

**SUMMARY OF
REPORT NO. GZ10050798-1R1
PERFORMANCE TESTS APPLY TO
MODEL NO. AVH-24V1DAA/B
AIR-SOURCE HEAT PUMP WATER HEATER**

**RENDERED TO
Zhongshan Amitime Electric Co., Ltd.
5 th Yandong Rd., Dayan Industrial Zone, Huangpu Town, Zhongshan City,
Guangdong, China**

**ISSUED BY
Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road,
Guangzhou Science City, GETDD, Guangzhou, China**

Test General

This report gives the results of Performance Tests of ONE sample of Model **AVH-24V1DAA/B** Air-Source Heat Pump Water Heater which uses electricity to move heat from air to water by refrigerating system driven by compressor.

Air to Water Heat Pump and Chiller details:

Brand:	AMITIME
Model name: (if applicable)	AVH-24V1DAA/B
Model number: (indoor unit if split system)	AVH-24V1DAA/B
Model number: (outdoor unit if split system)	AVH-24V1DAA/B
Air conditioner type:	
<input type="checkbox"/> Cooling only <input checked="" type="checkbox"/> Heating only <input type="checkbox"/> Cooling and heating	
Serial number(s) of unit tested: (of package unit or indoor unit if split system)	090168-ID-1002
Serial number(s) of unit tested: (of outdoor unit if split system)	090168-OD-1002
Rated voltage: V (of package unit or indoor unit if split system)	220
Rated voltage: V (of outdoor unit if split system)	220
Rated frequency: Hz	50
Rated cooling capacity (condition T1): W	2600-8000
Rated effective power input, cooling: W	1100-3500
Rated EER (condition T1): W/W	2.36/2.29
Rated heating capacity (condition H1): W	3400-9000
Rated effective power input, heating: W	1050-2800
Rated COP: W/W	3.24/3.21
Does this air conditioner use a variable speed drive or multi-speed compressor?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Note: N.A. = Not Applicable. (Test case does not apply to the test object)

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Test Standard

The Heating Capacity Tests were conducted in accordance with the following standards:

- EN 14511-1: 2007 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 1: Terms and definitions
- EN 14511-2: 2007 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 2: Test conditions
- EN 14511-3: 2007 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 3: Test methods

Note: The supplementary resistive heating element, if any, is not included in the Heating Capacity Test.

The test conditions and test methods were required by the client.

Test Method

The heating capacity of air-to-water heat pumps and liquid chilling packages was determined in accordance with the direct method at the water heat exchanger, by determination of the volume flow of the heat transfer medium, and the inlet and outlet temperatures, taking into consideration the specific heat capacity and density of the heat transfer medium. The tests were performed on a prototype.

The unit was installed and connected for the test as recommended by the manufacturer in the installation and operation manual.

The laboratory was investigated by an Intertek representative and found to comply with the requirements referred to the standards mentioned above.

Test Summary

Testing was performed at the air-to-water heat pumps and liquid chilling packages was determined in accordance with the direct method at the water heat exchanger **for Heating Capacity Tests, Shunde Polytechnic. Address: East Desheng Road, Shunde, Guangdong Province 528300, China.**

Test Condition

The following heating performance test conditions were required by **Zhongshan Amitime Electric Co., Ltd.**

Test Condition	A	B	C	D	E	F	G	H	I
Outdoor Side, dry-bulb (°C)	7	7	2	2	-7	-7	-15	-15	10
Outdoor Side, wet-bulb (°C)	6	6	1	1	-8	-8	--	--	8
Water temperature, Inlet (°C)	40	30	--	--	--		--	--	--
Water temperature, Outlet (°C)	45	--	45	35	45	35	45	35	35

A. Heating Capacity Test

Date of Test	May 19, 2010	May 19, 2010	May 19, 2010	May 19, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	7.03	7.00	7.00	7.03
Outdoor condition - maximum variation dry bulb (max - min) (°C)	7.10 - 6.79	7.10 - 6.92	7.05 - 6.92	7.08 - 6.91
Outdoor condition - mean wet bulb (°C)	5.90	5.99	5.95	5.98
Outdoor condition - maximum variation wet bulb (max - min) (°C)	5.99 - 5.73	6.11 - 5.90	6.02 - 5.83	6.07 - 5.86
Average water temperature - Inlet (°C)	39.93	41.14	41.79	42.72
Average water temperature - Outlet (°C)	45.00	45.16	45.05	45.03
Average water flow rate (kg/s)	0.435	0.435	0.434	0.433
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.3	230.4	230.3	230.3
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	15.21	10.69	7.17	5.06
Measured Total Power Input (W)	3296.3	2316.8	1552.9	1095.6
Power Factor (%)	94.08	94.05	94.02	94.11
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	9219	7310	5914	4181
Measured Coefficient of Performance (W/W)	2.80	3.16	3.81	3.82

Note: N.A. = Not Applicable.

B. Heating Capacity Test

Date of Test	May 19, 2010	May 19, 2010	May 19, 2010	May 19, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	7.05	7.04	7.00	7.05
Outdoor condition - maximum variation dry bulb (max - min) (°C)	7.27 - 6.71	7.19 - 6.73	7.26 - 6.70	7.18 - 6.71
Outdoor condition - mean wet bulb (°C)	5.90	5.85	5.91	6.01
Outdoor condition - maximum variation wet bulb (max - min) (°C)	6.01 - 5.71	6.00 - 5.77	5.97 - 5.72	6.09 - 5.80
Average water temperature - Inlet (°C)	30.13	30.12	30.10	30.08
Average water temperature - Outlet (°C)	35.55	34.28	33.62	32.58
Average water flow rate (kg/s)	0.433	0.437	0.434	0.435
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.4	230.3	230.3	230.5
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	12.97	9.07	6.83	4.69
Measured Total Power Input (W)	2811.1	1943.0	1448.8	994.4
Power Factor (%)	94.05	93.01	92.04	92.07
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	9810	7599	6386	4546
Measured Coefficient of Performance (W/W)	3.49	3.91	4.41	4.57

Note: N.A. = Not Applicable.

C. Heating Capacity Test

Date of Test	May 18, 2010	May 18, 2010	May 18, 2010	May 18, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	2.17	2.02	1.99	2.01
Outdoor condition - maximum variation dry bulb (max - min) (°C)	2.28 - 1.99	2.17 - 1.93	2.14 - 1.80	2.09 - 1.93
Outdoor condition - mean wet bulb (°C)	1.13	1.01	1.04	1.01
Outdoor condition - maximum variation wet bulb (max - min) (°C)	1.20 - 1.07	1.25 - 0.93	1.18 - 0.82	1.06 - 0.96
Average water temperature - Inlet (°C)	41.42	41.89	42.30	42.39
Average water temperature - Outlet (°C)	45.03	44.99	45.08	45.15
Average water flow rate (kg/s)	0.434	0.435	0.434	0.435
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.3	230.3	230.4	230.4
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	10.58	9.07	8.41	8.45
Measured Total Power Input (W)	2289.8	1943.0	1804.7	1810.5
Power Factor (%)	94.02	93.87	93.90	93.84
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	6549	5637	5043	5019
Measured Coefficient of Performance (W/W)	2.86	2.90	2.79	2.77

Note: N.A. = Not Applicable.

D. Heating Capacity Test

Date of Test	May 17, 2010	May 17, 2010	May 17, 2010	May 17, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	2.01	2.01	2.05	2.09
Outdoor condition - maximum variation dry bulb (max - min) (°C)	2.29 - 1.77	2.08 - 1.93	2.17 - 1.92	2.27 - 1.75
Outdoor condition - mean wet bulb (°C)	0.97	1.00	1.07	1.17
Outdoor condition - maximum variation wet bulb (max - min) (°C)	1.16 - 0.76	1.04 - 0.97	1.15 - 1.01	1.26 - 0.93
Average water temperature - Inlet (°C)	30.17	31.11	32.01	31.98
Average water temperature - Outlet (°C)	35.03	34.97	35.12	34.87
Average water flow rate (kg/s)	0.435	0.435	0.434	0.436
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.4	230.3	230.3	230.3
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	12.25	8.89	7.56	6.53
Measured Total Power Input (W)	2656.0	1904.8	1622.0	1398.3
Power Factor (%)	94.12	92.97	93.04	93.00
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	8837	7019	5642	5267
Measured Coefficient of Performance (W/W)	3.33	3.68	3.48	3.77

Note: N.A. = Not Applicable.

E. Heating Capacity Test

Date of Test	May 18, 2010	May 18, 2010	May 18, 2010	May 18, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	-6.83	-7.01	-7.00	-7.01
Outdoor condition - maximum variation dry bulb (max - min) (°C)	-6.74--6.95	-6.94--7.11	-6.71--7.27	-6.74--7.17
Outdoor condition - mean wet bulb (°C)	-7.91	-7.95	-7.08	-7.18
Outdoor condition - maximum variation wet bulb (max - min) (°C)	-7.75--8.01	-7.78--8.09	-7.89--8.29	-7.97--8.25
Average water temperature - Inlet (°C)	41.39	42.03	43.36	43.44
Average water temperature - Outlet (°C)	45.13	44.94	45.06	44.84
Average water flow rate (kg/s)	0.435	0.432	0.435	0.435
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.6	230.6	230.6	230.6
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	14.43	10.19	7.99	7.92
Measured Total Power Input (W)	3161.9	2228.2	1731.6	1715.1
Power Factor (%)	95.04	94.85	93.97	93.92
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	6800	5255	3091	2545
Measured Coefficient of Performance (W/W)	2.15	2.36	1.78	1.48

Note: N.A. = Not Applicable.

F. Heating Capacity Test

Date of Test	May 18, 2010	May 18, 2010	May 18, 2010	May 18, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	-6.88	-6.96	-7.01	-6.83
Outdoor condition - maximum variation dry bulb (max - min) (°C)	-6.70--6.91	-6.71--7.26	-6.81--7.23	-6.71--7.05
Outdoor condition - mean wet bulb (°C)	-7.87	-7.91	-7.19	-7.15
Outdoor condition - maximum variation wet bulb (max - min) (°C)	-7.81--8.11	-7.83--8.05	-7.02--8.27	-7.92--8.21
Average water temperature - Inlet (°C)	31.02	31.86	32.78	33.03
Average water temperature - Outlet (°C)	35.13	35.12	34.89	35.02
Average water flow rate (kg/s)	0.435	0.435	0.435	0.436
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.6	230.5	230.6	230.6
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	12.25	8.82	7.44	6.87
Measured Total Power Input (W)	2656.0	1907.7	1610.2	1485.4
Power Factor (%)	94.01	93.85	93.79	93.75
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	7473	5928	3837	3627
Measured Coefficient of Performance (W/W)	2.81	3.11	2.38	2.44

Note: N.A. = Not Applicable.

G. Heating Capacity Test

Date of Test	May 21, 2010	May 21, 2010	May 20, 2010	May 20, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	-14.95	-14.89	-15.04	-14.99
Outdoor condition - maximum variation dry bulb (max - min) (°C)	-14.70- -15.17	-14.73- -15.24	-14.85 - -15.20	-14.81 - -15.15
Outdoor condition - mean wet bulb (°C)	-16.05	-16.15	-16.07	-15.99
Outdoor condition - maximum variation wet bulb (max - min) (°C)	-15.73 - -16.19	-15.81 - -16.27	-15.93 - -16.11	-15.81 - -16.09
Average water temperature - Inlet (°C)	42.62	43.04	43.31	44.08
Average water temperature - Outlet (°C)	45.11	44.95	45.11	45.18
Average water flow rate (kg/s)	0.436	0.435	0.437	0.435
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.4	230.4	230.3	230.5
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	11.33	9.88	5.85	4.23
Measured Total Power Input (W)	2455.4	2129.6	1260.1	912.1
Power Factor (%)	94.02	93.58	93.55	93.61
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	4538	3473	3288	2000
Measured Coefficient of Performance (W/W)	1.85	1.63	2.61	2.19

Note: N.A. = Not Applicable.

H. Heating Capacity Test

Date of Test	May 20, 2010	May 20, 2010	May 20, 2010	May 20, 2010
Compressor frequency (Hz)	74	56	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	-15.02	-14.91	-15.06	-14.98
Outdoor condition - maximum variation dry bulb (max - min) (°C)	-14.75 - -15.13	-14.84 - -15.03	-14.93 - -15.18	-14.80 - -15.25
Outdoor condition - mean wet bulb (°C)	-16.12	-16.08	-15.96	-15.85
Outdoor condition - maximum variation wet bulb (max - min) (°C)	-15.85 - -16.26	-15.79 - -16.19	-15.82 - -16.07	-15.72 - -15.97
Average water temperature - Inlet (°C)	32.24	32.94	32.79	33.25
Average water temperature - Outlet (°C)	35.15	35.16	34.81	35.12
Average water flow rate (kg/s)	0.434	0.435	0.435	0.435
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 180	> 180	> 180	> 180
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	230.3	230.4	230.2	230.5
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	9.05	8.44	7.26	6.81
Measured Total Power Input (W)	1960.8	1820.4	1553.2	1458.4
Power Factor (%)	94.07	93.57	92.95	92.89
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	5279	4037	3673	3400
Measured Coefficient of Performance (W/W)	2.69	2.22	2.36	2.33

Note: N.A. = Not Applicable.

I. Heating Capacity Test



Date of Test	Apr. 22, 2011	Apr. 22, 2011	Apr. 22, 2011	Apr. 22, 2011
Compressor frequency (Hz)	56	74	42	30
Room Air Temperatures, Adjacent to Inlet of Test Unit				
Outdoor condition - mean dry bulb (°C)	9.98	10.02	9.97	10.04
Outdoor condition - maximum variation dry bulb (max - min) (°C)	10.01 ~ 9.96	10.04 ~ 9.91	10.04 ~ 9.87	10.06 ~ 10.02
Outdoor condition - mean wet bulb (°C)	8.09	8.10	8.15	8.17
Outdoor condition - maximum variation wet bulb (max - min) (°C)	8.10 ~ 8.07	8.13 ~ 8.05	8.18 ~ 8.09	8.22 ~ 8.14
Average water temperature - Inlet (°C)	30.48	28.43	31.52	32.32
Average water temperature - Outlet (°C)	35.14	35.10	35.04	34.92
Average water flow rate (kg/s)	0.430	0.430	0.431	0.430
Enthalpy				
Stabilization period (minutes)	> 70	> 70	> 70	> 70
Test period (minutes)	> 60	> 60	> 60	> 60
Reading frequency (minute)	< 0.5	< 0.5	< 0.5	< 0.5
Electrical Quantities				
Supply voltage (V)	229.71	229.34	229.98	229.79
Supply frequency (Hz)	50.00	50.00	50.00	50.00
Average current (Phase 1) (A)	7.70	11.73	5.51	3.89
Measured Total Power Input (W)	1768.8	2690.2	1267.2	893.88
Power Factor (%)	99.5	97.8	96.2	96.0
Defrosting Occurred				
Did the unit enter a defrost cycle during the test?	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes/ <input checked="" type="checkbox"/> No
If so, what is the average interval between defrosts? (Minutes)	N.A.	N.A.	N.A.	N.A.
Number of Complete Defrost Cycles	N.A.	N.A.	N.A.	N.A.
Duration of All Complete Defrost Cycles,	N.A.	N.A.	N.A.	N.A.
Defrosting Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Heating Time in One Representative Complete Defrost Cycle, minutes	N.A.	N.A.	N.A.	N.A.
Results				
Measured Total Heating Capacity (W)	8376	11989	6342	4673
Measured Coefficient of Performance (W/W)	4.74	4.46	5.00	5.23

Note: N.A. = Not Applicable. (Test case does not apply to the test object)

Marking Plate

DC Inverter Type Air To Water Unit

Model Number: AVH-24V1DAA/B
Input Voltage: 220V/1Ph/50Hz
Input Power-Cooling: 1,100-3,500 Watts
Input Power-Heating: 1,050-2,800 Watts
Min.Circuit Ampacity: 3.8 Amps
Max.Overcurrent Protection: 18 Amps
Cooling Capacity: 2,600-8,000 Watts
Heating Capacity: 3,400-9,000 Watts
Refrigerant: R410A
Max EER Cooling: 3.21 W/W
Max COP Heating: 4.5 W/W

Heat Pump   O:20090168



Serial Number: 090168-ID-1002




Label of indoor unit

DC Inverter Type Air To Water Unit

Model Number: AVH-24V1DAA/B
Input Voltage: 220V/1Ph/50Hz
Input Power-Cooling: 1,100-3,500 Watts
Input Power-Heating: 1,050-2,800 Watts
Min.Circuit Ampacity: 3.8 Amps
Max.Overcurrent Protection: 18 Amps
Cooling Capacity: 2,600-8,000 Watts
Heating Capacity: 3,400-9,000 Watts
Refrigerant: R410A/1.57 Kg
Max EER Cooling: 3.21 W/W
Max COP Heating: 4.5 W/W

Heat Pump   O:20090168

Serial Number: 090168-OD-1002



Label of outdoor unit

Outline







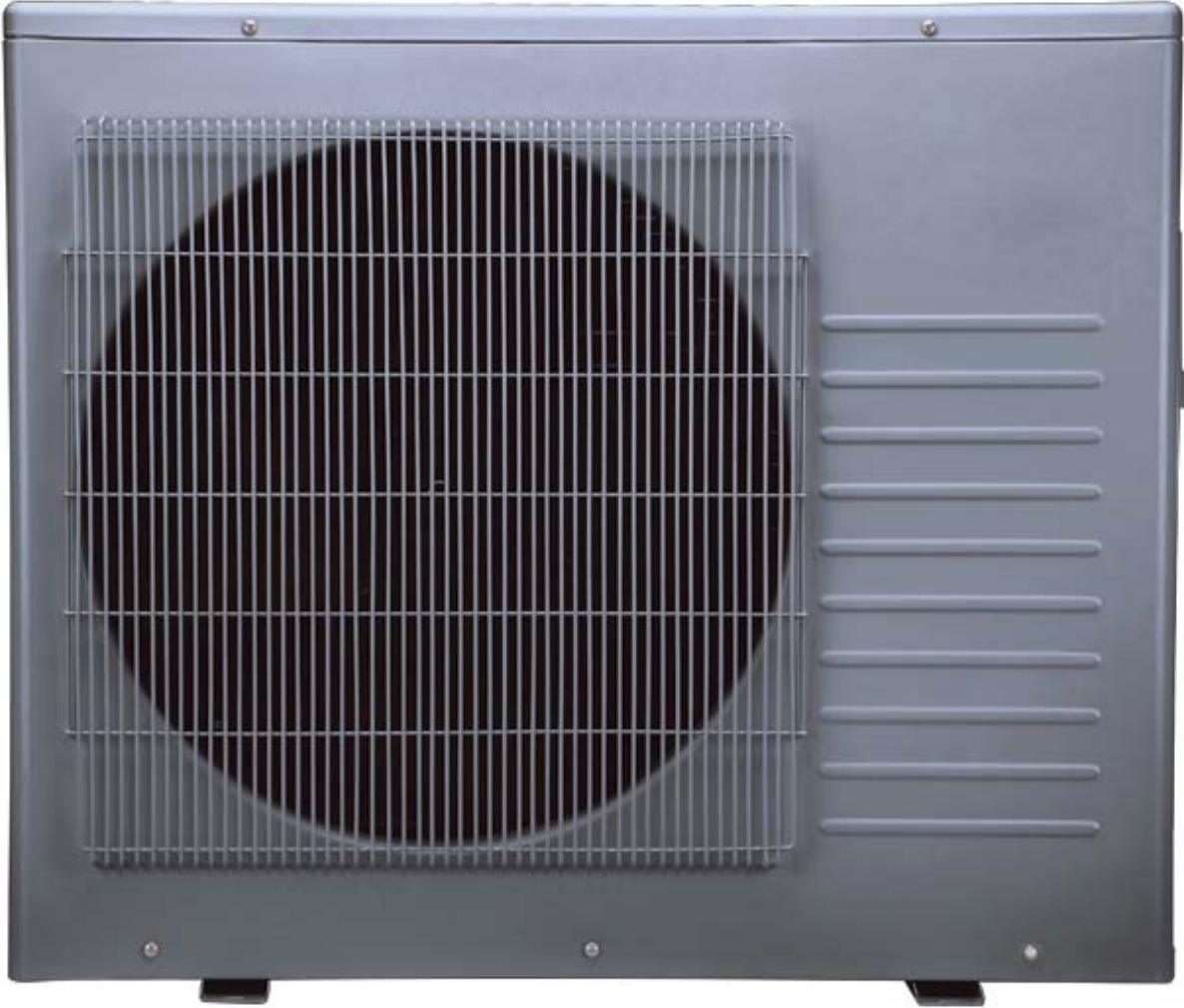
Indoor unit overview

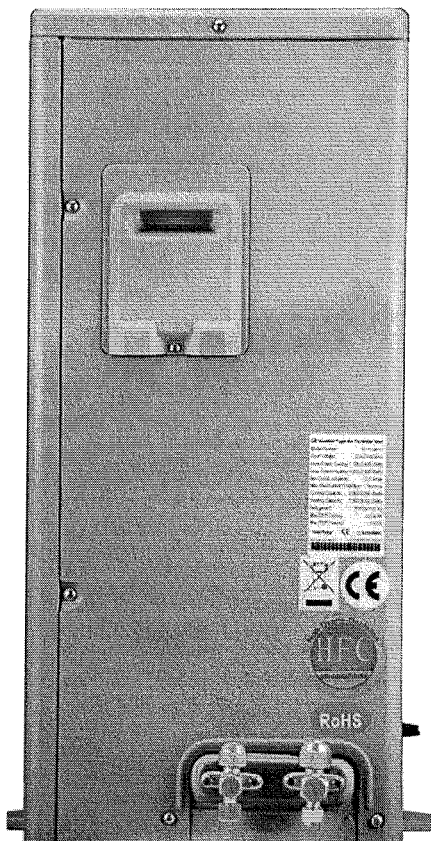
Note: All the indoors units have the same models and identical except for the product profile.



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Outdoor unit overview

Note: All the outdoor units have the same models and identical except for the product profile.

Controlled Components Table

Object/part No.	Manufacturer / trademark	Type/model	Technical data
Compressor	Panasonic	5KD240XCA21	DC 280 V; R410A
Outdoor Fan Motor	FOSHAN JUNFENG ELECTRICAL APPLIANCE CO., LTD.	YDK-60-6S	220-240V, 50 Hz; Class B; 0,76 A; 60 W
Capacitor Of outdoor Fan Motor	Anhui Tongfeng Electronic Company Ltd.	CBB61	450 V; 50/60 Hz; 40/70/21; 5 μ F
Pump	Xinhu Electric Machine (shanghai) Co., LTD.	GPD25-8	220 V; 50Hz; IP44; 1,0 A; 225 W; Class B

Conclusion

The results of these tests are for technical evaluation by **Zhongshan Amitime Electric Co., Ltd.** only and are applicable only to the specific test specimens described.

Tested by:

Reviewed by:

Jake He

Jake He
Engineer

Jeff Zhang

Jeff Zhang
Supervisor