



REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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**Pre-Visit** (contin.)

_____	_____	Be sure that all Laboratory instrumentation has current calibration stickers. Conduct a quick test to verify that the maximum deviation of the temperature probes from the highest to the lowest readings is within 0.10°F [0.055°C]. This can be done by placing the probes through a wooden board or 1-inch rubber insulation and setting it on a bucket of near-ambient water. Stir the water while checking the temperature readings from each probe. Document the temperature probe readings and recalibrate if necessary. Extreme care must be exercised when handling the temperature probes. Leave the rubber protective sleeves on the probes until you are ready to insert them into the thermo-wells or into the water streams.
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Minimum Laboratory instrumentation required:

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|-------|-------|--|
| _____ | _____ | Four (4) temperature probes including measurement device <ol style="list-style-type: none"> <li>1. Two (2) for measuring entering temperatures</li> <li>2. Two (2) for measuring leaving temperatures</li> </ol> |
| _____ | _____ | Two (2) differential pressure gauges including measurement device  |
| _____ | _____ | Power meter including current transformers and voltage sensing leads   |

**Day of Test**

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|-------|-------|--|
| _____ | _____ | Upon arrival, request a brief meeting of the involved parties to review the following information: <ol style="list-style-type: none"> <li>1. Safety rules at the test site</li> <li>2. Instrumentation List Calibration Summary Sheet (to be placed in the project file)</li> <li>3. Confirm test conditions and unit voltage</li> <li>4. Comparison of Field Fouling Factor calculations</li> <li>5. Test set-up; location of Laboratory instrumentation</li> </ol> |
| _____ | _____ | Representative shall unpack and visually inspect all Laboratory instrumentation  |
| _____ | _____ | Representative shall install all Laboratory instrumentation  |
| _____ | _____ | Representative shall verify temperature probes by repeating the quick test as prescribed in the Pre-Visit Section.   |
| _____ | _____ | Representative shall visually inspect and confirm the test sample chiller nameplate against the AHRI Selection Letter to confirm identity of the chiller under test.   |
| _____ | _____ | For water pressure drop across the condenser, the “Zero” measurement shall be recorded and shall be zero, within a tolerance of ± 1.0% of the full scale value of the calibration range of the measurement system. This verification shall be completed before starting the test sample chiller.   |

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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**Day of Test (contin.)**

_____	_____	For water flow through the condenser, the "Zero" measurements shall be recorded and shall be zero, within a tolerance of $\pm 1.0\%$ of the full scale value of the calibration range of the measurement system. This verification shall be completed before starting the test sample chiller.
_____	_____	For water pressure drop across the evaporator, the "Zero" measurement shall be recorded and shall be zero, within a tolerance of $\pm 1.0\%$ of the full scale value of the calibration range of the measurement system. This verification shall be completed before starting the test sample chiller.
_____	_____	For water flow through the evaporator, the "Zero" measurements shall be recorded and shall be zero, within a tolerance of $\pm 1.0\%$ of the full scale value of the calibration range of the measurement system. This verification shall be completed before starting the test sample chiller.
_____	_____	Representative shall verify the type of data reported: 1. Five (5) minute average point (continuous) or 2. Instantaneous data point
_____	_____	Representative shall authorize starting the test sample chiller

### 100% Full Load Test

All verifications shall be conducted at 100% load steady state conditions as the first load test point. Representative shall confirm and record that the Laboratory instrumentation is in agreement with the Test Stand's instruments. If these criteria are not met, interchange the Laboratory instrumentation to confirm they are correct.

Note: The RTD thermowell may be a cause of a temperature difference; not deep enough into the water stream or location. If calibration facilities are available on site, the Participant may wish to recalibrate his equipment and then compare with the Laboratory instrumentation.

Should any of these criteria not be met, steps should be taken to ensure that the discrepancy is resolved. In cases where the discrepancy cannot be resolved and no damage is apparent, the Laboratory instrumentation data for that parameter shall be used.

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|-------|-------|---|
| _____ | _____ | 1.1 The water temperature difference across the evaporator as determined by the Test Stand's instrumentation is within 0.2°F [0.11°C] from the Laboratory instrumentation |
| _____ | _____ | 1.2 The water temperature difference across the condenser as determined by the Test Stand's instrumentation is within 0.2°F [0.11°C] from the Laboratory instrumentation  |
| _____ | _____ | 1.3 The Test Stand and Laboratory temperatures values for entering Evaporator temperature are no more than 0.2°F [0.11°C] different                                       |
| _____ | _____ | 1.4 The Test Stand and Laboratory temperatures values for leaving Evaporator temperature are no more than 0.2°F [0.11°C] different  |
| _____ | _____ | 1.5 The Test Stand and Laboratory temperatures values for entering Condenser temperature are no more than 0.2°F [0.11°C] different  |
| _____ | _____ | 1.6 The Test Stand and Laboratory temperatures values for leaving Condenser temperature are no more than 0.2°F [0.11°C] different   |
| _____ | _____ | 1.7 The Power Input as determined by the Test Stand's instrumentation is within 2% from the Laboratory values   |
| _____ | _____ | 1.8 The Test Stand and Laboratory values for Water Pressure Drop are no more than 0.5 ft H <sub>2</sub> O [1.5 kPa].  |

_____	_____	After the proper refrigerant charge has been established, the refrigerant charging line shall be disconnected and remain off from the test sample during the testing
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_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously. The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period.
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**100% Full Load Test** (contin.)

The Representative shall confirm all of the following data collected at each test point are in accordance with the Standard:

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|-------|-----|---|
| _____ | 2.1 | Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | 2.2 | Heat balance is within tolerance per Table 13 of the Standard     |
| _____ | 2.3 | Evaporator water flow   |
| _____ | 2.4 | Leaving Evaporator water temperature                              |
| _____ | 2.5 | Condenser water flow  |
| _____ | 2.6 | Entering Condenser water temperature                              |
| _____ | 2.7 | Voltage (average of all phases)                                   |
| _____ | 2.8 | Frequency   |

The Representative shall confirm all of the following at the conclusion of the test are in accordance with the Standard:

- |       |       |   |   |
|-------|-------|---|---|
| _____ | _____ | 3.1   | Calculated Capacity                       |
| _____ | _____ | 3.2   | Calculated Efficiency                     |
| _____ | _____ | 3.3   | Calculated Evaporator water pressure drop |
| _____ | _____ | 3.4   | Calculated Condenser water pressure drop  |
| _____ | _____ | For continuous unloading units, verify that the actual capacity at 100% Full Load is not greater than 105% of the rated performance |   |

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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**75% Part-Load Test**

_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously.
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_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously. The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period.
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The Representative shall confirm all following data collected during the test are in accordance with the Standard

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1.1 Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | _____ | 1.2 Heat balance is within tolerance per Table 13 of the Standard     |
| _____ | _____ | 1.3 Evaporator water flow   |
| _____ | _____ | 1.4 Leaving Evaporator water temperature                              |
| _____ | _____ | 1.5 Condenser water flow  |
| _____ | _____ | 1.6 Entering Condenser water temperature                              |
| _____ | _____ | 1.7 Voltage (average of all phases)                                   |
| _____ | _____ | 1.8 Frequency   |

The Representative shall confirm the calculated IPLV/NPLV is within tolerance at the conclusion of the test in accordance with the Standard

_____	_____	For continuous unloading units during part-load tests, verify the measured capacities are within tolerance ( $\pm 2\%$ of the full load rated capacity). For discrete capacity step units, part-load test points shall be taken as close as practical to the specified part-load rating points as per Table 3 of the Standard.
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_____	_____	For discrete unloading units, verify that the condenser inlet water temperature is based on the measured capacity for the test as per Table 3 of the Standard.
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**50% Part-Load Test**

_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously.
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_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously. The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period per Table 12 of the Standard.
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The Representative shall confirm all following data collected during the test are in accordance with the Standard

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1.1 Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | _____ | 1.2 Heat balance is within tolerance per Table 13 of the Standard     |
| _____ | _____ | 1.3 Evaporator water flow   |
| _____ | _____ | 1.4 Leaving Evaporator water temperature                              |
| _____ | _____ | 1.5 Condenser water flow  |
| _____ | _____ | 1.6 Entering Condenser water temperature                              |
| _____ | _____ | 1.7 Voltage (average of all phases)                                   |
| _____ | _____ | 1.8 Frequency   |

The Representative shall confirm the calculated IPLV/NPLV is within tolerance at the conclusion of the test in accordance with the Standard

_____	_____	For continuous unloading units during part-load tests, verify the measured capacities are within tolerance ( $\pm 2\%$ of the full load rated capacity). For discrete capacity step units, part load test points shall be taken as close as practical to the specified part-load rating points as per Table 3 of the Standard.
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_____	_____	For discrete unloading units, verify that the condenser inlet water temperature is based on the measured capacity for the test as per Table 3 of the Standard.
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**25% Part-Load Test**

_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously.
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_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously. The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period per Table 12 of the Standard
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The Representative shall confirm all following data collected during the test are in accordance with the Standard

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1.1 Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | _____ | 1.2 Heat balance is within tolerance per Table 13 of the Standard     |
| _____ | _____ | 1.3 Evaporator water flow   |
| _____ | _____ | 1.4 Leaving Evaporator water temperature                              |
| _____ | _____ | 1.5 Condenser water flow  |
| _____ | _____ | 1.6 Entering Condenser water temperature                              |
| _____ | _____ | 1.7 Voltage (average of all phases)                                   |
| _____ | _____ | 1.8 Frequency   |

The Representative shall confirm the calculated IPLV/NPLV is within tolerance at the conclusion of the test in accordance with the Standard

_____	_____	For continuous unloading units during part-load tests, verify the measured capacities are within tolerance ( $\pm 2\%$ of the full load rated capacity). For discrete capacity step units, part load test points shall be taken as close as practical to the specified part-load rating points as per Table 3 of the Standard.
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_____	_____	For discrete unloading units, verify that the condenser inlet water temperature is based on the measured capacity for the test as per Table 3 of the Standard.
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REPRESENTATIVE INITIALS      DATA POINT (IF APPLICABLE)

**Extra Point** (Required for instances when previous points cannot be determined due to discrete step machines that are unloaded at different loads)

\_\_\_\_\_      \_\_\_\_\_      The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously.

\_\_\_\_\_      The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period per Table 12 of the Standard.

The Representative shall confirm all following data collected during the test are in accordance with the Standard

\_\_\_\_\_      1.1      Data collected in accordance with Section C6.2.1 of the Standard.

\_\_\_\_\_      1.2      Heat balance is within tolerance per Table 13 of the Standard

\_\_\_\_\_      1.3      Evaporator water flow

\_\_\_\_\_      1.4      Leaving Evaporator water temperature

\_\_\_\_\_      1.5      Condenser water flow

\_\_\_\_\_      1.6      Entering Condenser water temperature

\_\_\_\_\_      1.7      Voltage (average of all phases)

\_\_\_\_\_      1.8      Frequency

The Representative shall confirm the calculated IPLV/NPLV is within tolerance at the conclusion of the test in accordance with the Standard

\_\_\_\_\_      \_\_\_\_\_      For discrete capacity step units, part load test points shall be taken as close as practical to the specified part-load rating points as per Table 3 of the Standard.

\_\_\_\_\_      \_\_\_\_\_      For discrete unloading units, verify that the condenser inlet water temperature is based on the measured capacity for the test as per Table 3 of the Standard.

\_\_\_\_\_      \_\_\_\_\_      For units where the minimum step of unloading is greater than one or more of the required test points, the condenser inlet water temperature shall be adjusted to the required test point.

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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**Random Operating Point (5<sup>th</sup> Point)**

_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously.
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_____	_____	The Test Stand operator is to inform the Representative when they are ready to initiate the test so the Representative can record test data simultaneously. The Representative shall verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period, per Table 12 of the Standard.
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The Representative shall confirm all following data collected during the test are in accordance with the Standard

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|-------|-------|---|
| _____ | _____ | 1.1 Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | _____ | 1.2 Heat balance is within tolerance per Table 13 of the Standard     |
| _____ | _____ | 1.3 Evaporator water flow   |
| _____ | _____ | 1.4 Leaving Evaporator water temperature                              |
| _____ | _____ | 1.5 Condenser water flow  |
| _____ | _____ | 1.6 Entering Condenser water temperature                              |
| _____ | _____ | 1.7 Voltage (average of all phases)                                   |
| _____ | _____ | 1.8 Frequency   |

The Representative shall confirm all of the following at the conclusion of the test are in accordance with the Standard:

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 2.1 Calculated Capacity                       |
| _____ | _____ | 2.2 Calculated kW/ton                         |
| _____ | _____ | 2.3 Calculated Evaporator water pressure drop |
| _____ | _____ | 2.4 Calculated Condenser water pressure drop  |

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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**Day of Test (contin.)**

_____	_____	After the test is completed, calculate the unobtainable points as per the latest edition of the Standard, if applicable.
_____	_____	Calculate the IPLV/NPLV using the appropriate Efficiency values.
_____	_____	The results are then calculated by the Laboratory (using the Participant data) to compare with the Participant's calculated results as well as a separate Laboratory calculation. Any instrumentation discrepancies shall be included in the final test report. The Participant shall be informed of the final test results, and if the sample met the WCCL Certification Program criteria. If the sample fails, the Participant decides the next course of action as per the WCCL Operations Manual, Section 3.11 <i>Test Failures</i> .
_____	_____	If discrepancies were observed between the program participants and the Laboratory instrumentation, they should be so noted in the Laboratory test report along with any required follow-up. During the next visit to the program Participant's Test Stand, the Representative shall verify that the corrective action was performed.
_____	_____	The Laboratory test report, along with the raw data obtained from both the Test Stand and the Laboratory instrumentation, shall be issued to AHRI. The Laboratory shall invoice AHRI and the Participant in accordance with the AHRI/Laboratory Testing Services Agreement.

**This checklist & all supporting documents have been reviewed & approved by:**

\_\_\_\_\_  
PRINTED NAME OF REPRESENTATIVE

\_\_\_\_\_  
SIGNATURE OF REPRESENTATIVE

\_\_\_\_\_  
DATE