



Psychrometric Loop Facility # 1

Products Tested:	Test Standards (partial list):
Unitary air conditioners, rail air conditioners, chillers home humidifiers, desiccant wheels, coils, heat exchangers	ASHRAE - 20, 33, 37, 41.1, 41.2, 41.3, 58, 84; ARI 340/360, 210/240, 410, 610, 910; ISO 5151
Capacity: 10 tons to 100 tons 480VAC @ 400A 0 - 600VAC @ 800A 0 - 600VAC @ 600A Electrical Capabilities: V1 600A	Air Flow Range: 50 cfm to 35,000 cfm
Temp (indoor): Reheat & Rehum only	Temp (outdoor): Economizer cooling

Psychrometric Loop Facility # 2

Products Tested:	Test Standards (partial list):
Unitary air conditioners, rail air conditioners, home humidifiers, desiccant wheels, coils	ASHRAE - 20, 33, 37, 41.1, 41.2, 41.3, 51, 84; ARI 210/240, 340/360, 410, 610, 910; ISO 5151
Capacity: 7.5 tons to 75.0 tons 480VAC @ 400A 0 - 600VAC @ 800A 0 - 600VAC @ 600A	Air Flow Range: 50 cfm to 24,000 cfm @ 2" TSP (shared with Cell 3)
Temp (indoor): to 130° F Electrical Capabilities: 480V 400A V1 500A V2 600A VDC 0-125V 160A	Temp (outdoor): economizer cooling

Twin Psychrometric Facility # 3

Products Tested:	Test Standards (partial list):
Unitary air conditioners, rail air conditioners, home humidifiers, desiccant wheels, coils	ASHRAE - 20, 33, 37, 41.1, 41.2, 41.3, 51, 84; ARI 210/240, 340/360, 410, 610, 910; ISO 5151
Capacity: 7.5 tons to 75.0 tons 480VAC @ 400A 0 – 600VAC @ 800A 0 – 600VAC @ 600A	Air Flow Range: 50 cfm to 24,000 cfm @ 2" TSP (wind tunnel shared with Cell 2)
Temp (indoor): 40° F to 130° F Electrical Capabilities: V1 600A 480V 400A V2 800A	Temp (outdoor): n/a water cooled condenser only

Twin Psychrometric Facility # 4

Products Tested:	Test Standards (partial list):
Room air conditioners, package terminal air conditioners, packaged terminal heat pumps unitary air conditioners, rail air conditioners, home humidifiers	ASHRAE - 20, 33, 37, 41.1, 41.2, 41.3, 51, 58, 84; ARI 310/380, 210/240, 410, 440, 610; AHAM RAC-1, ISO 5151
Capacity: 0.5 tons to 8.0 tons	Air Flow Range: 50 cfm to 9500 cfm
Temp (indoor): 60° F to 95° F Electrical Capabilities: 100A 480V, 30	Temp (outdoor): 40° F to 140° F

Twin Psychrometric Facility # 5

Products Tested:	Test Standards (partial list):
Room air conditioners, package terminal air conditioners, packaged terminal heat pumps unitary air conditioners, rail air conditioners, home humidifiers, desiccant wheels	ASHRAE - 20, 33, 37, 41.1, 41.2, 41.3, 51, 58, 84; ARI 310/380, 210/240, 410, 440, 610, 910; ISO 5151
Capacity: 1.0 ton to 15.0 tons	Air Flow Range: 50 cfm to 9500 cfm
Temp (indoor): 60° F to 130° F Electrical Capabilities: 200A 240V 30 30A 480V 30	Temp (outdoor): 15° F to 150° F

Hx Facility # 1

Products Tested:	Test Standards (partial list):
Coils, heat exchangers	ASHRAE - 33, ARL 410
Capacity:	Air Flow Range:
.2 tons to 20 tons	50 cfm to 3500 cfm
Temp: 50° F to 250° F	

Reverberant Sound Room

Products Tested:	Test Standards (partial list):
Unitary air conditioners, rail air conditioners, chillers home humidifiers, diffusers, various components	ASHRAE - 68; ANSI, S1.31, S12.31

Hx Facility # 2

Products Tested:	Test Standards (partial list):
Var. refr. R-22-24 tons Hydronic to 75 kw	

Environmental Chamber # 1

Products Tested:	Test Standards (partial list):
Package Soaks	ISTA 2A, 2B & others

Environmental Chamber # 2

Products Tested:	Test Standards (partial list):
Package Soaks	ISTA 2A, 2B & others

Package Test Lab

Products Tested:	Test Standards (partial list):
Package Soaks	ISTA 1A, 1B, 2A, 2B 1C & 1D
Instruments: Transport simulator vibration table	Descriptions: 2000 lb. capacity rotary motion
Incline Impact Tester	2000 lb. capacity
Drop Tester	100 lb. payload
Certified Lab for International Safe Transit Association (ISTA Procedures)	

Test Cell Support Equipment – Portable

Name	Description
Code tester- air enthalpy tunnel	50 cfm to 9,000 cfm
Process water supply cart 75 KW	Variable speed drive pumping: 0 gpm to 225 gpm SCR controlled electric heat: 35 deg F to 200 deg F
Process water supply cart 24 KW	Variable speed drive pumping: 0 gpm to 90 gpm SCR controlled electric heat: 35 deg F to 200 deg F
Process false load-steam to water supply cart with duplex condensate pump, control valves and specialties	Entering steam: 2-15 pounds, water temperature range: 35 deg F to 200 deg F
Variable DX refrigeration cart	2 to 24 tons, R-22, water cooled condenser
Motor generator set for 50 Hz	75 KW, 45 Hz to 65 Hz, 200V to 600V
DCV generator	32 KW, 0-700 V.D.C.
DCV generator	20 KW, 0-125 V.D.C.
Steam generator electric powered 58 KW	0 PSI to 10 PSI
Hot water heater electric powered 36 KW	55 deg F to 190 deg F
Liebert computer room units (4) 20 tons- water cooled	
50 hp Air compressors @ 100 cfm	
120-208 30 75A, 400Hz power supply, 125 V.D.C. @ 75A	

Test Cell Support Equipment – Built In

Name	Description
Steam Boilers (2) low pressure 1,400,000 BTU's each	Serves as dry bulb control thru steam coils, serves as wet bulb control thru spray bar cells 1, 2, 3 & 12
Chillers (5) 3-30, 40, 42 ton	Chilled water at various temperatures and flow rates are piped to test cells
Cooling tower 125 tons	Cooling tower water is piped to various test cells
Instrument power conditioner	Liebert Precision Power Center 30kva 40 circuits, wired to cells 1, 2 & 3

Test Cells

Test Cell # 10	Medium sound chamber fully reverberant, 3700 cubic foot irregular shaped, sound trapped air intake exhaust provisions
Test Cell # 11	Medium sound chamber semi-reverberant, 1100 cubic foot irregular shaped
Test Cell # 12	Large environmental simulation test chamber, 20x20x10, 5-100% RH, can be used for haz. mat.
Test Cell # 13	Small environmental simulation test chamber, 3'x3'x3', 20 deg F to 350 deg F, 20 RH to 95 RH

Notes: All test cells are fully operational.

All conditions and capacities are not based on variables including the load of UUT, static pressures and pressure drops of the UUT, mode of operation of UUT (cooling, heating, ventilating), outside air temperatures and humidities, use of additional portable equipment, and other variables.

Small Psychrometric Facility:

Products tested: Unitary air conditioners and heat pumps, Split system air conditioners and heat pumps, geothermal air conditioners and heat pumps, recovery / recycle equipment		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 8-1/2 tons (cooling and heating)	Air flow range: 4000 cfm max.	Secondary Check: Refrigerant flow meters	Temperature: 17 °F – 130 °F
Room size: 14' x 14' x 10' (both indoor and outdoor rooms)			

Large Psychrometric Facility:

Products tested: Unitary air conditioners and heat pumps, Split system air conditioners and heat pumps, geothermal air conditioners and heat pumps, recovery / recycle equipment Pressure cycle testing capabilities		Test standards (partial list): ARI 340/360, 320, 325, 330; ASHRAE 33, 37, 51	
Capacity: 25 tons (cooling and heating)	Air flow range: 10,000 cfm max.	Secondary Check: Refrigerant flow meters	Temperature: 17 °F – 130 °F
Room Size: 20' x 20' x 13' (both indoor and outdoor rooms) 1,300 gallon geothermal tank (earth loop) with a 10 ton chiller			

Capillary Tube Blockage Test Bench:

Testing: Four air conditioner test stands measure compatibility of manufacturing process fluids and other materials. Alternative Refrigerant, new oils, gaskets, elastomers and o-rings are evaluated for chemical stability.

Non-condensable Purge Equipment:

Testing: Low Pressure Centrifugal Chiller simulator as described in ARI 580 for performance testing of Non-Condensable Gas Purge equipment. Foul gas discharge is collected and analyzed by Gas Chromatography for ratio of refrigerant to air.
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Refrigerant Recovery, Recycle and Reclaim Equipment Test Stand:

Testing:

ARI 740 3 cubic foot ASME stainless steel refrigerant mixing chamber test the performance of refrigerant recovery, recycle and reclaim equipment for contaminant removal and process efficiencies. Refrigerants are analytically contaminated at industry prescribed levels and recovery and recycling process rates are measured. At the conclusion of the refrigerant transfer - final refrigerant products are measured for residual contaminants are measured.

Refrigeration Systems Chemistry Laboratory:

Intertek is equipped with a full laboratory including:

We offer a broad range of analytical laboratory capabilities including refrigerant testing, lubricant analysis, halon testing, materials compatibility testing, alternative refrigerant analysis, fractionation, decomposition.

The components of the ARI 700 Refrigerant Analysis are as follows:

Acidity, Chloride, High Boiling Residue (OIL), Moisture, Mixed Refrigerants, Non-Condensable Gases (AIR), Particulate and Solids

Chemical Laboratory Instrumentation:

• Gas Chromatography (GC)	• Infrared (IR)	• Liquid Chromatography (LC)	• Inductively Coupled Plasma Emission Spectrometer (ICP)
• Karl Fischer Coulometric Titrator (FF)	• Tensile Strength Tester	• Shore A Durometer Hardness Tester	• Analytical Balances
• Mass Spectrometer (GC/MS)	• Par Bombs	• Autoclaves	• Dielectric Break down Voltage tester
• Total Acid Number (TAN)	• Cannon Finske Viscometers	• Miscibility and Solubility	• Specific Gravity
• Fluoride and Chloride	• Ion Selective Electrode (ISE)	• Refractometer	• Floc Point

Room Air Calorimeter:

Products tested: Room air conditioners, package terminal air conditioners, package terminal heat pumps	Test standards (partial list): ASHRAE – 16, 37, 41.1, 41.2, 58; ARI 310/380; AHAM RAC-1, ISO 5151
Capacity: 3,500 BTUH – 35,000 BTUH	Air flow range: 100 cfm - 900 cfm
Temp (indoor): 40 °F – 100 °F	Temp (outdoor): 60 °F – 125 °F

Unitary Test Facility #1 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 10 ton max	Air flow range (indoor): 270 cfm – 5,000 cfm	Air flow range (outdoor): 600 cfm – 10,000 cfm	
Temp (indoor): 50 °F – 125 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #2 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity 10 ton max	Air flow range (indoor):: 270 cfm – 5,000 cfm	Air flow range (outdoor): 600 cfm – 10,000 cfm	
Temp (indoor): 50 °F – 125 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #3 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 5 ton max	Air flow range (indoor): 270 cfm – 3,600 cfm	Air flow range (outdoor): 270 cfm – 5,000 cfm	
Temp (indoor):50 °F – 110 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #4 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 5 ton max.	Air flow range (indoor): 150 cfm – 2,250 cfm	Air flow range (outdoor): 270 cfm – 3,900 cfm	
Temp (indoor): 50 °F – 110 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #5 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 5 ton max.	Air flow range (indoor): 150 cfm – 2,250 cfm	Air flow range (outdoor): 420 cfm – 4,250 cfm	
Temp (indoor): 50 °F – 110 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #6 (psychrometric):

Products tested: Unitary air conditioners, unitary heat pumps		Test standards (partial list): ARI 110, 210/240; ASHRAE 37, 41.1, ISO 5151	
Capacity: 5 ton max.	Air flow range (indoor): 270 cfm – 3,300 cfm	Air flow range (outdoor): 625 cfm – 5,600 cfm	
Temp (indoor): 50 °F – 110 °F		Temp (outdoor): 0 °F – 125 °F	

Unitary Test Facility #7 (psychrometric – large facility):

Products tested: Large unitary air conditioners, large unitary heat pumps, air-cooled chillers		Test standards (partial list): ARI 340/360, 320, 325, 330; ASHRAE 33, 37, 51	
Capacity: 40 ton max. Air conditioner, heat pump (can extend up to 90 ton)		Capacity: 200 ton max. Air – cooled chillers	
Air flow range (indoor): 2,500 cfm – 20,000 cfm (can extend up to 40,000 cfm)		Water flow capacity: 480 gpm	
Temp (indoor): 50 °F – 125 °F		Temp (outdoor): 0 °F – 125 °	

Multi-Purpose Facility # 8A:

Products tested: Large coils, large water source heat pumps, condensers, roof top and split system air conditioners		Test standards (partial list): ARI 340/360, 320, 325, 330; ASHRAE 33, 37, 51	
Capacity: 25 ton max	Air flow range (indoor): 800 cfm – 22,000 cfm	Water flow capacity: 200 gpm	
Temp (indoor): 50 °F – 125 °F		Temp (outdoor): 50 °F – 125 °F	

Coil Loop Facility # 8B:

Products tested: Cold water coils, hot water coils, direct exchange coils, steam coils, and glycol coils		Test standards (partial list): ARI 410; ASHRAE 33	
Capacity: 20 ton max	Air flow range (indoor): 200 cfm – 8,000 cfm	Water flow capacity: 0.5 to 100 gpm	
Temp (Airsides): 50 °F – 140 °F:		Temp (Waterside): 42 °F – 180 °F	

Applied Facility # 9 (psychrometric – water cooled):

Products tested: Fan coils, unit ventilators, water source heat pumps, ground source heat pump, humidifiers, dehumidifiers, condensing units, compressors, heat pump pool heaters		Test standards (partial list): AHAM DH-1, HU-1; ISO Guide 13256-1; ASHRAE 37, 146;	
Capacity: 7 ton max	Air flow range: 150 cfm – 2,000 cfm		
Water flow capacity: 30 gpm		Temp: 0 °F – 125 °F	

AIR to AIR Heat Exchanger Facility:

Products tested: Enthalpy wheels, heat pipes and plate heat exchangers		Test standards (partial list): ARI 1060; ASHRAE 84	
Air flow range: 50 cfm – 5,000 cfm		Temp: 32 °F – 125 °F	

Air Filter Facility:

Products tested: Variety of filters – air handling residential, media, electronic	Test standards (partial list): ARI 680, 850; ASHRAE 52.1
Capability to load a variety of dusts	Air flow range: 500 cfm – 2,500 cfm
Pressure drop across filter: 0 – 4 inches water column	5 – 98 % ASHRAE efficiency air filters

Air Filter Facility:

Products tested: Variety of filters – air handling residential, media, electronic	Test standards (partial list): ARI 680, 850; ASHRAE 52.2
Capability to load a variety of dusts	Air flow range: 500 cfm – 3,000 cfm
Pressure drop across filter: 0 – 10 inches water column	5 – 98 % ASHRAE efficiency air filters

Room Air Cleaner Facility:

Products tested: Portable room air cleaners, media filters, ionizers, electronic filters	Test standards (partial list): ANSI/AHAM AC-1
Testing clean air delivery rates: 10 to 340 CADR	Airborne particulate counting and sizing: .09 – 15 micrometers
Temperature Range 70 °F plus/minus 5 °F, humidity control 40% RH plus/minus 5%RH	Pollutants used: Tobacco smoke, ASHRAE test dust, pollen

Gas Appliance Performance Test Facility:

Products tested: Water heaters (gas, oil and electric), heat pump water heaters, direct heating equipment, furnaces, and carbon monoxide detectors	Test standards (partial list): ADOE 10 CFR part 430; DOE vol. 49, no. 61, part 430; SCAQMD, ANSI/ASHRAE 103, 124; CGA P.3
Capacity range: 1,000 BTUH – 300,000 BTUH	Temperature Range: 65 °F – 70 °F

Acoustical Test Facility:

Products tested: Unitary air conditioner and heat pumps, Package terminal air conditioners, Package terminal heat pumps, ducted/non-ducted air conditioners, air terminals, appliances, fans air cleaners, humidifiers, absorptive panels, flexible and lined duct, silencers	Test standards (partial list): ARI 270, 300, 350, 530, 650, 880, 890: AHAM RAC 2SR, PNL-1; ASTM C423, E90, F1334
Refrigeration capacity range: 125,000 BTUH	Temperature Range: 60 °F – 110 °F
Airflow range: 1,000 cfm	Reverberation Room: 470 m3
Facility qualifications: ANSI S12.31, S12.32	