BSR/ASHRAE Addendum h to
ANSI/ASHRAE Standard 30-2019

Public Review Draft

Proposed Addendum h to Standard 30-2019, Method of Testing Liquid Chillers

First Public Review (November 2024)
(Draft shows Proposed Changes to Current Standard)

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard.)

FOREWORD

ASHRAE Standard 30 prescribes methods for obtaining performance data relating to *liquid-chilling* or *liquid-heating* equipment using any type of compressor. The intent of this standard is to provide uniform test methods to measure the performance of this equipment by addressing the test and instrumentation requirements, test procedures, data to be recorded, and calculations to generate and confirm valid test results.

Addendum 'h' includes the following revisions:

A. Section 8.2.1 is updated to state that all heat exchangers connected to the chiller shall remain connected for the duration of the test.
B. Clarify that remote tubing lengths and sizes must be specified in the test plan. For example, If this standard is used to support testing in accordance with AHRI 550/590: For standard rating tests the tubing length shall be 25'; For other rating conditions the length may vary per the test plan.
C. Add the requirement that redundant voltage measurements must be within ±2%.
D. Clarify the Operation Condition Tolerance and Stability Criteria during Fan Cycling.

Addendum h to ANSI/ASHRAE Standard 30-2019

Update Section 6.4 as shown below.

6.4 Plan. A test plan shall document all requirements for conducting the test. This includes a list of the required full-load and part-load test points and associated operating conditions, including adjusted liquid temperature targets based on the rated fouling factor allowance. In addition to the requirements specifically listed in this standard the test plan shall include intended heat exchanger operation (useful or not) and all other input signals or controls positions necessary to place the chiller in the operating mode for each test to be performed.

For remote heat exchangers the tubing line sizes, insulation, and details of installation shall be defined in the test plan.

Add Section 6.7.4.1.5 as shown below.

6.7.4.1.5 Redundant Voltage Measurement. Where redundant voltage measurement is required, the difference between the average voltage and either measurement shall be less than 2%.

Update Section 8.2.1 as shown below.

8.2.1 Setup. The chiller package to be tested shall be set up at the test facility in accordance with the manufacturer's instructions, including but not limited to support of installation mounting points, connections for liquid, connections for power supply, test instrumentation, charging of refrigerant or oil, etc. All **liquid ↔ refrigerant heat exchangers** shall remain connected for the duration of the test. Non-condensable gases, if present, shall be removed from the system.

Add Section 8.2.1.2 as shown below.

8.2.1.2 Refrigerant Tubing for Remote Heat Exchangers. The unit shall be installed with interconnecting refrigerant tubing as defined in the test plan. All refrigerant tubing and components shall be installed within the same test room as all other parts of the tested equipment. Refrigerant tubing line sizes, insulation, and details of installation shall be in accordance with the test plan and shall be recorded prior to testing.

Modify Table 6-6 as shown below.

Table 6-6 Definition of *Operating Condition Tolerances* and Stability Criteria

Heat Exchanger **Type**	**Measurement or Calculation Result**			**Values Calculated from Data Samples**		***Operating Condition Tolerance*** **Limits**	**Stability Criteria**
				Mean	**Std. Dev.**		
Air ↔ *Refrigerant* Not as Useful *Capacity*	*Air Temperature* [c]	Entering	Dry Bulb	$\overline{T}$	s_T	Heat Rejection with Fan Cycling: $\left\|\overline{T} - T_{target}\right\| \leq 0.56\ \Delta°C\ [1.00\ \Delta°F]$	$s_T \leq 0.42\ \Delta°C\ [0.75\ \Delta°F]$
						When non-frosting: $\left\|\overline{T} - T_{target}\right\| \leq 0.56\ \Delta°C\ [1.00\ \Delta°F]$	When non-frosting: $s_T \leq 0.42\ \Delta°C\ [0.75\ \Delta°F]$
						When frosting: $\left\|\overline{T} - T_{target}\right\| \leq 1.11\ \Delta°C\ [2.00\ \Delta°F]$	When frosting: $s_T \leq 0.56\ \Delta°C\ [1.00\ \Delta°F]$
						During defrost cycle: No requirement	During defrost cycle: $s_T \leq 1.39\ \Delta°C\ [2.50\ \Delta°F]$
			Wet Bulb			When non-frosting: $\left\|\overline{T} - T_{target}\right\| \leq 0.56\ \Delta°C\ [1.00\ \Delta°F]$	$s_T \leq 0.28\ \Delta°C\ [0.50\ \Delta°F]$
						When frosting: $\left\|\overline{T} - T_{target}\right\| \leq 0.83\ \Delta°C\ [1.50\ \Delta°F]$	When frosting: $s_T \leq 0.42\ \Delta°C\ [0.75\ \Delta°F]$