Test Report

Energy consumption test for the AU energy labelling of household air-conditioner

Test Report No.:	**AU100012**		*Page 1 of 12*
Applicant Name:	Gree Electric Appliances Inc. of Zhuhai		
Address	Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China		
Manufactyrer	Gree Electric Appliances Inc. of Zhuhai		
Address	Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China		
Product Name	Window-type air conditioner		
Trade Mark	Gree		
Model/ Type reference	See the name panel		
Rated and characteristics	220-240V ~ 50Hz		
Test specification:	AS/NZS 3823.1.1:1998+A1:2001+A2:2002+A3:2006 AS/NZS 3823.2:2009		
Date of receipt of test item	2009-12-23	Date of test	2010-1-13

Test Result:	Comparative Energy Consumption	Cooling mode(KWh per hr): 1.983	Heating code(KWh per hr): 1.869	
	Star Rating	*Cooling mode:1.5*	*Heating mode:1.5*	
	Measured cooling capacity (KW)	*5.979*	*Measured heating capacity (KW)*	*5.628*
	Measured EER:	*3.015*	*Measured COP:*	*3.011*
	Measured AEER:	*3.006*	*Measured ACOP:*	*3.001*

Test by:	**Sun Zhaohan**	
Reviewed by:	**Chen Zancheng**	
Approved by:	**Xiao Biao**	
Date of issue	**2010-01-13**	
Testing Laboratory:	Test laboratory of Gree Electric Appliances Inc. of Zhuhai(GTL)	
Testing location:	Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P.R.China http://www.gree.com.cn Tel:086-756-8614883 Fax:086-756-8614998	

Abbreviations: ***P(ass) = passed***
F(ail) = failed
N/A = not applicable
N/T = not tested

Summary of testing

1. The appliance was tested according to AS/NZS 3823.1.1 and AS/NZS 3823.2.
2. Test location:
   - ■ The tests were performed at Gree Electric Appliances Inc. of Zhuhai

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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)

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.

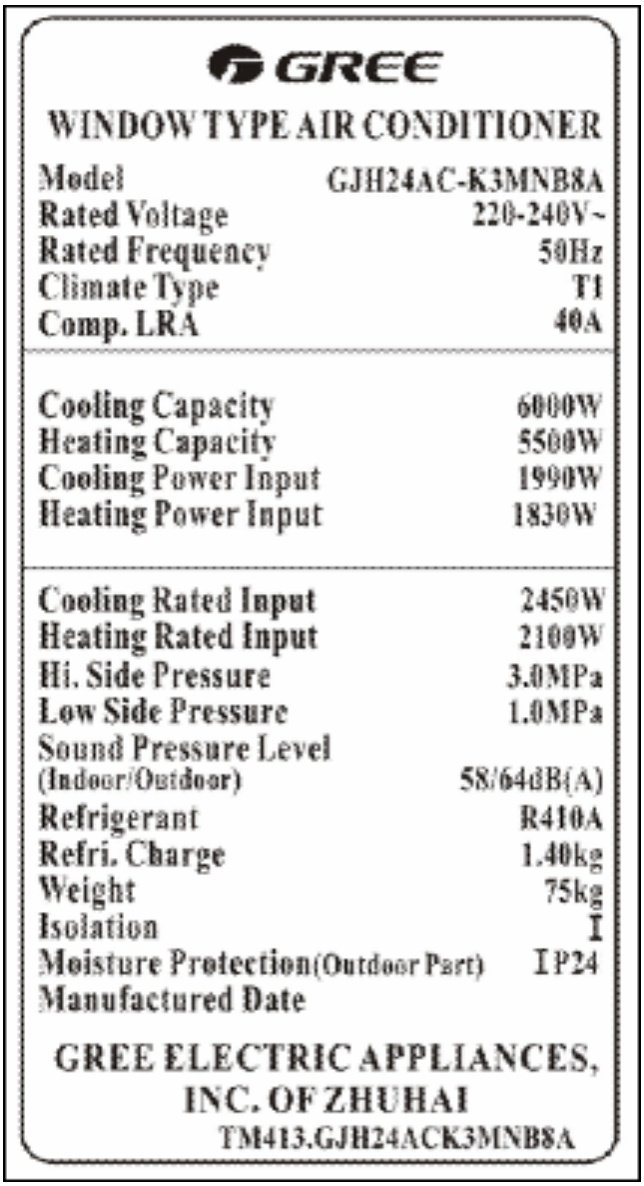
The test report is invalid without the official stamp of GREE.

The test report is invalid without the signatures of author and reviewer.

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

BRIEF DESCRIPTION OF THE TESTED SAMPLES:		
1	Ratings	
	Rated voltage/Rated voltage range(V)	220-240V~
	Rated frequency (Hz)	50
	Rated input(KW)(cooling/Heating)	1.99/1.83
	Rated capacity(KW)(cooling/Heating)	6.00/5.50
2	Type power supply	■ Single phase □ Three phase
3	Construction of the unit	□Split type ■Single packaged type □ Multi-split type
4	Type of the unit considering if it has the air ducts	□ Split type □ Single packaged type □ Multi-split type
5	The number of the indoor units if multi-split type	
6	Type of the indoor unit if split type	□Wall-mounted □ Free-standing □ Ceiling-mounted ■ Other type
7	Type of outdoor unit if split type	□Free-standing ■Other type
8	Supplementary heating element	□ Yes ■No
9	Type of the cooling method	■Air cooled □ Water cooled
10	Operation function	■Cooling mode and Heating mode □ Cooling mode only
11	Type of the refrigerant	R410A
12	Mass of refrigerant (Kg)	1.40
13	Series number	H0908139
14	Variable output compressor used	□ Yes ■ No

NAMEPLATE OF THE TESTED SAMPLE:



1. Summary

One air conditioner unit, window-type air-cooled with cooling and heating function, model type **GJH24AC-K3MNB8A** was tested in the Balanced Ambient Room-type Calorimeter at Gree's laboratory according to the standard AS/NZS 3823.1.1:1998+A1:2001+A2:2002+A3:2006, operating condition T1 for cooling and for heating.

Star rating, comparative energy consumption (CEC) and Minimum energy performance standard (MEPS) was determined in accordance with AS/NZS 3823.2:2009.

The key results, in compliance with energy labeling requirements of AS/NZS 3823.2:2009 are presented on the followed pages.

2. Cooling Capacity and Energy Consumption Measurement Test for Cooling Condition T1			
As required in AS/NZS 3823.1.1, APPENDIX ZZ, reading were taken at intervals of 5 minutes.			
2.1 electrical quantities			
Tested current input (A)		8.61	
Power factor		0.987	
Tested effective power input(KW)		1.983	
2.2 cooling capacity			
Test sensible cooling capacity(KW)		4.213	
Tested latent cooling capacity(KW)		1.766	
Tested total cooling capacity(KW)		5.979	
2.3 Ratios			
Measured EER		3.015	
2.4 Annal efficiency			
Pnoc （W）		1.73	
Measured AEER		3.006	
SRI cooling		1,512	
Star rating		1.5	
2.5 Control air temperature:			
Dry bulb temperature, roomside（℃):		27±0.3	
Wet bulb temperature, roomside(℃):		19±0.2	
Dry bulb temperature, outside(℃):		35±0.3	
Wet bulb temperature, outside(℃):		24±0.2	
2.6 Deviation			
Rated cooling capcity(KW):	6.000	Rated input(KW):	1.990
Measured cooling capcity(KW):	5.979	Measured rated input(KW):	1.983
Difference (%)	-0.35	Difference (%)	-0.35
Required Difference	≥-5	Required Difference	≤5

Minimum Energy Performance Standard(MEPS):		
Measured EER	Required minimum EER	Verdict
3.01	2.84	Pass

NOTE:
AEER=(cooling capacityx2000)/(effective power inputx2000+ Pnocx6.76)
SRI cooling= (AEERX8-18)/4

3. Cooling Capacity Measurement Data			
1	Supply Voltage	V	230.1
2	Frequency	Hz	50
3	Stabilization period	Min	60
4	Test period	Min	120
5	Indoor dry bulb	℃	27.02
6	Indoor wet bulb	℃	19.01
7	Outdoor dry bulb	℃	35.02
8	Outdoor wet bulb	℃	24.00

4. Heating Capacity and Energy Consumption Measurement Test for Heating Condition H1			
As required in AS/NZS 3823.1.1, APPENDIX ZZ, reading were taken at intervals of 5 minutes.			
4.1 electrical quantities			
Tested current input (A)		8.22	
Power factor		0.985	
Tested effective power input(KW)		1.869	
4.2 Heating capacity			
Tested total heating capacity(KW)		5.628	
4.3 Ratios			
Measured COP		3.010	
4.4 Annal efficiency			
Pnoh (W)		1.800	
Measured ACOP		3.001	
SRI heating		1.503	
Star rating		1.5	
4.5 Control air temperature:			
Dry bulb temperature, roomside (℃):		20±0.3	
Wet bulb temperature, roomside(℃):		15±0.2	
Dry bulb temperature, outside(℃):		7±0.3	
Wet bulb temperature, outside(℃):		6±0.2	
4.6 Deviation			
Rated heating capcity(KW):	5.500	Rated input(KW):	1.830
Measured heating capcity(KW):	5.628	Measured rated input(KW):	1.869
Difference (%)	2.33	Difference (%)	2.13
Required difference	≥-5	Required Difference	≤5
Note: ACOP=(heating capacityx2000)/(effective power inputx2000+ Pnohx6.76) SRI heating=(ACOPX8-18)/4			

5. Heating Capacity Measurement Data			
1	Supply Voltage	V	230.1
2	Frequency	Hz	50
3	Stabilization period	Min	60
4	Test period	Min	120
5	Indoor dry bulb	℃	20.01
6	Indoor wet bulb	℃	15.03
7	Outdoor dry bulb	℃	7.01
8	Outdoor wet bulb	℃	6.02

6. Maximum cooling test:	
Test result Parameter	Pass Standard test conditions
Temperature of air entering indoor side	
Dry bulb (℃)	32℃
Wet bulb(℃)	23℃
Temperature of air entering outdoor side	
Dry bulb	43℃
Wet bulb	26℃
Frequency of power supply	50Hz
Test voltage	198V and 264V
The controls of the air conditioner were set for maximum cooling. The unit was operated contimuously for a period of I hour after the specified temperature and equilibrium condensate level was achieved. All power to the equipment was then cut off for a period of 3 minutes and then restared for 1 hour.	
Performance Requirments: a) during one entire test, the equipment shall operate without any indication of damage; b) the motors of the equipment shall operate continuously for the first hour of the test without tripping any protective device; and c) the shut down period of 3 minutes, the motor overload protective device shall restart no more than 5 minutes period after restart of the compressor. d) after the interruption of power the equipment shall resume operation within 30 minutes and run continuously for one hour	

7. STANDBY POWER AND CRANK CASE HEATERS POWER MEASUREMENT			
Test method	Measurements of standby power and crank case heater power is undertaken in accordance with the procedures and instruments specified in AS/NZS 62301		
Test results	Non-operation power consumption according with clause 2.4 of AS/NZS3823.2:2009		------
			Passive standby power consumption (W)
	Non-operation mode description	The remote controller is off. The appliance is not operational and monitoring for a remote signal	1,7
		The remote controller is off. The appliance is not operational and the timer for auto start is on.	1,7
	The average crank heater power consumption	at 7 ℃(outdoor)	-----
		At 20℃(outdoor)	-----

8. APPENDIX ——GREE CONTROLLED ENVIRONMENT CHAMBER		
8.1 Operating Specifications		
Indoor Side		
Dimensions (L×W×H,m):	4.8×4.3×3.2	
Volume (m^3)	66	
Maximum heating capacity(KW):	14	
Maximum cooling capacity(KW):	12	
humidification capacity (Kg/h):	5.5	
Maximum air flow rate (m/s)	0.72	
Maximum air changed (m^3/min)	138	
Outdoor Side		
Dimensions (L×W×H,m):	4.8×4.3×3.2	
Volume (m^3)	66	
Maximum heating capacity(KW):	17	
Maximum cooling capacity(KW):	10	
humidification capacity (Kg/h):	4	
Maximum air flow rate (m/s)	0.9	
Maximum air changed (m^3/min)	159	
8.2 Measuring instruments		
Item	Description	Accuracy
Indoor Side		
Temperature control	YOKOGAWA/UT550	±0,1℃
Temperature monitor	YOKOGAWA/DR240	±0,1℃
Outdoor Side		
Temperature control	YOKOGAWA/UT550	±0,1℃
Temperature monitor	YOKOGAWA/DR240	±0,1℃
Water flow	OVAL/LUS-52C11-7112	±0,5%
Water temperature	CHINO/SOLIDPOK	±0,1℃
The drawing of the lab: