



Performance Test Report

1.0 Reference and Address			
Project Number	4789175874.1	Issue Date: 7-Oct-2019	Revised: None
Standard(s)	ISO 13253:2011 KWS 1893:2018 UAE.S 13253:2011 UAE.S 5010-5/2016 ANSI/AHRI 210/240-2017 State of Kuwait Ministry of Electricity and Water 26.6 C/19.4C ID and 48 C OD Performance Test State of Kuwait Ministry of Electricity and Water 26.6 C/19.4C ID and 52 C OD 2-hour continuity test		
Model(s)	VAGN-066N VHLL-HM6524TA	Date of Test	09/18/2019 to 09/20/2019
		Brand Name	
Applicant	UL LLC	Manufacturer	Rheem Manufacturing Company
Address	801 Klein Road Suite 200 Plano, TX 75074-3779	Address	5600 Old Greenwood Rd. Ft. Smith, AR 72906
Country	USA	Country	USA
		Contact	Preston Davis
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Report prepared by:	Josh Farrell	<i>Josh Farrell</i>	Report reviewed by:	Angelo Z. Sakellariou	<i>Angelo Z. Sakellariou</i>
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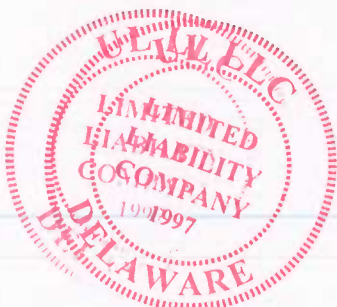
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2.0 Product Description								
Unit Type	Ducted Packaged Air-Conditioner							
Brand name	Rheem							
Unit Description	Ducted Split System Air-Conditioner							
Models	Outdoor Model# VAGN-066N (+) (++)(*) may be followed by additional suffixes Indoor Model# VHLL-HM6524TA(*)							
	(+) Followed by suffix: A - Base Unit S - Base unit with oil separator		(++) Optional Suffix: A35 - Coated fin with time delay O35 - Coated Fin O11 - with time delay			(*) Optional Suffix K - Kuwait E - Emirates Q - Qatar O - Oman B - Bahrain		
Model Similarity	Outdoor Identical to Rheem Model SAGN-066N(+) (++)(*) except for Model # and Brand Name Indoor Identical to Rheem Model SHLL-HM6524TA(*) except for Model # and Brand Name (+)(++)(*) - may be followed by additional suffixes							
Rated Power Supply	Model Number	Voltage	Phase	Frequency	Refrigerant			
	Indoor Unit	220-240	1	50	410A			
	Outdoor Unit	380-415	3	50	410A			
Other Ratings	N/A							

Test Procedure:							
ISO 13253:2011 KWS 1893:2018 UAE.S 13253:2011 UAE.S 5010-5/2016 ANSI/AHRI 210/240-2017 State of Kuwait Ministry of Electricity and Water 26.6 C/19.4C ID and 48C OD Performance Test State of Kuwait Ministry of Electricity and Water 26.6 C/19.4C ID and 52 C OD 2-hour continuity test							
Pass/Fail Criteria							
The intent of these tests is a third party verification of the energy efficiency values. The 2-Hour Continuity Test must operate for 2-hours without tripping or overheating.							



3.0 Calibration Information				
Instrumentation ID	Description	Function	Calibration Date	Calibration Due Date
Psych 15T Room	Test chamber	Temperature, humidity, pressure, power, voltage	1/18/2019	1/18/2020



4.0 Product Photographs

Photo 1 - Air Handler Nameplate

MODEL NO.	SHLL-HM6524TA		SERIAL NO.:	W061919358		
VOLTS:	220-240	PHASE	1	HERTZ	50	
INDOOR CURRENT:	4.6	INDOOR POWER:	437	MOTOR HP:	3/4	
DESIGN PRESSURE HIGH:	465 PSIG	3307 kPa				
DESIGN PRESSURE LOW:	250 PSIG	1724 kPa				
REFRIGERANT:	R410A					
OUTDOOR UNIT:	SAGN-060N			SAGN-066N		
	(T1)	(T3)	(T4)	(T1)	(T3)	(T4)
	35-27/19	46-29/19	48-26.7/19.4	35-27/19	46-29/19	48-26.7/19.4
RATED CURRENT:	7.47	8.27	9.11	9.03	10.23	10.61
RATED POWER:	4.553	5.382	5.800	5.269	6.290	6.550
RATED CAPACITY:	62185	55215	53858	67820	60603	58851
EER:	13.66	10.26	9.29	12.87	9.64	8.98



4.0 Product Photographs

Photo 2 - Condensing Unit Nameplate

MODEL NO. SAGN-066N		SERIAL NO.: W471820682	
VOLTS:	380/415	PHASE	3
OUTDOOR CURRENT:	9.8	HERTZ	50
		REFRIGERANT:	R410A
DESIGN PRESSURE HIGH:		550 PSIG / 3792 kPa	
DESIGN PRESSURE LOW:		250 PSIG / 1724 kPa	
OUTDOOR UNIT FACTORY CHARGE:		243 OZ.	6.89 kg
TOTAL SYSTEM CHARGE:		OZ.	kg
MATCHED SYSTEM RATING	SHLL-HM6524TA		
	(T1)	(T3)	(T4)
	35-27/19	46-29/19	48-26.7/19.4
RATED CURRENT:	9.03	10.23	10.61
RATED POWER:	5.269	6.290	6.550
RATED CAPACITY:	67820	60603	58851
EER:	12.87	9.64	8.98
RHEEM SALES COMPANY INC.		IPX4	
FORT SMITH, ARKANSAS		MADE IN MEXICO	
		92-22050-17	



4.0 Product Photographs

Photo 3 - Indoor Blower Motor Nameplate



4.0 Product Photographs

Photo 4 - Outdoor Fan Motor nameplate



4.0 Product Photographs

Photo 5 - Compressor nameplate



4.0 Product Photographs

Photo 6 - Air Handler Setup



4.0 Product Photographs

Photo 7 - Condenser Setup



5.0 Critical Components							
Photo #	Quantity	Name	Manufacturer/ trademark ²	Type / model ²	Technical data	Serial Number	Mark(s) of conformity ³
1		Air Handler	Rheem	SHLL-HM6524TA	220-240V, 1~, 50Hz, 3/4HP, 4.6A	W061919358	N/A
2		Condenser	Rheem	SAGN-066N	380-415V, 3~, 50Hz, 9.8A, R410a, IPX4	W471820682	N/A
	1	Condenser Coil	Rheem	Tube and fin	N/A	N/A	-
	1	Evaporator Coil	Rheem	Tube and fin	N/A	N/A	-
3	1	Compressor	Copeland	ZP67KCE-TFD-830	380-420V, 3~, 50Hz, 67-74 LRA, 13.0 lmax, IP21	19GJ3765L	UL R/C
4	1	Indoor Blower Motor	US Motors	M055PWCYT-0388	208-230V, 50/60Hz, 1 ph, 3/4 HP	51-104360-0200	UL R/C
5	1	Outdoor Fan Motor	Genteq	5KCP39SFWG36S	380-415V, 50 HZ, 1/2HP, 1.5A,	51-42534-33	UL R/C
NOTES: 1) Not all item numbers are indicated (called out) in the photos, as their location is obvious. 2) "Various" means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used. 3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component.							



6.0 Critical Features

Recognized Component(R/C) - A component part, which has been previously evaluated by an accredited body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

Construction Details - For specific construction details, reference should be made to the photographs and descriptions. Any dimensions are approximate unless specified as exact or within a tolerance.



7.0 Illustrations

Illustration 1 - Condenser Manual (English)

INSTALLATION INSTRUCTIONS

R410A/60HZ CONDENSING UNITS

*AGN – SERIES

*AHM – SERIES

R410A/50HZ CONDENSING UNITS

*AGL – SERIES

*AGN – SERIES



*S or V

NOTE: Appearance of unit may vary.



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION!

▲ WARNING

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



DO NOT DESTROY THIS MANUAL

PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICEMAN

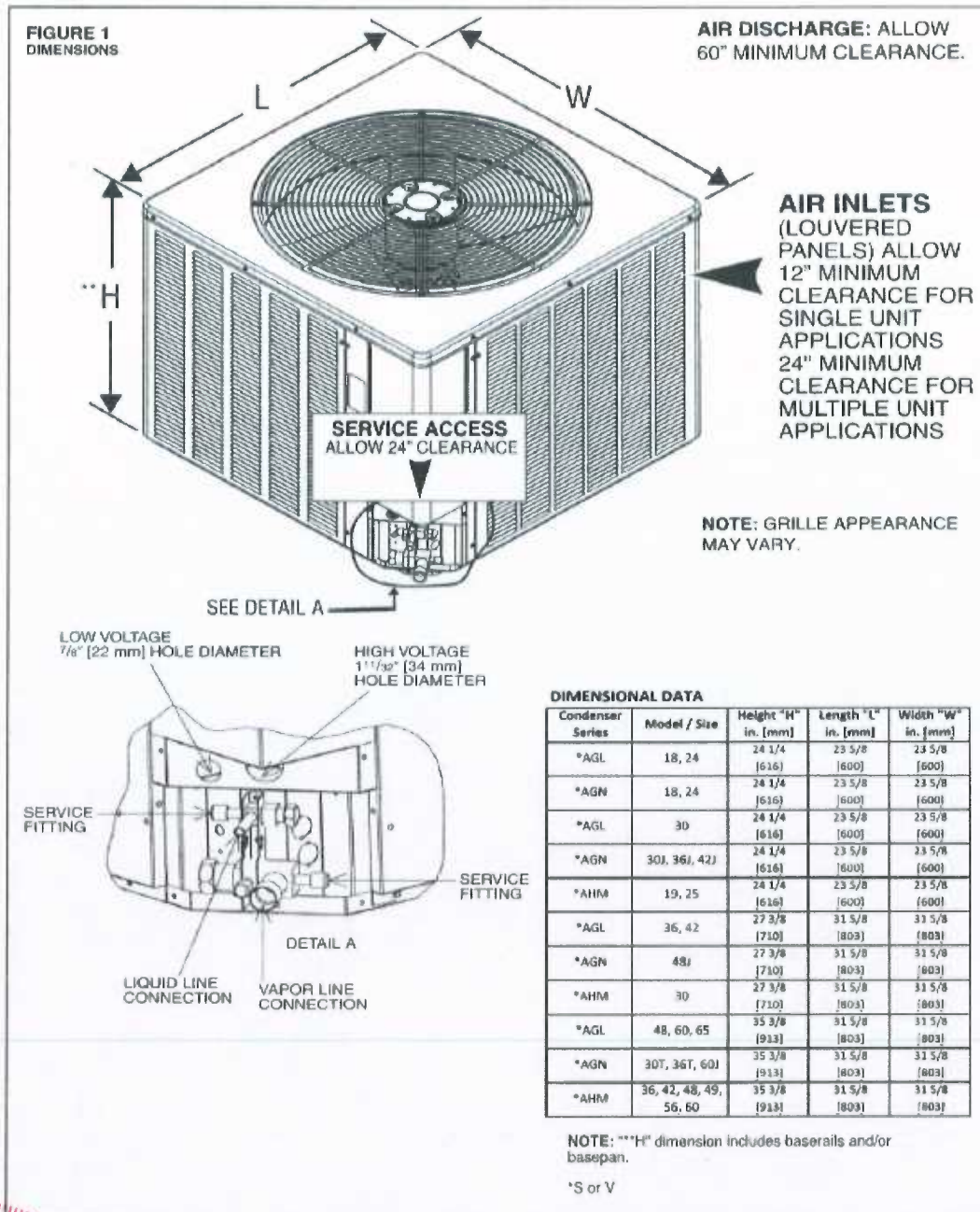
92-21354-95-06
SUPERSEDES 92-21354-95-05



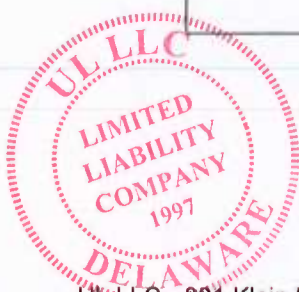
7.0 Illustrations

Illustration 2 - Condenser dimensions

2.3 (SEE FIGURE 1)



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7.0 Illustrations

Illustration 3 - Air Handler Manual (English)

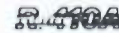
FORM NO. EXH11-524 REV. 1
Supersedes Form No. EXH11-524

AIR HANDLERS



AIR HANDLERS

SHLL- High Efficiency
featuring Earth-Friendly
R-410A Refrigerant



SHSL- Standard Efficiency
featuring Earth-Friendly
R-410A Refrigerant



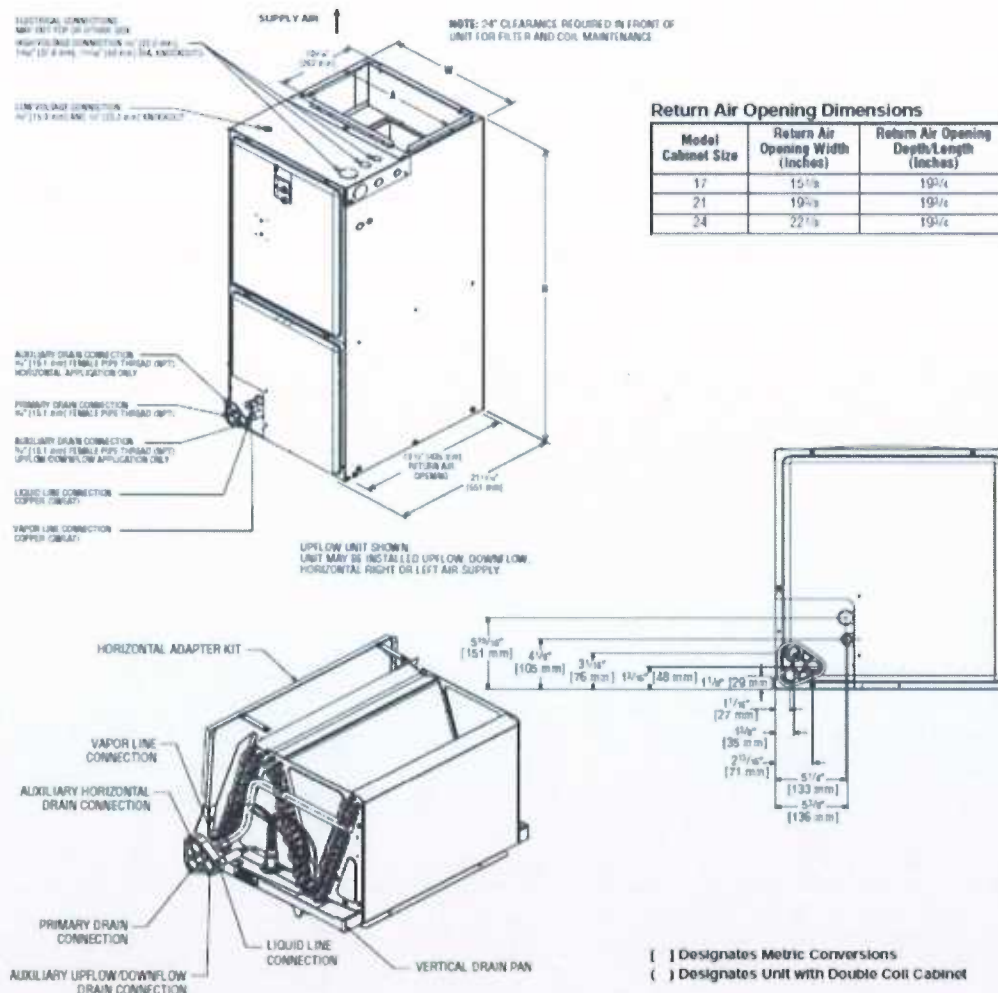
Features

- SHLL features Genteq X-13 motor which provides enhanced efficiency.
- 1½ ton [5.3 kW] through 5½ ton [19.3 kW] models are between 42½ to 55½ inches [1080 to 1410 mm] tall and 22 inches [559 mm] deep.
- Versatile 4-way convertible design for upflow, downflow, horizontal left and horizontal right applications.
- Factory-installed high efficiency indoor coil.
- All models meet or exceed 330 to 400 CFM [156 to 189 L/s] per ton at .3 inches [.7 kPa] of external static pressure.
- Enhanced airflow up to .7" external static pressure.
- Sturdy construction with 1.0 inch [.24 kPa] of reinforced foil faced jacket insulation for excellent thermal and sound insulation.
- Field-installed auxiliary electric heater kits provide exact heat for indoor comfort. Kits include circuit breakers which meet requirements for service disconnect in most cases.



7.0 Illustrations

Illustration 4 - Air Handler dimensions



8.0 Test Summary

Date of Test

09/18/2019 to 09/20/2019

Test Standard UAE.S 13253:2011

Test Description	Test IDU/ODU Conditions	Rated EER (BTU/Hr W)	Tested EER (BTU/Hr W)	Rated Capacity (BTU/Hr)	Tested Capacity (BTU/Hr)	Rated Total Watts (Watt)	Tested Total Watts (Watt)	Rated Total Current (Amp)	Tested Total OD Current (Amp)	Tested Total ID Current (Amp)	Tested Total OD Watts (Watt)	Tested COP (W/W)	Tested OD COP (W/W)	Tested KW/Ton
T1	27/19-35C	12.87	12.870	67820.00	67819.710	5269.00	5269.010	9.03	7.87	3.46	4688.7	3.77	4.24	
T3	29/19-46C	9.64	9.640	60603.00	60603.140	6290.00	6289.740	10.23	9.08	3.46	5710.7	2.83	3.11	
MEW	80/67-118.4F	8.980	8.980	58851.00	58850.600	6550.00	6552.610	10.61	9.45	3.46	5972.5	2.63	2.89	1.34
MEW CONTINUITY	80/67-125.6F	Passed 2 - hour continuity @ 125.6 F, 52 C												

Tested Capacity shown here is Gross capacity which includes the effect of the evaporator fan motor heat



8.0 Test Summary

T1 (27/19-35 C)

Test Standard UAE.S 13253:2011

Date	9/19/2019	Outdoor UUT Model	SAGN-066NA	Indoor UUT Model	SHL-HM6524TA	Comment 1	Blower tap 5	Engineer	Luis Zapata
WO#		Outdoor UUT Serial	W471820682	Indoor UUT Serial	W061919358	Comment 2	Charge of 6.8 Kg	Technician	Lucio Leal
Run#	4	Compressor	ZP67KCE-TFD-830	TXV	45-30 ZGA 29718-1-G	Comment 3	With Air filter		
Test	T1	Fan Motor	S1-42534-33	Blower Motor	MOSSPWCT-0388 (S1-104360-00)	Comment 4	With 67 Compressor		
		Indoor Data		Outdoor Data					
Inlet Air	80.6	66.2 degF		95	75.19 degF				
Outlet Air	55.85	58.19 degF							
Inlet Air Enthalpy		31.18 Btu/lb							
Outlet Air Enthalpy		23.94 Btu/lb							
Specific Volume Outlet		13.342 ft ³ /lb							
Specific Volume Inlet		13.221 ft ³ /lb							
Standard CFM		2021.78 ft ³ /min							
Airflow measured CFM		2023.18 ft ³ /min							
Duct Loss		106.00 BTU/hr							
Mass Flow		14.64 lb/min							
Mass Flow		878 lb/hr							
Enthalpy Liquid		51.25 BTU/lb							
Enthalpy Vapor		125.31 BTU/lb							
Total Via Enthalpy					65860.82 BTU/hr				
Total Via Compressor									
Total Via Flow Meter					62536.4 BTU/hr				
Heat Balance					5.2 %				
Gross Capacity					67819.71 BTU/hr				
Compressor Watt/Amp					4377.419 7.355 W/Amps				
Fan Watt/Amp	543.14	3.457 W/Amps			311.322 0.778 W/Amps				
Fan Volts/Hertz	228.94	50 V/Hz			404.265 50 V/Hz				
Compr Volts/Hertz					404.141 50 V/Hz				
Calculated Fan Watts		542.93 W			311.37 W				
Calculated Fan BTU's		1853.19 BTU/hr							
Evap Out A Superheat		10.01 degF							
Net Total		65966.61 BTU/hr							
Net Latent		15462 BTU/hr							
Net Power		5269.01 W							
Air side EER		12.52							
Air side COP		3.670							
Gross EER		12.870							



8.0 Test Summary

T3 (29/19-46 C)

Test Standard UAE.S 13253:2011

Date	9/19/2019	Outdoor UUT Model	SAGN-066NA	Indoor UUT Model	SHL-HM6524TA	Comment 1	Blower tap 5	Engineer	Luis Zapata
WO#		Outdoor UUT Serial	W471820682	Indoor UUT Serial	W061919358	Comment 2	Charge of 6.8 Kg	Technician	Lucio Leal
Run#	3	Compressor	ZP67KCE-TFD-830	TXV	45-30 ZGA 29718-1-G	Comment 3	With Air filter		
Test	T3	Fan Motor	51-42534-33	Blower Motor	M055PWCT-0388 (51-104360-00)	Comment 4	With 67 Compressor		
		Indoor Data		Outdoor Data					
Inlet Air	84.25	66.14 degF		114.77	75.19 degF				
Outlet Air	56.96	60.87 degF							
Inlet Air Enthalpy	31.15	Btu/lb							
Outlet Air Enthalpy	24.67	Btu/lb							
Specific Volume Outlet	13.452	ft ³ /lb							
Specific Volume Inlet	13.328	ft ³ /lb							
Standard CFM	2011.73	ft ³ /min							
Airflow measured CFM	2029.58	ft ³ /min							
Latent Cooling Capacity	6700.05	BTU/hr							
Sensible Cooling Capacity	52005	BTU/hr							
Mass Flow	14.56	lb/min							
Mass Flow	874	lb/hr							
Enthalpy Liquid	59.37	BTU/lb							
Enthalpy Vapor	125.51	BTU/lb							
Total Via Enthalpy				58643.73	BTU/hr				
Total Via Flow Meter				55480.2	BTU/hr				
Heat Balance				5.55	%				
Gross Capacity				60603.14	BTU/hr				
Compressor Watt/Amp				5407.936	8.569 W/Amps				
Fan Watt/Amp	542.358	3.455 W/Amps		302.804	0.762 W/Amps				
Fan Volts/Hertz	228.798	50 V/Hz		401.142	50 V/Hz				
Compr Volts/Hertz				400.929	50 V/Hz				
Calculated Fan Watts	542.28	W		302.92	W				
Calculated Fan BTU's	1850.53	BTU/hr							
Evap Out A Superheat	10.53	degF							
Net Total	58754.27	BTU/hr							
Net Latent	6637	BTU/hr							
Net Power	6289.74	W							
Air side EER	9.34								
Air side COP	2.740								
Gross EER	9.640								



8.0 Test Summary

MEW (80/67 - 118.4 F)

Date	9/18/2019	Outdoor UUT Model	SAGN-066NA	Indoor UUT Model	SHL-HM6524TA	Comment 1	Blower tap 5	Engineer	Luis Zapata
WO#		Outdoor UUT Serial	W471820682	Indoor UUT Serial	W061919358	Comment 2	Charge of 6.8 Kg	Technician	Lucio Leal
Run#	3	Compressor	ZP67KCE-TFD-830	TXV	45-30 ZGA 29718-1-G	Comment 3	With Air filter		
Test	MEW 118	Fan Motor	51-42534-33	Blower Motor	M055PWCT-0388 (51-104360-00)	Comment 4	With 67 Compressor		

	Indoor Data		Outdoor Data	
Inlet Air	80.6	66.2 degF	118.74	74.63 degF
Outlet Air	57.39	59.93 degF		
Inlet Air Enthalpy		31.22 Btu/lb		
Outlet Air Enthalpy		24.96 Btu/lb		
Specific Volume Outlet		13.425 ft³/lb		
Specific Volume Inlet		13.295 ft³/lb		
Standard CFM		2017.5 ft³/min		
Airflow measured CFM		2031.3 ft³/min		
Latent Cooling Capacity		10646.31 BTU/hr		
Sensible Cooling Capacity		46302 BTU/hr		
Mass Flow		14.78 lb/min		
Mass Flow		887 lb/hr		
Enthalpy Liquid		61.4 BTU/lb		
Enthalpy Vapor		125.3 BTU/lb		
Total Via Enthalpy			56901.9 BTU/hr	
Total Via Compressor				
Total Via Flow Meter			54255.5 BTU/hr	
Heat Balance			4.81 %	
Gross Capacity			58850.6 BTU/hr	
Compressor Watt/Amp			5667.611 8.943 W/Amps	
Fan Watt/Amp	542.962	3.461 W/Amps	304.849 0.763 W/Amps	
Fan Volts/Hertz	228.807	50 V/Hz	403.623 50 V/Hz	
Compr Volts/Hertz			403.385 50 V/Hz	
Calculated Fan Watts	543.24 W		304.88 W	
Calculated Fan BTU's	1852.59 BTU/hr			
Net Total	56999.63 BTU/hr			
Net Latent	10600 BTU/hr			
Net Power	6552.61 W			
Air side EER	8.7			
Air side COP	2.550			
Gross EER	8.980			



8.0 Test Summary

2 HR CONTINUITY (26.6/19.4 - 52 C)

Date	9/20/2019	Outdoor UUT Model	SAGN-066NA	Indoor UUT Model	SHL-HM6524TA	Comment 1	Blower tap 4	Engineer	Luis Zapata
WO#		Outdoor UUT Serial	W471820682	Indoor UUT Serial	W061919358	Comment 2	Charge of 6.8 Kg	Technician	Lucio Leal
Run#	3	Compressor	ZP67KCE-TFD-830	TXV	45-30 ZGA 29718-1-G	Comment 3	With Air filter		
Test	Continuity	Fan Motor	51-42534-33	Blower Motor	M055PWCT-0388 (51-104360-00)	Comment 4	With 67 Compressor		
		Indoor Data		Outdoor Data					
Inlet Air	89.61	73.4 degF		125.61	87.79 degF				
Outlet Air	65.3	68.46 degF							
Inlet Air Enthalpy		37.32 Btu/lb							
Outlet Air Enthalpy		30.54 Btu/lb							
Specific Volume Outlet		13.591 ft³/lb							
Specific Volume Inlet		13.418 ft³/lb							
Standard CFM		1978.04 ft³/min							
Airflow measured CFM		2016.32 ft³/min							
Latent Cooling Capacity		13518.5 BTU/hr							
Sensible Cooling Capacity		46870 BTU/hr							
Mass Flow		16.47 lb/min							
Mass Flow		988 lb/hr							
Enthalpy Liquid		66.13 BTU/lb							
Enthalpy Vapor		126.48 BTU/lb							
Total Via Enthalpy				60354.72 BTU/hr					
Total Via Flow Meter				57177.8 BTU/hr					
Heat Balance				5.42 %					
Gross Capacity				62337.02 BTU/hr					
Compressor Watt/Amp				6168.431 9.531 W/Amps					
Fan Watt/Amp	551.422	3.522 W/Amps		310.345 0.786 W/Amps					
Fan Volts/Hertz	229.145	50 V/Hz		400.91 50 V/Hz					
Compr Volts/Hertz				400.619 50 V/Hz					
Calculated Fan Watts		551.21 W		310.07 W					
Calculated Fan BTU's		1881.45 BTU/hr							
Evap Out A Superheat		12.09 degF							
Net Total		60454.73 BTU/hr							
Net Latent		13485 BTU/hr							
Net Power		7066.81 W							
Air side EER		8.56							
Air side COP		2.510							
Gross EER		8.820							



