The following sample was submitted and identified on behalf of the client as:

TEST REPORT
COMMISSION REGULATION (EU) No 811/2013
of 18 February 2013
supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device

COMMISSION REGULATION (EU) No 813/2013
of 2 August 2013
implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters

Report Reference No......:	GZES201203564132
Tested by (name + signature).....:	David Lei /Project engineer
Approved by (+ signature) .....:	Sky Lin /Reviewer
Date of issue.....:	2021-01-11
Total number of pages.....:	25 pages
Testing Laboratory .....:	SGS-CSTC Standards Technical Services Co., Ltd. Shunde Branch
Address.....:	Building 1, European Industrial Park, No.1, Shunhenan Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China
Applicant's name.....:	NuLite New Energy (Guangzhou) Co.,Ltd.
Address.....:	506 No.16 North Red Cotton avenue Xiuquan Street Huadu District Guangzhou City China
Test specification:	
Standard .....:	COMMISSION REGULATION (EU) No 811/2013; (EU) No 813/2013
	EN 14825: 2018
Test procedure.....:	STR: EU Directive 2009/125/EC
Non-standard test method……..:	None
Test Report Form No. .....:	811/2013_01/ 813/2013_1
Test Report Form(s) Originator .....:	SGS-CSTC
Master TRF .....:	2015-04-27

Test item description .....:	DC Inverter Heat Pump
Trade Mark .....:	**NULITE NEW ENERGY**
Manufacturer.....:	Same as applicant
Model/Type reference.....:	NL-BKDX50-200II/R32
Ratings.....:	380 V,3N~,50HZ,IPX4; details refer to marking plates
Factory.....:	Same as applicant

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
COMMISSION REGULATION (EU) No 811/2013 and COMMISSION REGULATION (EU) No 813/2013. EN 14825: 2018 The test voltage: 400 V,3N~	1/F., of No.1 Jusheng Road, Ronggui Hongxing Residential Committee, Shunde, Foshan, Guangdong, China

Copy of marking plate

The marking plate is only the draft.

NULITE NEW ENERGY	
DC Inverter Heat Pump	
Model	NL-BKDX50-200II/R32
Rated of waterproof	IPX4
Rated of Elc. leakage protection	I Class
Power supply	380V-3N-Inverter
Max water pump head	8M
Expansion tank capacity	5L
Rated input power	7500W
Rated input current	12.9A
Auxilary element power	3000W
Auxilary element current	14A
Heating capacity	5500W-21000W
Hot water capacity	4500W-20000W
Cooling capacity	4800W-14500W
Heating input power	2000-5500W
Hot water input power	2000-5500W
Cooling input power	2000-5500W
Rated flow rate	3.5m³/h
Max water temperature	60°C
Refrigeration	R32/2300g
Net weight	150KG
Noise	≤52dB(A)
Max working pressure	4.2MPa
Nulite New Energy (Guangzhou)Co.,Ltd. CE	

Test item particulars .....:	
Classification of installation and use .....:	Fixed appliance
Supply Connection.....:	Connected to fixed wiring
.....:	
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2020-12-30
Date (s) of performance of tests .....:	2020-12-30 to 2021-01-11

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

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

General product information:

Heap pump for space heating used.

COMMISSION REGULATION (EU) No 813/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
	Ecodesign requirements		—
ANNEX I	Definitions applicable for Annexes II to V		P
ANNEX II	Ecodesign requirements		P
1. (a)	From 26 September 2015 the seasonal space heating energy efficiency and useful efficiencies of heaters shall not fall below the following values:		P
	Fuel boiler space heaters with rated heat output ≤ 70 kW and fuel boiler combination heaters with rated heat output ≤ 70 kW, with the exception of type B1 boilers with rated heat output ≤ 10 kW and type B1 combination boilers with rated heat output ≤ 30 kW:		N/A
	The seasonal space heating energy efficiency shall not fall below 86 %.		N/A
	Type B1 boilers with rated heat output ≤ 10 kW and type B1 combination boilers with rated heat output ≤ 30 kW:		N/A
	The seasonal space heating energy efficiency shall not fall below 75 %.		N/A
	Fuel boiler space heaters with rated heat output > 70 kW and ≤400 kW and fuel boiler combination heaters with rated heat output > 70 kW and ≤ 400 kW:		N/A
	The useful efficiency at 100 % of the rated heat output shall not fall below 86 %, and the useful efficiency at 30 % of the rated heat output shall not fall below 94 %.		N/A
	Electric boiler space heaters and electric boiler combination heaters:		N/A
	The seasonal space heating energy efficiency shall not fall below 30 %.		N/A
	Cogeneration space heaters:		N/A
	The seasonal space heating energy efficiency shall not fall below 86 %.		N/A
	Heat pump space heaters and heat pump combination heaters, with the exception of low-temperature heat pumps:		P
	The seasonal space heating energy efficiency shall not fall below 100 %.		P
	Low-temperature heat pumps:		N/A
	The seasonal space heating energy efficiency shall not fall below 115 %.		N/A
(b)	From 26 September 2017 the seasonal space heating energy efficiency of electric boiler space heaters, electric boiler combination heaters, cogeneration space heaters, heat pump space heaters and heat pump combination heaters shall not fall below the following values:		P
	Electric boiler space heaters and electric boiler combination heaters:		N/A
	The seasonal space heating energy efficiency shall not fall below 36 %.		N/A
	Cogeneration space heaters:		N/A
	The seasonal space heating energy efficiency shall not fall below 100 %.		N/A

COMMISSION REGULATION (EU) No 813/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
	Heat pump space heaters and heat pump combination heaters, with the exception of low-temperature heat pumps:		P
	The seasonal space heating energy efficiency shall not fall below 110 %.		P
	Low-temperature heat pumps:		N/A
	The seasonal space heating energy efficiency shall not fall below 125 %.		N/A
2.	REQUIREMENTS FOR WATER HEATING ENERGY EFFICIENCY		N/A
(a)	From 26 September 2015 the water heating energy efficiency of combination heaters shall not fall below the following values:		N/A
			N/A

Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL
Water heating energy efficiency	22 %	23 %	26 %	26 %	30 %	30 %	30 %	32 %	32 %	32 %

(b)	From 26 September 2017 the water heating energy efficiency of combination heaters shall not fall below the following values:		N/A
			N/A

Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL
Water heating energy efficiency	32 %	32 %	32 %	32 %	36 %	37 %	38 %	60 %	64 %	64 %

3	REQUIREMENTS FOR SOUND POWER LEVEL		No testing
	From 26 September 2015 the sound power level of heat pump space heaters and heat pump combination heaters shall not exceed the following values:		No testing
			No testing

Rated heat output ≤ 6 kW		Rated heat output > 6 kW and ≤ 12 kW		Rated heat output > 12 kW and ≤ 30 kW		Rated heat output > 30 kW and ≤ 70 kW	
Sound power level (L_{WA}), indoors	Sound power level (L_{WA}), outdoors	Sound power level (L_{WA}), indoors	Sound power level (L_{WA}), outdoors	Sound power level (L_{WA}), indoors	Sound power level (L_{WA}), outdoors	Sound power level (L_{WA}), indoors	Sound power level (L_{WA}), outdoors
60 dB	65 dB	65 dB	70 dB	70 dB	78 dB	80 dB	88 dB

4.	REQUIREMENTS FOR EMISSIONS OF NITROGEN OXIDES		N/A
5	REQUIREMENTS FOR PRODUCT INFORMATION		P
	From 26 September 2015 the following product information on heaters shall be provided:		P
(a)	the instruction manuals for installers and end-users, and free access websites of manufacturers, their authorised representatives and importers shall contain the following elements:		P
	for boiler space heaters, boiler combination heaters and cogeneration space heaters, the technical parameters set out in Table 1, measured and calculated in accordance with Annex III;		N/A

COMMISSION REGULATION (EU) No 813/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
	for heat pump space heaters and heat pump combination heaters, the technical parameters set out in Table 2, measured and calculated in accordance with Annex III;		P
	any specific precautions that shall be taken when the heater is assembled, installed or maintained;		P
	for type B1 boilers and type B1 combination boilers, their characteristics and the following standard text: 'This natural draught boiler is intended to be connected only to a flue shared between multiple dwellings in existing buildings that evacuates the residues of combustion to the outside of the room containing the boiler. It draws the combustion air directly from the room and incorporates a draught diverter. Due to lower efficiency, any other use of this boiler shall be avoided and would result in higher energy consumption and higher operating costs;		N/A
	for heat generators designed for heaters, and heater housings to be equipped with such heat generators, their characteristics, the requirements for assembly, to ensure compliance with the ecodesign requirements for heaters and, where appropriate, the list of combinations recommended by the manufacturer;		N/A
	information relevant for disassembly, recycling and/or disposal at end-of-life;		N/A
(b)	the technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:		P
	the elements specified in point (a);		P
	for heat pump space heaters and heat pump combination heaters where the information relating to a specific model comprising a combination of indoor and outdoor units has been obtained by calculation on the basis of design and/or extrapolation from other combinations, the details of such calculations and/or extrapolations, and of any tests undertaken to verify the accuracy of the calculations, including details of the mathematical model for calculating the performance of such combinations and details of the measurements taken to verify this model;		P
(c)	the following information shall be durably marked on the heater:		N/A
	if applicable, 'type B1 boiler' or 'type B1 combination boiler';		N/A
	for cogeneration space heaters, the electrical capacity.		N/A
ANNEX III	Measurements and calculations		—

COMMISSION REGULATION (EU) No 813/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
1	For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published in the ***Official Journal of European Union***, or other reliable, accurate and reproducible method, which takes into account the generally recognised state of the art methods, and whose results are deemed to be of low uncertainty. They shall fulfil all of the following technical parameters.	EN 14825:2018 was used	P
2	General conditions for measurements and calculations		P
	(a) For the purposes of the measurements set out in points 2 to 5, the indoor ambient temperature shall be set at 20 °C ± 1 °C.		P
	(b) For the purposes of the calculations set out in points 3 to 5, consumption of electricity shall be multiplied by a conversion coefficient CC of 2,5.		P
	(c) Emissions of nitrogen oxides shall be measured as the sum of nitrogen monoxide and nitrogen dioxide, and expressed in nitrogen dioxide.		N/A
	(d) For heaters equipped with supplementary heaters, the measurement and calculation of rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and emissions of nitrogen oxides shall take account of the supplementary heater.		Not Check
	(e) Declared values for rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and emissions of nitrogen oxides shall be rounded to the nearest integer.		Not Check
	(f) Any heat generator designed for a heater, and any heater housing to be equipped with such a heat generator, shall be tested with an appropriate heater housing and heat generator, respectively.		N/A
3	Seasonal space heating energy efficiency of boiler space heaters, boiler combination heaters and cogeneration space heaters		N/A
	The seasonal space heating energy efficiency η_s shall be calculated as the seasonal space heating energy efficiency in active mode η_{son}, corrected by contributions accounting for temperature controls, auxiliary electricity consumption, standby heat loss, ignition burner power consumption (if applicable) and, for cogeneration space heaters, corrected by adding the electrical efficiency multiplied by a conversion coefficient CC of 2,5.		N/A
4	Seasonal space heating energy efficiency of heat pump space heaters and heat pump combination heaters		P

COMMISSION REGULATION (EU) No 813/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
	(a)For establishing the rated coefficient of performance COP rated or rated primary energy ratio PER rated , the sound power level or emissions of nitrogen oxides, the operating conditions shall be the standard rating conditions set out in Table 3 and the same declared capacity for heating shall be used.		P
	(b)The active mode coefficient of performance SCOP on or active mode primary energy ratio SPER on shall be calculated on the basis of the part load for heating Ph(T j), the supplementary capacity for heating sup(T j) (if applicable) and the bin-specific coefficient of performance COPbin(T j) or bin-specific primary energy ratio PERbin(T j), weighted by the bin-hours for which the bin conditions apply, using the following conditions:		P
	— the reference design conditions set out in Table 4;		P
	— the European reference heating season under average climate conditions set out in Table 5;		P
	— if applicable, the effects of any degradation of energy efficiency caused by cycling depending on the type of control of the heating capacity.		P
	(c)The reference annual heat demand Q H shall be the design load for heating Pdesignh multiplied by the annual equivalent active mode hours H HE of 2 066.		P
	(d)The annual energy consumption Q HE shall be calculated as the sum of:		P
	— the ratio of the reference annual heating demand Q H and the active mode coefficient of performance SCOP on or active mode primary energy ratio SPER on and		P
	— the energy consumption for off, thermostat-off, standby, and crankcase heater mode during the heating season.		P
	(e)The seasonal coefficient of performance SCOP or seasonal primary energy ratio SPER shall be calculated as the ratio of the reference annual heat demand Q H and the annual energy consumption Q HE .		P
	(f)The seasonal space heating energy efficiency η s shall be calculated as the seasonal coefficient of performance SCOP divided by the conversion coefficient CC or the seasonal primary energy ratio SPER, corrected by contributions accounting for temperature controls and, for water-/brine-to-water heat pump space heaters and heat pump combination heaters, the electricity consumption of one or more ground water pumps.		P
5	Water heating energy efficiency of combination heaters		N/A
	The water heating energy efficiency η wh of a combination heater shall be calculated as the ratio between the reference energy Q ref of the declared load profile and the energy required for its generation under the following conditions:		N/A

<table>
<tr><th colspan="4">COMMISSION REGULATION (EU) No 813/2013</th></tr>
<tr><th>Cl.</th><th>Requirement-Test</th><th>Result-Remark</th><th>Verdict</th></tr>
<tr><td></td><td>(a)measurements shall be carried out using the load profiles set out in Table 7;</td><td></td><td>N/A</td></tr>
<tr><td></td><td>(b)measurements shall be carried out using a 24-hour measurement cycle as follows:
— 00:00 to 06:59: no water draw-off;
— from 07:00: water draw-offs according to the declared load profile;
— from end of last water draw-off until 24:00: no water draw-off;</td><td></td><td>N/A</td></tr>
<tr><td></td><td>(c) the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile;</td><td></td><td>N/A</td></tr>
<tr><td></td><td>(d) for heat pump combination heaters, the following additional conditions apply:
— heat pump combination heaters shall be tested under the conditions set out in Table 3;
— heat pump combination heaters which use ventilation exhaust air as the heat source shall be tested under the conditions set out in Table 6.</td><td></td><td>N/A</td></tr>
<tr><td>Table 3</td><td>
Table 3
Standard rating conditions for heat pump space heaters and heat pump combination heaters
<table>
<tr><th rowspan="3">Heat source</th><th>Outdoor heat exchanger</th><th colspan="4">Indoor heat exchanger</th></tr>
<tr><th rowspan="2">Inlet dry bulb (wet bulb) temperature</th><th colspan="2">Heat pump space heaters and heat pump combination heaters, except low-temperature heat pumps</th><th colspan="2">Low-temperature heat pumps</th></tr>
<tr><th>Inlet temperature</th><th>Outlet temperature</th><th>Inlet temperature</th><th>Outlet temperature</th></tr>
<tr><td>Outdoor air</td><td>+ 7 °C (+ 6 °C)</td><td rowspan="4">+ 47 °C</td><td rowspan="4">+ 55 °C</td><td rowspan="4">+ 30 °C</td><td rowspan="4">+ 35 °C</td></tr>
<tr><td>Exhaust air</td><td>+ 20 °C (+ 12 °C)</td></tr>
<tr><td></td><td>Inlet/outlet temperature</td></tr>
<tr><td>Water</td><td>+ 10 °C/+ 7 °C</td></tr>
<tr><td>Brine</td><td>0 °C/– 3 °C</td><td></td><td></td><td></td><td></td></tr>
</table>
</td><td></td><td>P</td></tr>
<tr><td>Table 4</td><td>
Table 4
Reference design conditions for heat pump space heaters and heat pump combination heaters, temperatures in dry bulb air temperature (wet bulb air temperature indicated in brackets)
<table>
<tr><th>Reference design temperature</th><th>Bivalent temperature</th><th>Operation limit temperature</th></tr>
<tr><td>Tdesignh</td><td>T_{biv}</td><td>TOL</td></tr>
<tr><td>– 10 (– 11) °C</td><td>maximum + 2 °C</td><td>maximum – 7 °C</td></tr>
</table>
</td><td></td><td>P</td></tr>
</table>

COMMISSION REGULATION (EU) No 813/2013

Cl.	Requirement-Test	Result-Remark	Verdict
Table 5			P

Table 5

European reference heating season under average climate conditions for heat pump space heaters and heat pump combination heaters

bin_j	T_j [°C]	H_j [h/annum]
1 to 20	– 30 to – 11	0
21	– 10	1
22	– 9	25
23	– 8	23
24	– 7	24
25	– 6	27
26	– 5	68
27	– 4	91
28	– 3	89
29	– 2	165
30	– 1	173
31	0	240
32	1	280
33	2	320
34	3	357
35	4	356
36	5	303
37	6	330
38	7	326
39	8	348
40	9	335
41	10	315
42	11	215
43	12	169
44	13	151
45	14	105
46	15	74
Total hours:		4 910

Table			N/A

Table 6

Maximum ventilation exhaust air available [m^3/h], at humidity of 5,5 g/m^3

Declared load profile	XXS	XS	S	M	L	XL	XXL	3XL	4XL
Maximum ventilation exhaust air available	109	128	128	159	190	870	1 021	2 943	8 830

<table>
<tr><th colspan="4">COMMISSION REGULATION (EU) No 811/2013</th></tr>
<tr><td>Cl.</td><td>Requirement-Test</td><td>Result-Remark</td><td>Verdict</td></tr>
<tr><td>ANNEX II</td><td>Energy efficiency classes</td><td></td><td>P</td></tr>
<tr><td>1</td><td>The seasonal space heating energy efficiency class of a heater, with the exception of low-temperature heat pumps and heat pump space heaters for low-temperature application, shall be determined on the basis of its seasonal space heating energy efficiency as set out in Table 1.</td><td></td><td>P</td></tr>
<tr><td></td><td>The seasonal space heating energy efficiency classes of a low-temperature heat pump and a heat pump space heater for low-temperature application shall be determined on the basis of its seasonal space heating energy efficiency as set out in Table 2.</td><td></td><td>N/A</td></tr>
<tr><td></td><td>The seasonal space heating energy efficiency of a heater shall be calculated in accordance with points 3 and 4 of Annex VII, for heat pump space heaters, heat pump combination heaters and low-temperature heat pumps under average climate conditions.</td><td></td><td>P</td></tr>
<tr><td>Table1</td><td>Table 1
Seasonal space heating energy efficiency classes of heaters, with the exception of low-temperature heat pumps and heat pump space heaters for low-temperature application
<table>
<tr><th>Seasonal space heating energy efficiency class</th><th>Seasonal space heating energy efficiency η_s in %</th></tr>
<tr><td>A^{+++}</td><td>$\eta_s \geq 150$</td></tr>
<tr><td>A^{++}</td><td>$125 \leq \eta_s < 150$</td></tr>
<tr><td>A^{+}</td><td>$98 \leq \eta_s < 125$</td></tr>
<tr><td>A</td><td>$90 \leq \eta_s < 98$</td></tr>
<tr><td>B</td><td>$82 \leq \eta_s < 90$</td></tr>
<tr><td>C</td><td>$75 \leq \eta_s < 82$</td></tr>
<tr><td>D</td><td>$36 \leq \eta_s < 75$</td></tr>
<tr><td>E</td><td>$34 \leq \eta_s < 36$</td></tr>
<tr><td>F</td><td>$30 \leq \eta_s < 34$</td></tr>
<tr><td>G</td><td>$\eta_s < 30$</td></tr>
</table></td><td></td><td>-</td></tr>
<tr><td>Table 2</td><td>Table 2
Seasonal space heating energy efficiency classes of low-temperature heat pumps and heat pump space heaters for low-temperature application
<table>
<tr><th>Seasonal space heating energy efficiency class</th><th>Seasonal space heating energy efficiency η_s in %</th></tr>
<tr><td>A^{+++}</td><td>$\eta_s \geq 175$</td></tr>
<tr><td>A^{++}</td><td>$150 \leq \eta_s < 175$</td></tr>
<tr><td>A^{+}</td><td>$123 \leq \eta_s < 150$</td></tr>
<tr><td>A</td><td>$115 \leq \eta_s < 123$</td></tr>
<tr><td>B</td><td>$107 \leq \eta_s < 115$</td></tr>
<tr><td>C</td><td>$100 \leq \eta_s < 107$</td></tr>
<tr><td>D</td><td>$61 \leq \eta_s < 100$</td></tr>
<tr><td>E</td><td>$59 \leq \eta_s < 61$</td></tr>
<tr><td>F</td><td>$55 \leq \eta_s < 59$</td></tr>
<tr><td>G</td><td>$\eta_s < 55$</td></tr>
</table></td><td></td><td>-</td></tr>
</table>

2	WATER HEATING ENERGY EFFICIENCY CLASSES		N/A
	The water heating energy efficiency class of a combination heater shall be determined on the basis of its water heating energy efficiency as set out in Table 3.		N/A

Table 1: **Information requirements for heat pump space heaters and heat pump combination heaters**							P
(the number of decimals in the box indicates the precision of reporting) Information to identify the model(s) to which the information relates to:							
Air-to-water heat pump: [yes/no]				Yes			
Water-to-water heat pump: [yes/no]				No			
Brine-to-water heat pump: [yes/no]				No			
Low-temperature heat pump: [yes/no]				No			
Equipped with a supplementary heater: [yes/no]				Yes			
Heat pump combination heater: [yes/no]				No			
Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.				Parameters shall be declared for average climate conditions.			
Medium-temperature application		Y		Average (mandatory)		Y	
Low-temperature application		N		Warmer (if designated)		N	
				Colder (if designated)		N	
Item	**symbol**	**value**	**unit**	**item**	**symbol**	**value**	**unit**
Rated heat output (*)	Prated	12,83	kW	Seasonal space heating energy efficiency	ηs	128	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature T j				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T j			
T j = – 7 °C	Pdh	11,35	kW	T j = – 7 °C	COPd	1,86	-
T j = + 2 °C	Pdh	7,03	kW	T j = + 2 °C	COPd	3,52	-
T j = + 7 °C	Pdh	4,70	kW	T j = + 7 °C	COPd	4,15	-
T j = + 12 °C	Pdh	2,69	kW	T j = + 12 °C	COPd	6,10	-
T j = bivalent temperature	Pdh	11,35	kW	T j = bivalent temperature	COPd	1,86	-
T j = operation limit temperature	Pdh	13,07	kW	T j = operation limit temperature	COPd	1,48	-
For air-to-water heat pumps: T j = – 15°C (if TOL < – 20°C)	Pdh	N/A	kW	For air-to-water heat pumps: T j = – 15°C (if TOL < – 20°C)	COPd	N/A	-
Bivalent temperature	T biv	-7	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	N/A	kW	Cycling interval efficiency	COPcyc	N/A	kW
Degradation co-	Cdh	0,9	—	Heating water	W_{TOL}	-	°C

efficient (**)				operating limit temperature			
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0144	kW	Rated heat output (*)	Psup	3	kW
Thermostat-off mode	P_{TO}	0,0569	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0144	kW				
Crankcase heater mode	P_{CK}	0,040	kW				
Other items							
Capacity control	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	—	—	m 3 /h
Sound power level, indoors/ outdoors	L_{WA}	52	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	—	N/A	m 3 /h
Emissions of nitrogen oxides	NO x	N/A	mg/ kWh				
Annual energy consumption	Q_{HE}	8068	KWh				
For heat pump combination heater:							
Declared load profile	N/A			Water heating energy efficiency	η wh	N/A	%
Daily electricity consumption	Q elec	N/A	kWh	Daily fuel consumption	Q fuel	N/A	kW h
Contact details	NuLite New Energy (Guangzhou) Co., Ltd. 506 No.16 North Red Cotton avenue Xiuquan Street Huadu District Guangzhou City China						

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Test condition (Heating function / Average heating season in medium temperature application):

Voltage: 400 V,3N~ / frequency: 50 Hz ;

Indoor heat exchanger: variable outlet

Tj (bivalent temperature): -7 ℃ ; operating limit (TOL): -10 ℃ ;

Table 10 — Part load conditions for air-to-water(brine) units in medium temperature application for the reference heating seasons "A" = average, "W" = warmer and "C" = colder

Condition	Part Load Ratio in %				Outdoor heat exchanger		Indoor heat exchanger			
					Inlet dry (wet) bulb temperature °C		Fixed outlet °C	Variable outlet[d] °C		
	Formula	A	W	C	Outdoor air	Exhaust air	All climates	A	W	C
A	$(-7 - 16) / (T_{designh} - 16)$	88	n/a	61	−7(−8)	20(12)	[a] / 55	[a] / 52	n/a	[a] / 44
B	$(+2 - 16) / (T_{designh} - 16)$	54	100	37	2(1)	20(12)	[a] / 55	[a] / 42	[a] / 55	[a] / 37
C	$(+7 - 16) / (T_{designh} - 16)$	35	64	24	7(6)	20(12)	[a] / 55	[a] / 36	[a] / 46	[a] / 32
D	$(+12 - 16) / (T_{designh} - 16)$	15	29	11	12(11)	20(12)	[a] / 55	[a] / 30	[a] / 34	[a] / 28
E	$(TOL - 16) / (T_{designh} - 16)$				TOL	20(12)	[a] / 55	[a] / [b]	[a] / [b]	[a] / [b]
F	$(T_{biv} - 16) / (T_{designh} - 16)$				T_{biv}	20(12)	[a] / 55	[a] / [c]	[a] / [c]	[a] / [c]
G	$(-15 - 16) / (T_{designh} - 16)$	n/a	n/a	82	−15	20(12)	[a] / 55	n/a	n/a	[a] / 49

[a] With the flow rate as determined at the standard rating conditions given in EN 14511-2 at 47/55 conditions for units with a fixed flow rate, and with a fixed delta T of 8 K for units with a variable flow rate. If for any of the test conditions the resulting flow rate is below the minimum flow rate then this minimum flow rate is used as a fixed flow rate with the outlet temperature for this test condition.

[b] Variable outlet shall be calculated by interpolation from $T_{designh}$ and the temperature which is closest to the TOL.

[c] Variable outlet shall be calculated by interpolation between the upper and lower temperatures which are closest to the bivalent temperature.

[d] If the variable outlet temperature is below the minimum of the operation range of the unit, this minimum should be considered.

Remark: With the flow rate as determined at the standard rating conditions given in EN 14511-2 at 47/55 conditions.

Test 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:mm	02:00	02:00	02:00	02:00	02:00	02:00
The heat pump defrosts	-	No	No	No	No	No	No
Complete cycles	-	0	0	0	0	0	0
Barometric pressure	kPa	103,1	103,1	103,1	103,1	103,1	103,1
Voltage	V	400,0	400,0	400,0	400,0	400,0	400,0
Current	A	9,28	3,06	1,75	0,68	13,56	9,28
Power input	W	6102,3	1996,8	1131,9	440,5	8836,8	6102,3
Test conditions indoor unit							
Inlet Water temperature, DB	℃	45,70	37,96	33,17	28,53	47,65	45,70
Outlet Water temperature, DB	℃	52,08	41,91	35,81	30,04	55,00	52,08
Test conditions outdoor unit							
Air inlet temperature, DB	℃	-7,00	2,00	7,00	12,02	-10,15	-7,00
Air outlet temperature, DB	℃	-8,16	1,08	6,00	10,97	-11,00	-8,16
Water flow	m^3/h	1,53	1,53	1,53	1,53	1,53	1,53

Summary of test result:

Test condition	Heating capacity (kW)	Heating power input (kW)	COP	Compressor frequency
A	11,3502	6,1023	1,8600	80 Hz
B	7,0286	1,9968	3,5199	40 Hz
C	4,6976	1,1319	4,1502	30 Hz
D	2,6869	0,4405	6,0996	20 Hz
E	13,0785	8,8368	1,4800	90 Hz
F	11,3502	6,1023	1,8600	80 Hz

Electric power consumptions	Unit	Value
Thermostat-off mode (P_{TO})	kW	0,0487

Standby mode(P_{SB})	kW	0,0144
Crankcase heater(P_{CK})	kW	0,0569
Off mode(P_{OFF})	kW	0,0144
Pdesignh	kW	12,830
SCOPon:	kWh/kWh	3,381
SCOP:	kWh/kWh	3,285
Q_H:	kWh	26508
Q_{HE}:	kWh	8068
$\eta_{s,h}$	%	128,4
Seasonal space heating energy efficiency classes: (According (EU)No 811/2013 Table 1)	A++	

Test condition (Heating function / Average heating season in low temperature application):

Voltage: 400 V,3N~ / frequency: 50 Hz ;

Indoor heat exchanger: variable outlet

Tj (bivalent temperature): -7 ℃ ; operating limit (TOL): -10 ℃ ;

Table 8 — Part load conditions for air-to-water(brine) units in low temperature application fo the reference heating seasons "A" = average, "W" = warmer and "C" = colder

Condition	Part Load Ratio in %				Outdoor heat exchanger		Indoor heat exchanger			
					Inlet dry (wet) bulb temperature °C		Fixed outlet °C	Variable outlet[d] °C		
	Formula	A	W	C	Outdoor air	Exhaust air	All climates	A	W	C
A	$(-7 - 16) / (T_{designh} - 16)$	88	n/a	61	−7(−8)	20(12)	[a] / 35	[a] / 34	n/a	[a] / 30
B	$(+2 - 16) / (T_{designh} - 16)$	54	100	37	2(1)	20(12)	[a] / 35	[a] / 30	[a] / 35	[a] / 27
C	$(+7 - 16) / (T_{designh} - 16)$	35	64	24	7(6)	20(12)	[a] / 35	[a] / 27	[a] / 31	[a] / 25
D	$(+12 - 16) / (T_{designh} - 16)$	15	29	11	12(11)	20(12)	[a] / 35	[a] / 24	[a] / 26	[a] / 24
E	$(TOL - 16) / (T_{designh} - 16)$				TOL	20(12)	[a] / 35	[a] / [b]	[a] / [b]	[a] / [b]
F	$(T_{biv} - 16) / (T_{designh} - 16)$				T_{biv}	20(12)	[a] / 35	[a] / [c]	[a] / [c]	[a] / [c]
G	$(-15 - 16) / (T_{designh} - 16)$	n/a	n/a	82	−15	20(12)	[a] / 35	n/a	n/a	[a] / 32

[a] With the flow rate as determined at the standard rating conditions given in EN 14511-2 at 30/35 conditions for units with a fixed flow rate, and with a fixed delta T of 5 K for units with a variable flow rate. If for any of the test conditions the resulting flow rate is below the minimum flow rate then this minimum flow rate is used as a fixed flow rate with the outlet temperature for this test condition.

[b] Variable outlet shall be calculated by interpolation from $T_{designh}$ and the temperature which is closest to the TOL.

[c] Variable outlet shall be calculated by interpolation between the upper and lower temperatures which are closest to the bivalent temperature.

[d] If the variable outlet temperature is below the minimum of the operation range of the unit, this minimum should be considered.

Remark: With the flow rate as determined at the standard rating conditions given in EN 14511-2 at 30/35 conditions.

Test 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	hours	02:00	02:00	02:00	02:00	02:00	02:00
The heat pump defrosts	-	No	No	No	No	No	No
Complete cycles	-	0	0	0	0	0	0
Barometric pressure	kPa	103,1	103,1	103,1	103,1	103,2	103,1
Voltage	V	400	400	400	400	400	400
Current	A	6,04	2,91	2,48	0,59	7,60	6,04
Power input	W	3929,2	1877,0	955,4	382,0	4944,9	3929,2
Test conditions indoor unit							
Inlet Water temperature, DB	℃	29,93	27,47	25,16	23,06	31,18	29,93
Outlet Water temperature, DB	℃	33,93	30,18	27,02	24,05	35,24	33,93
Test conditions outdoor unit							
Air inlet temperature, DB	℃	-7,06	1,97	6,90	11,98	-9,99	-7,06
Air outlet temperature, DB	℃	-7,83	1,00	6,03	11,06	-11,00	-7,83
Water flow	m^3/h	2,68	2,68	2,68	2,68	2,68	2,68

Summary of test result:

Test condition	**Heating capacity (kW)**	**Heating power input (kW)**	**COP**	**Compressor frequency**
A	12,4594	3,9292	3,1710	80 Hz
B	8,4466	1,8770	4,5001	40 Hz
C	5,7973	0,9554	6,0679	30 Hz
D	3,0857	0,3820	8,0778	20 Hz
E	14,0881	4,9449	2,8490	90 Hz
F	12,4594	3,9292	3,1710	80 Hz

Electric power consumptions	**Unit**	**Value**
Thermostat-off mode (P_{TO})	kW	0,0487
Standby mode(P_{SB})	kW	0,0144
Crankcase heater(P_{CK})	kW	0,0569
Off mode(P_{OFF})	kW	0,0144

$P_{designh}$	kW	14,085
SCOPon:	kWh/kWh	4,729
SCOP:	kWh/kWh	4,560
Q_H:	kWh	29100
Q_{HE}:	kWh	6382
$\eta_{s,h}$	%	179,4
Seasonal space heating energy efficiency classes: (According (EU)No 811/2013 Table 2)	A+++	

Information of efficiency class according to (EU) No 811/2013		
Item	Measured value	Verdict
Average (mandatory)		
Declared temperature application	Medium-temperature	—
SCOP	3,285	—
seasonal space heating energy efficiency η s; %	128,4	A++
Annual energy consumption Q_{HE};(KWh)	8068	—
Average (mandatory)		
Declared temperature application	Low-temperature	—
SCOP	4,560	—
seasonal space heating energy efficiency η s; %	179,4	A+++
Annual energy consumption Q_{HE};(KWh)	6382	—

(a) for heat pump space heaters and heat pump combination heaters using electricity:

$$\eta_s = (100/CC) \times SCOP - \Sigma F(i)$$

(1) For heat pump space heaters and heat pump combination heaters, the correction is F(1) = 3 %.

(2) For water-/brine-to-water heat pump space heaters and heat pump combination heaters, the correction is F(2) = 5 %.

Information of efficiency class according to (EU) No 811/2013

Seasonal space heating energy efficiency classes of heaters, with the exception of low-temperature heat pumps and heat pump space heaters for low-temperature application

Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency η_s in %
A^{+++}	$\eta_s \geq 150$
A^{++}	$125 \leq \eta_s < 150$
A^{+}	$98 \leq \eta_s < 125$
A	$90 \leq \eta_s < 98$
B	$82 \leq \eta_s < 90$
C	$75 \leq \eta_s < 82$
D	$36 \leq \eta_s < 75$
E	$34 \leq \eta_s < 36$
F	$30 \leq \eta_s < 34$
G	$\eta_s < 30$

Seasonal space heating energy efficiency classes of low-temperature heat pumps and heat pump space heaters for low-temperature application

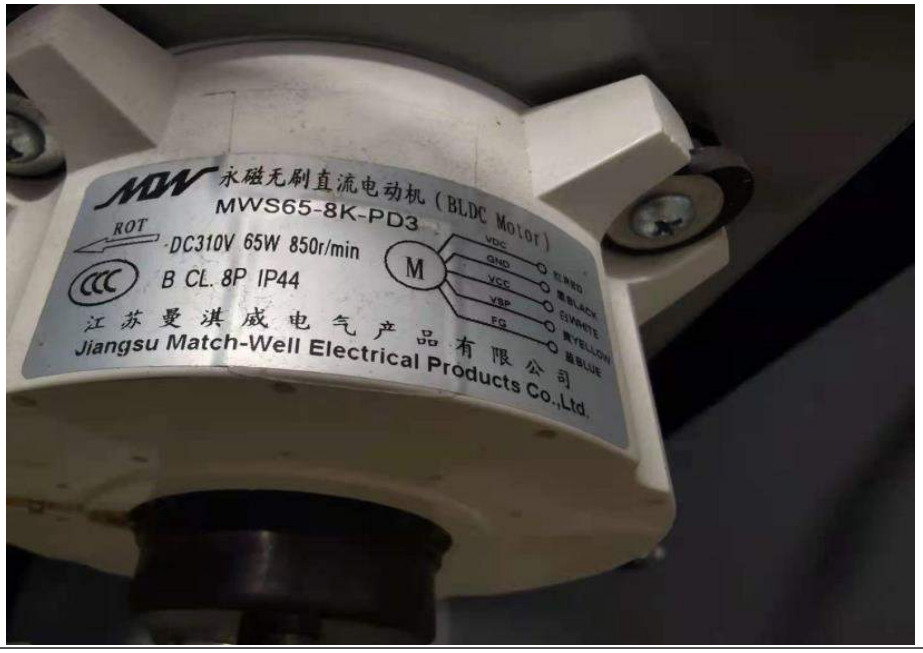
Seasonal space heating energy efficiency class	Seasonal space heating energy efficiency η_s in %
A^{+++}	$\eta_s \geq 175$
A^{++}	$150 \leq \eta_s < 175$
A^{+}	$123 \leq \eta_s < 150$
A	$115 \leq \eta_s < 123$
B	$107 \leq \eta_s < 115$
C	$100 \leq \eta_s < 107$
D	$61 \leq \eta_s < 100$
E	$59 \leq \eta_s < 61$
F	$55 \leq \eta_s < 59$
G	$\eta_s < 55$

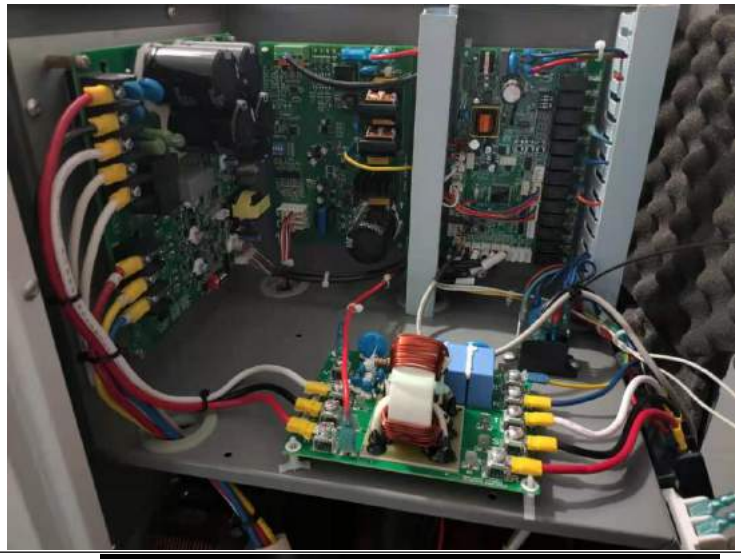
Ecodesign requirements according to (EU) No 813/2013				**Pass**
Model identification		NL-BKDX50-200II/R32		
Declared temperature application		Exception of low-temperature		
Items	Measured value	Stage 1	Stage 2	Verdict
seasonal space heating energy efficiency ηs	128,4	☒ From 26 September 2015 ⩾100	☒ From 26 September 2017 ⩾110	Pass

Declared temperature application		low-temperature		
Items	Measured value	Stage 1	Stage 2	Verdict
seasonal space heating energy efficiency ηs	179,4	☒ From 26 September 2015 ⩾115	☒ From 26 September 2017 ⩾125	Pass

Photo documents:

Products General





- - - End of Report - - -