



Energy Efficiency Testing for HVAC/R

Helping you comply with energy efficiency regulatory programs

As global demand for energy consumption continues to increase, the race to build more energy efficient products intensifies. HVAC/R equipment manufacturers in particular are being pressured to meet more demanding mandatory efficiency regulations in North America, and around the world. UL offers you the testing services you need to clear the path to energy efficiency compliance while helping you design next-generation products that keep you ahead of the curve.

Energy efficiency evaluations by UL

UL provides HVAC/R manufacturers with expanded energy efficiency compliance solutions for Department of Energy (DOE), California Energy Commission (CEC), National Resources Canada (NRCAN), (AHRI) Air-Conditioning, Heating, and Refrigeration Institute, State of Kuwait, (MEW) Ministry of Electricity & Water, (SASO) Saudi Arabian Standards Organization and other global regulatory requirements. In addition, UL is an EPA-recognized CB and EPA-recognized Laboratory for the enhanced ENERGY STAR® program. Our scope for energy efficiency testing for HVAC/R equipment, as well as R&D prototype testing for HVAC/R equipment, includes:

- Unitary air-conditioning and heat pump equipment
- Package terminal air-conditioners and heat pumps
- Water source heat pumps
- Ground source closed-loop heat pumps, water-to-water and water-to-air
- Commercial and industrial unitary air-conditioning and heat pump equipment
- Commercial and industrial unitary condensing units
- Single package vertical air-conditioners and heat pumps
- Force-circulation air-cooling and air-heating coils
- Room fan-coils
- Air and water cooled chillers
- Direct geexchange heat pumps
- Indoor pool dehumidifiers
- Heat pump pool heaters
- Mini-split air-conditioning and heat pump equipment
- Room air-conditioners and heat pumps



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For more information please contact, email HVACinfo@ul.com or call 1.630.736.7500



State-of-the-art facility

Located in Plano, Texas, UL's energy efficiency test center is a modern, high-tech center of excellence staffed by experts with years of experience in the HVAC/R industry. The 35,000 square-foot facility carries the latest test equipment and full test capabilities including:

- LEAP Certified test facilities through AHRI
- Multi-chamber psychrometric testing (6 dual-cell chambers)
- HVAC testing capabilities to 30 tons
- Air-to-water and water-to-water cooled testing capabilities
- International or domestic powered units
- Single or three phase test samples
- 50 or 60 Hz
- 0 to 700 VAC
- 0 to 210 Amps
- Fan or blower RPM readings
- Total input power readings including Volts, Amps, Watts, & Frequency
- Individual components Volts, Amps, and Watts readings
- Total or individual component watt-hours
- Chamber temperature ranges from -10°F to 135°F
- Airflow measurements up to 14,000 CFM
- Water flow rate up to 90 gallons per minute
- Refrigerant flow rate up to 250 lbs. per minute
- Maximum of 16 pressure transducers per room
- Up to 300 individual thermocouple readings
- Data collection speeds up to 2 seconds
- Private offices for visiting clients with secure internet, phone, and remote viewing of tests being performed
- UL offers secondary capacity checks by refrigerant flow or outdoor enthalpy
- Remote real-time data tracking, chat communication, and observation of tests being performed via the internet for customers world wide

Full suite of compliance solutions for your HVAC/R equipment

UL can create customized assessment services to suit your needs.

- Testing in accordance to a variety of HVAC/R industry standards and programs
- Full-service research and development capability for product prototype testing
- Performance validation for pre-compliance testing or benchmarking
- Bundled compliance solutions available at the same location energy efficiency testing is performed: product safety certification testing and international certifications

State-of-the-art instrumentation

- Micro Motion Coriolis Flow Meters
- Rosemount Differential Pressure Transmitters
- Precision RTD Measurements
- LabVIEW System Design Software
- Yokogawa Power Analyzing Equipment
- Staco Variable Transformers

List of ISO 17025 accredited HVAC/R performance standards and programs

ENERGY STAR® Program Requirements

- Dehumidifiers
- Geothermal Heat Pumps
- Light Commercial HVAC
- Residential Air Source Heat Pump (ASHPs) and Central Air Conditioner Equipment
- Water Coolers

Code of Federal Regulations

- 10 CFR 430, Subpart B, Appendix M — Energy Consumption of Central Air conditioners and Heat Pumps
- 10 CFR 430, Subpart F — Commercial Air Conditioners and Heat Pumps



Air-Conditioning, Heating, and Refrigeration Institute Standards

- AHRI 210/240 — Unitary Air-Conditioning and Air-Source Heat Pump Equipment
- AHRI 310/380 — Packaged terminal Air-Conditioners and Heat Pumps
- AHRI 320 — Water-Source Heat Pumps
- AHRI 325 — Performance and Calibration of Reference Sound Sources
- AHRI 330 — ground Source Closed-Loop Heat Pumps
- AHRI 340/360 — Commercial & Industrial Unitary Air-Conditioning and Heat Pump Equipment
- AHRI 365 & 366 — Commercial and Industrial Unitary Air-Conditioning Condensing Units
- AHRI 390 — Single Package Vertical Air-Conditioners and Heat Pumps
- AHRI 410 — Forced-Circulation Air-Cooling and Air-Heating Coils
- AHRI 440 — Performance Rating of Room Fan-Coils
- AHRI 550/590 — Water-Chilling Packages Using the Vapor Compression Cycle
- AHRI 810 — Performance Rating of Automatic Commercial Ice-Makers
- AHRI 870 — Performance Rating of Direct Geoexchange Heat Pumps
- AHRI 910 — Performance Rating of Indoor Pool Dehumidifiers
- AHRI 1160 & 1161 — Performance Rating of Heat Pump Pool Heaters
- AHRI 1230 — Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning & Heat Pump Equipment

American Society of Heating, Refrigerating and Air-Conditioning Engineers Standards

- ASHRAE 20 — Method of testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers
- ASHRAE 30 — Method of testing Liquid-Chilling Packages
- ASHRAE 33 — Method of testing Forced Circulation Air Cooling and Air Heating Coils
- ASHRAE 37 — Methods of testing for Rating Unitary Air-Conditioning and Heat Pump Equipment
- ASHRAE 41.1 — Standard Method for temperature Measurement
- ASHRAE 41.2 — Standard Methods for Laboratory Airflow Measurement
- ASHRAE 41.3 — Standard Method for Pressure Measurement
- ASHRAE 41.6 — Standard Method for Measurement of Moist Air Properties
- ASHRAE 41.7 — Method of test for Measurement of Flow of gas
- ASHRAE 41.10 — Standard Methods for Volatile-Refrigerant mass Flow Measurements Using Flow Meters
- ASHRAE 79 — Method of testing for Rating Fan-Coil Conditioners
- ASHRAE 116 — Methods of testing for Rating Seasonal Efficiency of Unitary Air Conditioners and Heat Pumps
- ASHRAE 128 — Method of Rating Unitary Spot Air Conditioners
- ASHRAE 133 — Method of testing Direct Evaporative Air Coolers
- ASHRAE 146 — Methods of testing and Rating Pool Heaters
- ASHRAE 13256-1 — Water-Source Heat Pumps – Water-to-Air and Brine-to-Air Heat Pumps
- ASHRAE 13256-2 — Water-Source Heat Pumps – Water-to-Water and Brine-to-Water Heat Pumps



Association of Home Appliance Manufactures Standards

- AHAM DH-1 — Dehumidifiers

Saudi Arabian Standard Organization Standards

- SASO 2663 — Energy Labeling And Minimum Energy Performance Requirements For Air-Conditioners
- SASO 2664 — Energy Performance And Capacity Of Household Refrigerators, Refrigerator-Freezers, and Freezers

British Standards

- BS EN 14511-1 — Air Conditioners, Liquid Chilling Packages & Heat Pumps with Electrically Driven Compressors for Space Heating and Cooling
- BS EN 14511-2 — Air Conditioners, Liquid Chilling Packages & Heat Pumps with Electrically Driven Compressors for Space Heating and Cooling
- BS EN 14511-3 — Air Conditioners, Liquid Chilling Packages & Heat Pumps with Electrically Driven Compressors for Space Heating and Cooling

Canadian Standards Association Standards

- CSA C656 — Performance Standard for Split-System & Single-Package Central Air Conditioners & Heat Pumps
- CSA C743 — Performance Standard for Rating Packaged Water Chillers
- CSA C746 — Performance Standard for Rating Large Air Conditioners and Heat Pumps
- CSA C749 — Performance of Dehumidifiers

International Standards Organization Standards

- ISO 5151 — Non-Ducted Air Conditioners and Heat Pumps – testing and Rating for Performance
- ISO 13256-1 — Water-Source Heat Pumps – Water-to-Air and Brine-to-Air Heat Pumps
- ISO 13256-2 — Water-Source Heat Pumps – Water-to-Water and Brine-to-Water Heat Pumps

ASTM International

- ASTM F 2140 — Standard test Method for Performance of Hot Food Holding Cabinets

Product Safety Standards

- IEC 606335-2-40 (and EN 60335-2-40)
- UL 1995 / CSA C22.2 No. 236 – Heating and cooling equipment