

Test Report No.:	NTRE20170436-1	Page 1 of 17
Applicant Name:	Gree Electric Appliances Inc. of Zhuhai Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China	
Test item:	Split Heat Pump Air Conditioner	
Identification:	Outdoor unit: GUD160W/NhA-X Indoor unit: GUD160PHS/A-T	Serial No.: Engineering sample
Receipt No.:	RZ00340463	Date of receipt: 2017.11.30
Testing location:	Gree Electric Appliances Inc. of Zhuhai Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China	
Test specification:	COMMISSION REGULATION (EU) 2016/2281 EN 14825:2016 EN 14511-2,3:2013 EN 12102:2013	
Test Result:	<i>The test items passed the test specification(s).</i>	
Testing Laboratory:	Testing Center of Gree Electric Appliances Inc. of Zhuhai	
tested by:		
reviewed by:		
Date	Name/Position	Signature
Other Aspects:		
Abbreviations: <i>P(ass) = passed</i> <i>F(ail) = failed</i> <i>N/A = not applicable</i> <i>N/T =not tested</i>		
<i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>		

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict

Summary of testing			
1. The appliance was tested according to EN 14511.			
2. The SEER、 $\eta_{s,c}$ and SCOP、 $\eta_{s,h}$ were calculated according to EN14825.			
3. All the tests were performed on the outdoor model GUD160W/NhA-X and the indoor model GUD160PHS/A-T as representative.			
4. The samples are engineering samples without serial numbers.			
Test item particulars			
Class of temperature	T1		
Type	Split Heat Pump Air Conditioner		
Degree of protection	Indoor unit:IPX0 Outdoor unit:IPX4		
Supply Connection	Type Y attachment		
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	2017.11.30		
Date (s) of performance of tests	2017.12.03-2017.12.20		
General remarks			
<ul style="list-style-type: none"> ➤ This appliance is heat pump type air conditioner, which consist of one outdoor unit and one indoor units. ➤ The indoor units are ducted type air conditioners, which are usually not accessible (only for maintenance purpose). ➤ Cooling and heating modes are applied by reverse cycle method. In the heating mode, defrost operation may be applied. ➤ The indoor unit can be controlled by a wired controller or an infrared wireless battery powered remote control unit 			
Critical components:			
Model	Compressor model	Indoor fan motor	Outdoor fan motor
Outdoor unit: GUD160W/NhA-X Indoor unit: GUD160PHS/A-T	QXFS-F428zX450I	FG560B-ZL	SWZ120A

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict

Rating labels and marking:

Match table:

Indoor unit	Outdoor unit
GUD160PHS/A-T	GUD160W/NhA-X

The artwork below may be only a draft.

AIR CONDITIONER OUTDOOR UNIT			
Model	GUD160W/NhA-X		
Rated Voltage	380-415V 3N~	Refrigerant	
Rated Frequency	50/60Hz	R32	
Climate Type	T1	Refri. Charge	3.6kg
Weight	112kg	GWP	
Moisture Protection	IPX4	CO ₂ Equivalent	2.43t
Operating Pressure (Discharge Side/Suction Side)		4.6/2.5MPa	
Maximum Allowable Pressure		4.6MPa	
Manufactured Date			

Contains fluorinated greenhouse gases
GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI
 600004062145
 Add: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China, 519070

DUCTED TYPE AIR CONDITIONER	
Model	GUD160PHS/A-T
Rated Voltage/Frequency	220-240V ~/50Hz 208-230V ~/60Hz
Cooling Capacity	16000W
Heating Capacity	17000W
Rated Input	240W
Air Flow Volume	2400m ³ /h
Sound Pressure Level	44dB(A)
Weight	57kg
Manufactured Date	

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI
 600004061352
 Add: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China, 519070

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict

1	Seasonal space heating energy efficiency of air heating products		
(a)	From 1 January 2018, the seasonal space heating energy efficiency of air heating products shall not fall below the values in Table 1	Measured $\eta_{s,h}$:143.9% Measured $\eta_{s,h} \geq 133\%$	P
	For multi-split heat pumps, the manufacturer shall establish conformity with this regulation based on measurements and calculations according to Annex III.		N/A
	For each model of outdoor side unit, a list of recommended combinations with compatible indoor side units shall be included in the technical documentation.		N/A
	The declaration of conformity shall then apply to all combinations mentioned in this list.		N/A
	The list of recommended combinations shall be made available prior to the purchase/lease/hire of an outdoor side unit.		N/A
(b)	From 1 January 2021, the seasonal space heating energy efficiency of air heating products shall not fall below the values in Table 2	Measured $\eta_{s,h}$:143.9% Measured $\eta_{s,h} \geq 137\%$	P
	For multi-split heat pumps the manufacturer shall establish conformity with this regulation based on measurements and calculations according to Annex III.		N/A
	For each model of outdoor side unit, a list of recommended combinations with compatible indoor side units shall be included in the technical documentation.		N/A
	The declaration of conformity shall then apply to all combinations mentioned in this list.		N/A
	The list of recommended combinations shall be made available prior to the purchase/lease/hire of an outdoor side unit.		N/A
2	Seasonal space cooling energy efficiency of cooling products		
(a)	From 1 January 2018, the seasonal space cooling energy efficiency of cooling products shall not fall below the values in Table 3	Measured $\eta_{s,c}$:255.1% Measured $\eta_{s,c} \geq 181\%$	P

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict
	For multi-split air conditioners the manufacturer shall establish conformity with this regulation based on measurements and calculations according to Annex III.		N/A
	For each model of outdoor side unit, a list of recommended combinations with compatible indoor side units shall be included in the technical documentation.		N/A
	The declaration of conformity shall then apply to all combinations mentioned in this list.		N/A
	The list of recommended combinations shall be made available prior to the purchase/lease/hire of an outdoor side unit.		N/A
(b)	From 1 January 2021, the seasonal space cooling energy efficiency of cooling products shall not fall below the values in Table 4	Measured $\eta_{s,c}$:255.1% Measured $\eta_{s,c} \geq 189\%$	P
	For multi-split air conditioners the manufacturer shall establish conformity with this regulation based on measurements and calculations according to Annex III.		N/A
	For each model of outdoor side unit, a list of recommended combinations with compatible indoor side units shall be included in the technical documentation.		N/A
	The declaration of conformity shall then apply to all combinations mentioned in this list.		N/A
	The list of recommended combinations shall be made available prior to the purchase/lease/hire of an outdoor side unit.		N/A
3	Seasonal energy performance ratio of high temperature process chillers		
(a)	From 1 January 2018, the seasonal energy performance ratio of high temperature process chillers shall not fall below the values in Table 5		N/A
(b)	From 1 January 2021, the seasonal energy performance ratio of high temperature process chillers shall not fall below the values in Table 6		N/A
4	Emissions of nitrogen oxides		

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict
(a)	From 26 September 2018, the emissions of nitrogen oxides, expressed in nitrogen dioxide, of warm air heaters, heat pumps, comfort chillers and air conditioners shall not exceed values in Table 7		N/A
(b)	From 1 January 2021, the emissions of nitrogen oxides, expressed in nitrogen dioxide, of warm air heaters shall not exceed values in Table 8		N/A
5	Product information		
(a)	From 1 January 2018, the instruction manuals for installers and end-users, and free access websites of manufacturers, their authorised representatives and importers shall provide the following product information		P
(1)	for warm air heaters, the information set out in Table 9 of this Annex, measured and calculated in accordance with Annex III		N/A
(2)	for comfort chillers, the information set out in Table 10 of this Annex, measured and calculated in accordance with Annex III		N/A
(3)	for air-to-air air conditioners, the information set out in Table 11 of this Annex, measured and calculated in accordance with Annex III		P
(4)	for water/brine-to-air air conditioners, the information set out in Table 12 of this Annex, measured and calculated in accordance with Annex III		N/A
(5)	for fan coil units, the information set out in Table 13 of this Annex, measured and calculated in accordance with Annex III		N/A
(6)	for heat pumps, the information set out in Table 14 of this Annex, measured and calculated in accordance with Annex III		P
(7)	for high temperature process chillers, the information set out in Table 15 of this Annex, measured and calculated in accordance with Annex III		N/A
(8)	any specific precautions that must be taken when the product is assembled, installed or maintained		N/A

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict
(9)	for heat generators or cold generators designed for air heating or cooling products, and air heating or cooling product housings to be equipped with such heat or cold generators, their characteristics, the requirements for assembly, to ensure compliance with the ecodesign requirements for air heating or cooling products and, where appropriate, the list of combinations recommended by the manufacturer		P
(10)	for multi-split heat pumps and multi-split air conditioners, a list of appropriate indoor units		N/A
(11)	for B1, C2 and C4 warm air heaters the following standard text: 'This warm air heater is intended to be connected only to a flue shared between multiple dwellings in existing buildings. Due to a lower efficiency, any other use of this warm air heater shall be avoided and would result in higher energy consumption and higher operating costs'		N/A
(b)	From 1 January 2018, the instruction manuals for installers and end-users, and a part for professionals of the free-access websites of manufacturers, their authorised representatives and importers shall provide the following product information		P
(1)	information relevant for disassembly, recycling and/or disposal at end-of-life		P
(c)	The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements		P
(1)	the elements specified in point (a)		P
(2)	where the information relating to a specific model has been obtained by calculation on the basis of design, and/or extrapolation from other combinations, the technical documentation shall include details of such calculations and/or extrapolations, and of tests undertaken to verify the accuracy of the calculations undertaken, including details of the mathematical model for calculating performance of such combinations, and of measurements taken to verify this model, and a list of any other models where the information included in the technical documentation was obtained on the same basis		P

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict

Test result of part load according to EN 14825:

Calculation of SEER、 $\eta_{s,c}$ in cooling mode:

Full load (Pdesignc):16000 W; Tdesignc: 35°C Tested Voltage: 230V Frequency: 50Hz						
Test item	Indoor DB/WB(°C)	Outdoor DB/WB(°C)	Tested Pc(W)	Tested EER	Cd	ESP(Pa)
A	27/19	35/-	16270	3.02	0,25	50
B		30/-	11387	4.95	0,25	50
C		25/-	7227	7.48	0,25	50
D		20/-	4680	10.88	0,25	50
Psb= Poff =4.98W; Pck=0W; Pto=16.91W						
Tested SEER			6.451			
Tested $\eta_{s,c}$			255.1%			
The calculation method of SEER and $\eta_{s,c}$ according to the clause 6 of EN14825:2016.						

Calculation of SCOP、 $\eta_{s,h}$ in heating mode:

Full load (Pdesignh):12300W ;Tdesignh: -10°C; Climate: Average ; Tbivalent: -7°C; TOL: -10°C						
Tested Voltage: 230V Frequency: 50Hz						
Test item	Indoor DB(°C)	Outdoor DB/WB(°C)	Tested Ph(W)	Tested COP	Cd	ESP(Pa)
A	20/-	-7/-8	10890	2.29	0,25	50
B		2/1	6650	3.49	0,25	50
C		7/6	4513	5.11	0,25	50
D		12/11	3334	6.29	0,25	50
E		TOL	10426	2.30	0,25	50
F		Tbivalent	10890	2.29	0,25	50
Psb= Poff =4.98W; Pck=0W; Pto=24.36W						
Tested SCOP			3.672			
Tested $\eta_{s,h}$			143.9%			
The calculation method of SCOP and $\eta_{s,h}$ according to the clause 7 of EN14825:2016.						

(EU) 2016/2281 and EN 14511 & EN 14825			
Clause	Requirement - Test	Result - Remark	Verdict

Measured result summary

Outdoor side heat exchanger of air conditioner: air							
Indoor side heat exchanger of air conditioner: air							
Indication if the heater is equipped with a supplementary heater: no							
Type: compressor driven vapour compression							
If applicable: driver of compressor: electric motor							
Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity,outdoor	$P_{rated,c}$	16.0	kW	Seasonal space cooling energy efficiency,outdoor	$\eta_{s,c}$	255.1	%
cooling capacity for part load at given outdoor temperatures T_j and indoor 27°/19 °C (dry/wet bulb)				energy efficiency ratio for part load at given outdoor temperatures T_j			
$T_j = + 35 \text{ }^\circ\text{C}$	P_c	16.27	kW	$T_j = + 35 \text{ }^\circ\text{C}$	EER	3.02	-
$T_j = + 30 \text{ }^\circ\text{C}$	P_c	11.38	kW	$T_j = + 30 \text{ }^\circ\text{C}$	EER	4.95	-
$T_j = + 25 \text{ }^\circ\text{C}$	P_c	7.22	kW	$T_j = + 25 \text{ }^\circ\text{C}$	EER	7.48	-
$T_j = + 20 \text{ }^\circ\text{C}$	P_c	4.68	kW	$T_j = + 20 \text{ }^\circ\text{C}$	EER	10.88	-
Average heating season capacity for part load at indoor temperature 20 °C and outdoor temperature T_j				Average season coefficient of performance for part load at given outdoor temperatures T_j			
Rated heating capacity	$P_{rated,h}$	17.0	kW	Seasonal space heating energy efficiency	143.9	x.x	%
$T_j = -7 \text{ }^\circ\text{C}$	P_h	10.89	kW	$T_j = -7 \text{ }^\circ\text{C}$	2.29	x.xx	-
$T_j = +2 \text{ }^\circ\text{C}$	P_h	6.65	kW	$T_j = +2 \text{ }^\circ\text{C}$	3.49	x.xx	-
$T_j = +7 \text{ }^\circ\text{C}$	P_h	4.51	kW	$T_j = +7 \text{ }^\circ\text{C}$	5.11	x.xx	-
$T_j = +12 \text{ }^\circ\text{C}$	P_h	3.33	kW	$T_j = +12 \text{ }^\circ\text{C}$	6.29	x.xx	-
Tbiv	P_h	10.89	kW	Tbiv	2.29	x.xx	-

(EU) 2016/2281 and EN 14511 & EN 14825								
Clause	Requirement - Test				Result - Remark			Verdict
ToL	P_h	10.42	kW		ToL	COP	2.30	-
$T_j = -15\text{ }^\circ\text{C}$ (if $T_{OL} < -20\text{ }^\circ\text{C}$)	P_{th}	-	kW		$T_j = -15\text{ }^\circ\text{C}$ (if $T_{OL} < -20\text{ }^\circ\text{C}$)	COP	-	-
Bivalent temperature	T_{biv}	-7	$^\circ\text{C}$		Operation limit temperature	ToL	-10	$^\circ\text{C}$
Degradation coefficient for air conditioners	C_{dc}	0.25	-					
Power consumption in modes other than 'active mode'								
Off mode	P_{OFF}	0.00498	kW		Crankcase heater mode	P_{CK}	0	kW
Standby mode	P_{SB}	0.00498	kW		Back-up heating capacity	$elbu$	-	KW
Thermostat-off mode(cooling/heating)	P_{TO}	0.01691 / 0.02436	kW		Type of energy input		-	
Other items								
Capacity control	variable				air flow rate, outdoor measured(cooling)	6600	m^3/h	
Sound power level, indoor/outdoor measured(cooling)	L_{WA}	66.2/70.5	dB		air flow rate, outdoor measured(heating)	6600	m^3/h	
Sound power level, indoor/outdoor measured(heating)	L_{WA}	67.6/72.5	dB		GWP of the refrigerant	675	kg CO_2eq (100 years)	
Contact details for obtaining more information on the setting of the unit				Gree Electric Appliances Inc. of Zhuhai Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China Email: greerzsykt@cn.gree.com				
<p>(*) If C_{dc} is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.</p> <p>Where information relates to multi-split air conditioners, the test result and performance data may be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.</p>								

--End of report--