

# ISO 15042:2017-07 (E)

## Multiple split-system air conditioners and air-to-air heat pumps - Testing and rating for performance

---

<b>Contents</b>		<b>Page</b>
Foreword .....		vi
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>2</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Symbols .....</b>	<b>5</b>
<b>5</b>	<b>Airflow setting .....</b>	<b>8</b>
5.1	General .....	8
5.2	Airflow setting for ducted indoor units .....	8
5.2.1	General .....	8
5.2.2	Airflow setting procedure for ducted indoor units .....	8
5.3	ESP for rating .....	8
5.4	Airflow setting for non-ducted indoor units measured by air enthalpy method .....	10
5.5	Outdoor airflow .....	10
5.6	Unit supplied without indoor fan .....	10
<b>6</b>	<b>Cooling tests .....</b>	<b>10</b>
6.1	Cooling capacity test .....	10
6.1.1	General conditions .....	10
6.1.2	Temperature conditions .....	11
6.1.3	Test conditions .....	12
6.2	Maximum cooling performance test .....	13
6.2.1	General conditions .....	13
6.2.2	Temperature conditions .....	13
6.2.3	Airflow conditions .....	13
6.2.4	Test conditions .....	13
6.2.5	Performance requirements .....	13
6.3	Minimum cooling test .....	15
6.3.1	General conditions .....	15
6.3.2	Temperature conditions .....	15
6.3.3	Airflow conditions .....	15
6.3.4	Test condition .....	15
6.3.5	Performance requirements .....	16
6.4	Freeze-up drip test (applies to non-ducted multi-splits) .....	16
6.4.1	General conditions .....	16
6.4.2	Temperature conditions .....	16
6.4.3	Airflow conditions .....	16
6.4.4	Test conditions .....	17
6.4.5	Performance requirements .....	17
6.5	Condensate control test and enclosure sweat test .....	17
6.5.1	General conditions .....	17
6.5.2	Temperature conditions .....	17
6.5.3	Airflow conditions .....	17
6.5.4	Test conditions .....	18
6.5.5	Performance requirements .....	18
<b>7</b>	<b>Heating tests .....</b>	<b>18</b>

7.1	Heating capacity tests .....	18
7.1.1	General conditions .....	18
7.1.2	Temperature conditions .....	19
7.1.3	Airflow conditions .....	20
7.1.4	Defrost operation .....	20
7.1.5	Test procedure -- General .....	21
7.1.6	Preconditioning period .....	21
7.1.7	Equilibrium period .....	21
7.1.8	Data collection period .....	21
7.1.9	Test procedure when a defrost cycle (whether automatically or manually initiated) ends the preconditioning period (7.1.6) .....	22
7.1.10	Test procedure when a defrost cycle does not end the preconditioning period (7.1.6) .....	22
7.1.11	Test procedure for transient tests .....	23
7.1.12	Heating capacity test results .....	24
7.2	Maximum heating performance test .....	24
7.2.1	General conditions .....	24
7.2.2	Temperature conditions .....	24
7.2.3	Airflow conditions .....	25
7.2.4	Test conditions .....	25
7.2.5	Performance requirements .....	25
7.3	Minimum heating performance test .....	25
7.3.1	General conditions .....	25
7.3.2	Temperature conditions .....	25
7.3.3	Airflow conditions .....	26
7.3.4	Test conditions .....	26
7.3.5	Performance requirements .....	26
7.4	Automatic defrost performance test .....	26
7.4.1	General conditions .....	26
7.4.2	Temperature conditions .....	27
7.4.3	Airflow conditions .....	27
7.4.4	Test conditions .....	27
7.4.5	Performance requirements .....	27
8	Heat recovery test .....	27
8.1	Heat recovery capacity ratings .....	27
8.1.1	General conditions .....	27
8.1.2	Temperature conditions .....	27
9	Test methods and uncertainties of measurement .....	28
9.1	Test methods .....	28
9.1.1	General .....	28
9.1.2	Calorimeter test method .....	28
9.1.3	Indoor air enthalpy method .....	28
9.1.4	Capacity tests .....	29
9.2	Uncertainty of measurement .....	29
9.3	Test tolerances for the capacity tests .....	30
9.4	Test tolerances for performance tests .....	31
10	Test results .....	31
10.1	Capacity results .....	31
10.1.1	General .....	31
10.1.2	Adjustments .....	32
10.1.3	Cooling capacity calculations .....	32
10.1.4	Heating capacity calculations .....	32
10.1.5	Power input of fans .....	33
10.2	Data to be recorded .....	33
10.3	Test report .....	36
10.3.1	General information .....	36
10.3.2	Rating test results .....	36
10.3.3	Performance tests .....	36

<b>11</b>	<b>Marking provisions</b> .....	<b>37</b>
<b>11.1</b>	<b>Nameplate requirements</b> .....	<b>37</b>
<b>11.2</b>	<b>Nameplate information</b> .....	<b>37</b>
<b>11.3</b>	<b>Split systems</b> .....	<b>37</b>
<b>12</b>	<b>Publication of ratings</b> .....	<b>38</b>
<b>12.1</b>	<b>Standard ratings</b> .....	<b>38</b>
<b>12.2</b>	<b>Other ratings</b> .....	<b>38</b>
<b>Annex A (normative) Airflow settings for ducted units</b> .....		<b>39</b>
<b>Annex B (normative) Test requirements</b> .....		<b>44</b>
<b>Annex C (informative) Airflow measurement</b> .....		<b>51</b>
<b>Annex D (normative) Calorimeter test method</b> .....		<b>57</b>
<b>Annex E (normative) Indoor air enthalpy test method</b> .....		<b>65</b>
<b>Annex F (informative) Part-load capacity tests and determination of energy efficiency ratios and coefficients of performance</b> .....		<b>72</b>
<b>Annex G (informative) Individual indoor unit capacity tests</b> .....		<b>73</b>
<b>Annex H (normative) Heat recovery test method</b> .....		<b>75</b>
<b>Annex I (informative) Refrigerant enthalpy test method</b> .....		<b>76</b>
<b>Annex J (informative) Outdoor air enthalpy test method</b> .....		<b>78</b>
<b>Annex K (informative) Indoor calorimeter confirmative test method</b> .....		<b>81</b>
<b>Annex L (informative) Outdoor calorimeter confirmative test method</b> .....		<b>83</b>
<b>Annex M (informative) Balanced-type calorimeter confirmative test method</b> .....		<b>85</b>
<b>Annex N (informative) Cooling condensate measurements</b> .....		<b>86</b>
<b>Annex O (normative) Supplemental requirements when rating fan-less (coil only) type units</b> .....		<b>87</b>
<b>Annex P (informative) Pictorial examples of the heating capacity test procedures given in 7.1</b> .....		<b>90</b>
<b>Bibliography</b> .....		<b>97</b>