
Barometric pressure	kPa	101.02	101.02	101.02	101.02	101.02	101.02	
Voltage	V	404.4	404.0	399.0	406.8	401.4	404.4	
Current input of the unit	A	11.55	4.67	4.31	3.77	12.84	11.55	
Power input of the unit	kW	5.611	2.080	1.760	1.413	5.954	5.611	
Test conditions indoor unit								
Inlet Water temperature, DB	°C	45.50	38.88	32.15	25.59	48.77	45.50	
Outlet Water temperature, DB	°C	50.75	42.07	35.97	29.97	54.21	50.75	

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Appendix I Test results

Test conditions outdoor unit							
Air inlet temperature, DB	°C	-6.95	2.01	7.01	12.01	-9.85	-6.95
Air inlet temperature, WB	°C	-8.11	1.00	6.00	11.00	-10.97	-8.11
Summary of the results							
Total heating capacity	kW	12.278	7.427	8.849	10.125	12.600	12.278
Effective power input	kW	5.643	2.111	1.792	1.444	5.985	5.643
Coefficient of performance (COP)	--	2.18	3.52	4.94	7.01	2.11	2.18
Compressor frequency	Hz	78	33	33	33	78	78
Water flow	m³/h	2.03	2.03	2.03	2.03	2.03	2.03
Remark: * In part condition, outlet temperature data is recorded by a full average complete cycle's data.							
3.Calculation/conclusion for SCOP(Average):							
Tdesignh(°C)	-10	Tbiv(°C)		-7			
Pdesignh(kW)	13.880	TOL(°C)		-10			
Test result A, B, C, D, E, F conditions:							
Condition	Part load	Measured capacity	COP at measured capacity	Cdh	CR	COP at part load	
E	13.880	12.600	2.11	0.00	1.00	2.11	
F	12.278	12.278	2.18	0.00	1.00	2.18	
A	12.278	12.278	2.18	0.00	1.00	2.18	
B	7.474	7.427	3.52	0.00	1.00	3.52	
C	4.805	8.849	4.94	0.99	0.54	4.90	
D	2.135	10.125	7.01	0.99	0.21	6.76	
CR: part load divided by capacity;							





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Appendix I Test results

Electric power consumptions	Unit	Value
Thermostat-off mode [P_{TO}]	kW	0.017
Standby mode [P_{SB}]	kW	0.017
Crankcase heater [P_{CK}]	kW	0.034
Off mode [P_{OFF}]	kW	0.017





Conclusions:	Unit	Value
SCOP _{on} :	kWh/kWh	3.65
SCOP:	kWh/kWh	3.65
Q_H :	kWh/year	28676
Q_{HE} :	kWh/year	7867
$\eta_{s,h}$	%	142.8
Seasonal space heating energy efficiency classes: (According (EU) No 811/2013 Table 1)	--	A++

Appendix II Marking plate

Nameplate	
Model: CGK-030V3L	
 	
EVI DC Inverter Air Source Heat Pumps	
Model	CGK-030V3L
Power Supply	380-415V,3N~/50Hz
Heating Capacity Min./Max.	5.52/12kW
Heating Input Power Min./Max.	1.0/2.7kW
Cooling Capacity Min./Max.	3.97/8.64kW
Cooling Input Power Min./Max.	1.1/3.44kW
Rated. Input Power/Current	3.9kW/8.25A
Max. Water Outlet Temperature	55°C
Water Flow	2.06m ³ /h
Refrigerant/Weight	R32/1500g
Low/High side operation pressure	1.5/4.4MPa
Maximum allowable pressure	4.4MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
WaterProof Level	IPX4
Water Pressure Drop	20kPa
Water Pipe Connection	1 inch
Net Weight	95kg
Date/NO.	See bar code
System CO ₂ aquivalent charge weight: 1.05 ton	
Guangzhou Sprsun New Energy Technology   Development Co., Ltd No.15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng	





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Appendix II Marking plate

Nameplate	
Model: CGK-050V3L	
 	
EVI DC Inverter Air Source Heat Pumps	
Model	CGK-050V3L
Power Supply	380-415V,3N~/50Hz
Heating Capacity Min./Max.	9.2/20kW
Heating Input Power Min./Max.	1.55/4.2kW
Cooling Capacity Min./Max.	6.62/14.4kW
Cooling Input Power Min./Max.	1.7/5.36kW
Rated. Input Power/Current	6.1kW/12.86A
Max. Water Outlet Temperature	55°C
Water Flow	3.4m ³ /h
Refrigerant/Weight	R32/2800g
Low/High side operation pressure	1.5/4.4MPa
Maximum allowable pressure	4.4MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
WaterProof Level	IPX4
Water Pressure Drop	23kPa
Water Pipe Connection	1 inch
Net Weight	130kg
Date/NO.	See bar code
System CO ₂ equivalent charge weight: 1.96 ton	
Guangzhou Sprsun New Energy Technology Development Co., Ltd  	
No. 15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng	

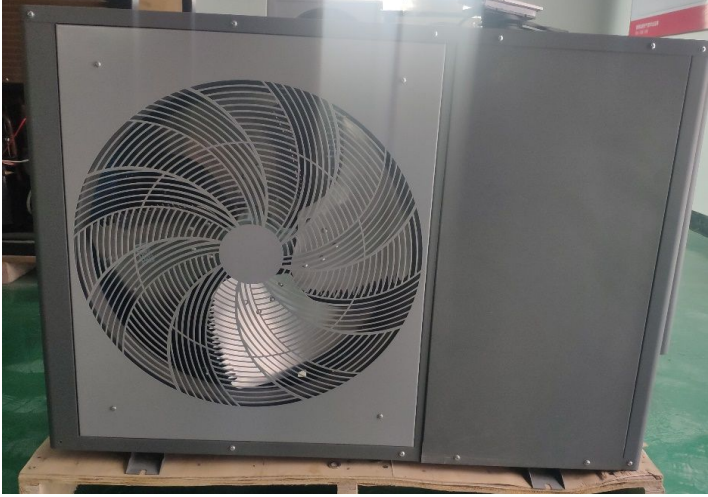
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Appendix II Marking plate

Nameplate	
Model: CGK-060V3L	
 	
EVI DC Inverter Air Source Heat Pumps	
Model	CGK-060V3L
Power Supply	380-415V,3N~/50Hz
Heating Capacity Min./Max.	10.12/22kW
Heating Input Power Min./Max.	1.75/4.76kW
Cooling Capacity Min./Max.	7.29/15.84kW
Cooling Input Power Min./Max.	1.93/6.08kW
Rated. Input Power/Current	6.9kW/14.48A
Max. Water Outlet Temperature	55°C
Water Flow	3.8m ³ /h
Refrigerant/Weight	R32/2800g
Low/High side operation pressure	1.5/4.4MPa
Maximum allowable pressure	4.4MPa
Max Water Pressure	1.0MPa
Shock Proof Grade	I
WaterProof Level	IPX4
Water Pressure Drop	25kPa
Water Pipe Connection	1 inch
Net Weight	130kg
Date/NO.	See bar code
System CO ₂ equivalent charge weight: 1.96 ton	
Guangzhou Sprsun New Energy Technology Development Co., Ltd  	
No. 15 Tangxi Road, Yinsha Industrial Park, Xintang, Zengcheng	

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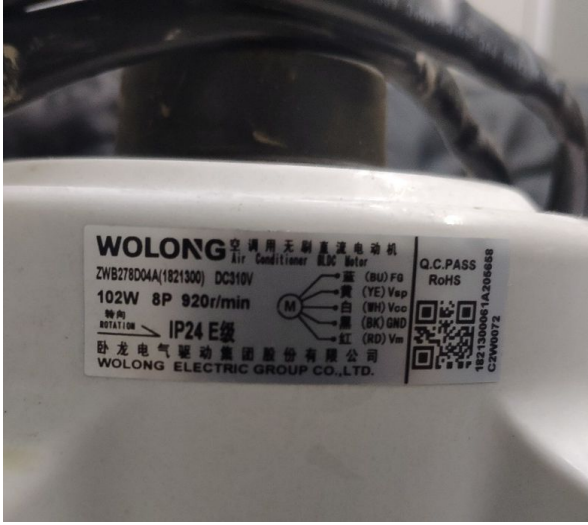
Appendix III photo documentaiton


Details of:	Overall view for CGK-030V3L
<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 for CGK-030V3L
<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:	Fan Motor for CGK-030V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

Details of:	Main Control Board for CGK-030V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

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Appendix III photo documentaiton


Details of:	Overall view for CGK-050V3L&CGK-060V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	


Details of:	Compressor for CGK-050V3L&CGK-060V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

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Doc

Appendix III photo documentaiton

Details of:	Fan Motor for CGK-050V3L&CGK-060V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

Details of:	Main Control Board for CGK-050V3L&CGK-060V3L
View:	
<input type="checkbox"/> General	
<input type="checkbox"/> Front	
<input type="checkbox"/> Rear	
<input type="checkbox"/> Right	
<input type="checkbox"/> Left	
<input type="checkbox"/> Top	
<input type="checkbox"/> Bottom	

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Appendix IV Construction data form

Model: CGK-030V3L		
Part		Technical data
1. Compressor		
	Manufacture:	Panasonic Wanbao Appliances Compressor (Guangzhou) Co., Ltd
	Type:	9KD240ZAA2J
	Rated capacity:	2405W
	Serial-number:	N/A
2. Condenser		
	Manufacture:	East -Alliance Thermal Equipment
	Type:	EATB61-D-26-2M-2L
	Heat exchanger:	Plate heat exchanger
	Dimension (mm):	539(L)mmX125(H)mmX103(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration Equipment Co.,Ltd.
	Type:	03KA-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension (mm):	660(L)mmX750(H)mmX345(D)mm
4. Fan motor		
	Manufacture:	Wolong Electric Group Co., Ltd
	Type:	ZWB278D04A
	Fan type:	3 blade
5. Main control board		
	Manufacture:	CAREL
	Type:	UP3CON0S00
	Specification:	380-420V; 50Hz

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Appendix IV Construction data form

Model: CGK-050V3L,CGK-060V3L

Part	Technical data	
1. Compressor		
	Manufacture:	Panasonic Wanbao Appliances Compressor (Guangzhou) Co.,Ltd.
	Type:	9VD420ZAA2J
	Rated capacity:	4390W
	Serial-number:	N/A
2. Condenser		
	Manufacture:	East -Alliance Thermal Equipment
	Type:	EATB61-D-40-2M-2L
	Heat exchanger:	Plate heat exchanger
	Dimension (mm):	539(L)mmX125(H)mmX103(D)mm
3. Evaporator		
	Manufacture:	Guangzhou Aotai Refrigeration Equipment Co.,Ltd.
	Type:	05KA-CP-01
	Heat exchanger:	Finned-coil heat exchanger
	Dimension (mm):	660(L)mmX1300(H)mmX345(D)mm
4. Fan motor		
	Manufacture:	Wolong Electric Group Co., Ltd
	Type:	ZWB278D04A
	Fan type:	3 blade
5. Main control board		
	Manufacture:	CAREL
	Type:	UP3CON0S00
	Specification:	380-420V; 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	20kW	-	2022-08-02
2	Temperature and humidity meter	VAISALA	HMD42	H5110021	2022-08-02
3	Platinum resistance	YINUO	Pt100	7430F	2022-05-20
4	Platinum resistance	YINUO	Pt100	7434F	2022-05-20
5	Flowmeter	YOKOGAWA	AXF015G	S5M201965	2022-05-20
6	Flowmeter	YOKOGAWA	AXF040G	S5M805005	2022-05-20
7	Pressure transmitter	MICRO	MPM489	240502	2022-08-02
8	Pressure transmitter	MICRO	MPM489	240503	2022-08-02
9	Water pressure difference transmitter	MICRO	MDM3051	291459	2022-08-02
10	AC source Supply	YANGHONG	YF-3600	-	2022-01-01
11	Water pressure difference transmitter	MICRO	MDM3051	291459	2022-08-02
12	AC source Supply	YANGHONG	YF-3600	-	2022-01-01
13	Temperature and humidity meter	H5110021	HMD42	VAISALA	2022-08-02

-- End of Report --