



**FORM ACCL-PC2
ACCL IN-HOUSE TEST PROCEDURE AND CHECKLIST
AHRI CERTIFICATION PROGRAM FOR AIR-COOLED (ACCL)
WATER CHILLING PACKAGES**

ACCL Participant: _____
Date of Test: _____
Test Number: _____
Test Results: _____

Instructions to Laboratory: The following Test Procedure and Checklist is to be used by the Laboratory Contracted by AHRI to document all steps required to conduct testing for the Air-Cooled (ACCL) Water Chilling Packages Certification Program. This Test Procedure and Checklist is to be used in conjunction with the AHRI General Operations Manual (OM) for AHRI Certification Programs, the ACCL OM and the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI) (Standard). Where the AHRI General OM, the ACCL OM and this Test Procedure and Checklist differ, the other documents shall prevail. The completed checklist shall be submitted to AHRI upon the completion of the certification test.

Select the Standard to be used to perform this test (select only one):

- _____ AHRI Standard 550/590 (I-P)
- _____ AHRI Standard 551/591 (SI)

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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Pre-Test

_____	_____	When setting up to Test an Air-Cooled chiller for AHRI Certification Programs, several information items are required. Those items are, but not limited to: <ol style="list-style-type: none"> 1. Chiller Model Number 2. Model Performance Ratings 3. Unit rated voltage, amperage and frequency 4. Dimensions of test sample and arrangement of inlet/outlets 5. Calculation Sheets, including Fouling Factor Calculations for the evaporator and Water Side Surface Area for the evaporator 6. Random Operating Point (5th Point)
_____	_____	Verify all Laboratory instrumentation used have current calibration stickers.

Day of Test

_____	_____	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, the “Zero” measurements 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 can be completed before or after the test has been conducted.
_____	_____	For water flow, the “Zero” measurements 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 can be completed before or after the test has been conducted.

100% Full Load Test

- | | | |
|-------|-------|--|
| _____ | _____ | 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 |
| _____ | | Verify air distribution in accordance with the ACCL Air Distribution Checklist |
| _____ | _____ | Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period. |

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

- | | | |
|-------|--|--|
| _____ | | 1.1 Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | | 1.2 Entering Evaporator water temperature measurements for each set of instruments |
| _____ | | 1.3 Leaving Evaporator water temperature measurements for each set of instruments |
| _____ | | 1.4 Evaporator water flow measurements for each set of instruments |
| _____ | | 1.5 Power input measurements for each set of instruments |

Instrument Set #1 (next two steps)

- | | | |
|-------|--|---|
| _____ | | 1.6 Evaporator water flow as compared to Target |
| _____ | | 1.7 Leaving Evaporator water temperature as compared to Target) |

Instrument Set #2 (next two steps)

- | | | |
|-------|--|--|
| _____ | | 1.8 Evaporator water flow as compared to Target |
| _____ | | 1.9 Leaving Evaporator water temperature as compared to Target |
| _____ | | 1.10 Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | | 1.11 Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | | 1.12 Voltage (average of all phases) as compared to Target |
| _____ | | 1.13 Frequency as compared to Target |

REPRESENTATIVE DATA POINT (IF
INITIALS APPLICABLE)

100% Full Load Test (contin.)

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

_____ 2.1 Calculated Capacity (adjusted for Barometric Pressure) is within tolerance

_____ 2.2 Calculated IPLV (adjusted for Barometric Pressure) is within tolerance

_____ 2.3 Calculated Evaporator water pressure drop

_____ For continuous unloading units, verify that the actual capacity (adjusted for Barometric Pressure) at 100% Full Load is not greater than 105% of the rated performance

75% Part-Load Test

- | | | |
|-------|-------|--|
| _____ | _____ | Verify air distribution in accordance with the ACCL Air Distribution Checklist |
| _____ | _____ | Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period. |

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

- | | | |
|-------|-----|--|
| _____ | 1.1 | Data collected in accordance with Section C6.2.1 of the Standard. |
| _____ | 1.2 | Entering Evaporator water temperature measurements for each set of instruments |
| _____ | 1.3 | Leaving Evaporator water temperature measurements for each set of instruments |
| _____ | 1.4 | Evaporator water flow measurements for each set of instruments |
| _____ | 1.5 | Power input measurements for each set of instruments |

Instrument Set #1 (next two steps)

- | | | |
|-------|-----|--|
| _____ | 1.6 | Evaporator water flow as compared to Target |
| _____ | 1.7 | Leaving Evaporator water temperature as compared to Target |

Instrument Set #2 (next two steps)

- | | | |
|-------|------|---|
| _____ | 1.8 | Evaporator water flow as compared to Target |
| _____ | 1.9 | Leaving Evaporator water temperature as compared to Target |
| _____ | 1.10 | Mean Entering Condenser dry-bulb air-temperature as compared to Target |
| _____ | 1.11 | Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | 1.12 | Voltage (average of all phases) as compared to Target |
| _____ | 1.13 | Frequency as compared to Target |

REPRESENTATIVE DATA POINT (IF
INITIALS APPLICABLE)

75% Part-Load Test (Contin.)

The Laboratory shall confirm the calculated IPLV is within tolerance at the conclusion of the test are in accordance with the Standard

_____ _____ For continuous unloading units during part-load tests, verify the measured capacities (adjusted for Barometric Pressure) 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.

_____ _____ For discrete unloading units, verify that the mean entering condenser dry-bulb air temperature is based on the measured capacity (adjusted for Barometric Pressure) for the test as per Table 3 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

50% Part-Load Test

- | | | |
|-------|-------|--|
| _____ | _____ | Verify air distribution in accordance with the ACCL Air Distribution Checklist |
| _____ | _____ | Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period. |

The Laboratory 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 | Entering Evaporator water temperature measurements for each set of instruments |
| _____ | 1.3 | Leaving Evaporator water temperature measurements for each set of instruments |
| _____ | 1.4 | Evaporator water flow measurements for each set of instruments |
| _____ | 1.5 | Power input measurements for each set of instruments |

Instrument Set #1 (next two steps)

- | | | |
|-------|-----|--|
| _____ | 1.6 | Evaporator water flow as compared to Target |
| _____ | 1.7 | Leaving Evaporator water temperature as compared to Target |

Instrument Set #1 (next two steps)

- | | | |
|-------|------|---|
| _____ | 1.8 | Evaporator water flow as compared to Target |
| _____ | 1.9 | Leaving Evaporator water temperature as compared to Target |
| _____ | 1.10 | Mean Entering Condenser dry-bulb air-temperature as compared to Target |
| _____ | 1.11 | Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | 1.12 | Voltage (average of all phases) as compared to Target |
| _____ | 1.13 | Frequency as compared to Target |

REPRESENTATIVE DATA POINT (IF
INITIALS APPLICABLE)

50% Part-Load Test (Contin.)

The Laboratory shall confirm the calculated IPLV is within tolerance at the conclusion of the test are in accordance with the Standard

_____ _____ For continuous unloading units during part-load tests, verify the measured capacities (adjusted for Barometric Pressure) 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.

_____ _____ For discrete unloading units, verify that the mean entering condenser dry-bulb air temperature is based on the measured capacity (adjusted for Barometric Pressure) for the test as per Table 3 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

25% Part-Load Test

- | | | |
|-------|-------|--|
| _____ | _____ | Verify air distribution in accordance with the ACCL Air Distribution Checklist |
| _____ | _____ | Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period. |

The Laboratory 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 Entering Evaporator water temperature measurements for each set of instruments |
| _____ | _____ | 1.3 Leaving Evaporator water temperature measurements for each set of instruments |
| _____ | _____ | 1.4 Evaporator water flow measurements for each set of instruments |
| _____ | _____ | 1.5 Power input measurements for each set of instruments |

Instrument Set #1 (next two steps)

- | | | |
|-------|-------|--|
| _____ | _____ | 1.6 Evaporator water flow as compared to Target |
| _____ | _____ | 1.7 Leaving Evaporator water temperature as compared to Target |

Instrument Set #1 (next two steps)

- | | | |
|-------|-------|--|
| _____ | _____ | 1.8 Evaporator water flow as compared to Target |
| _____ | _____ | 1.9 Leaving Evaporator water temperature as compared to Target |
| _____ | _____ | 1.10 Mean Entering Condenser dry-bulb air-temperature as compared to Target |
| _____ | _____ | 1.11 Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | _____ | 1.12 Voltage (average of all phases) as compared to Target |
| _____ | _____ | 1.13 Frequency as compared to Target |

REPRESENTATIVE DATA POINT (IF
INITIALS APPLICABLE)

25% Part-Load Test (Contin.)

The Laboratory shall confirm the calculated IPLV is within tolerance at the conclusion of the test are in accordance with the Standard

_____ _____ For continuous unloading units during part-load tests, verify the measured capacities (adjusted for Barometric Pressure) 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 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

_____ _____ For discrete unloading units, verify that the mean entering condenser dry-bulb air temperature is based on the measured capacity (adjusted for Barometric Pressure) for the test as per Table 3 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

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

_____ _____ Verify air distribution in accordance with the ACCL Air Distribution Checklist

_____ _____ Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period.

The Laboratory 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 Entering Evaporator water temperature measurements for each set of instruments

_____ 1.3 Leaving Evaporator water temperature measurements for each set of instruments

_____ 1.4 Evaporator water flow measurements for each set of instruments

_____ 1.5 Power input measurements for each set of instruments

Instrument Set #1 (next two steps)

_____ 1.6 Evaporator water flow as compared to Target

_____ 1.7 Leaving Evaporator water temperature as compared to Target

Instrument Set #1 (next two steps)

_____ 1.8 Evaporator water flow as compared to Target

_____ 1.9 Leaving Evaporator water temperature as compared to Target

_____ 1.10 Mean Entering Condenser dry-bulb air-temperature as compared to Target

_____ 1.11 Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target

_____ 1.12 Voltage (average of all phases) as compared to Target

_____ 1.13 Frequency as compared to Target

REPRESENTATIVE DATA POINT (IF
INITIALS APPLICABLE)

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

The Laboratory shall confirm the calculated IPLV is within tolerance at the conclusion of the test are in accordance with the Standard

_____ _____ For continuous unloading units during part-load tests, verify the measured capacities (adjusted for Barometric Pressure) 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 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

_____ _____ For discrete unloading units, verify that the mean entering condenser dry-bulb air temperature is based on the measured capacity (adjusted for Barometric Pressure) for the test as per Table 3 in the latest edition of AHRI Standard 550/590 (I-P) or AHRI Standard 551/591 (SI).

Random Operating Point (5th Point)

- | | | |
|-------|-------|--|
| _____ | _____ | Verify air distribution in accordance with the ACCL Air Distribution Checklist |
| _____ | _____ | Verify that the Test Stand test conditions remain within the allowable tolerances for the duration of the test period. |

The Laboratory 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 Entering Evaporator water temperature measurements for each set of instruments |
| _____ | 1.3 Leaving Evaporator water temperature measurements for each set of instruments |
| _____ | 1.4 Evaporator water flow measurements for each set of instruments |
| _____ | 1.5 Power input measurements for each set of instruments |

Instrument Set #1 (next two steps)

- | | |
|-------|--|
| _____ | 1.6 Evaporator water flow as compared to Target |
| _____ | 1.7 Leaving Evaporator water temperature as compared to Target |

Instrument Set #1 (next two steps)

- | | |
|-------|--|
| _____ | 1.8 Evaporator water flow as compared to Target |
| _____ | 1.9 Leaving Evaporator water temperature as compared to Target |
| _____ | 1.10 Mean Entering Condenser dry-bulb air-temperature as compared to Target |
| _____ | 1.11 Variation of Mean Entering Condenser dry-bulb air temperature as compared to Target |
| _____ | 1.12 Voltage (average of all phases) as compared to Target |
| _____ | 1.13 Frequency as compared to Target |

REPRESENTATIVE INITIALS	DATA POINT (IF APPLICABLE)
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Random Operating Point (5th Point) (Contin.)

The Laboratory shall confirm the following are within tolerance at the conclusion of the test in accordance with the Standard

- | | | |
|-------|-------|--|
| _____ | _____ | 2.1 Calculated Capacity (adjusted for Barometric Pressure) is within tolerance |
| _____ | _____ | 2.2 Calculated IPLV (adjusted for Barometric Pressure) is within tolerance |
| _____ | _____ | 2.3 Calculated Evaporator water pressure drop |

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 using the appropriate efficiency values. |
| _____ | _____ | The results are then calculated by the Laboratory. The Participant shall be informed of the final test results, and if the sample met the ACCL Certification Program criteria. If the sample fails, the Participant decides the next course of action as per the ACCL Operations Manual, Section 3.11 <i>Test Failures</i> . |
| _____ | _____ | The Laboratory test report, along with the raw data obtained from the Facility 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 LABORATORY SUPERVISOR

SIGNATURE OF LABORATORY SUPERVISOR

DATE