

ISO 5151:2017-07 (E)

Non-ducted air conditioners and heat pumps - Testing and rating for performance

Contents		Page
Foreword		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Symbols	6
5	Cooling tests	8
5.1	Cooling capacity test	8
5.1.1	General conditions	8
5.1.2	Temperature conditions	8
5.1.3	Airflow conditions	9
5.1.4	Test conditions	10
5.2	Maximum cooling performance test	11
5.2.1	General conditions	11
5.2.2	Temperature conditions	11
5.2.3	Airflow conditions	11
5.2.4	Test conditions	11
5.2.5	Performance requirements	12
5.3	Minimum cooling, freeze-up air blockage and freeze-up drip performance tests	13
5.3.1	General conditions	13
5.3.2	Temperature conditions	13
5.3.3	Airflow conditions	13
5.3.4	Test conditions	13
5.3.5	Performance requirements	13
5.4	Freeze-up drip performance test	14
5.4.1	General conditions	14
5.4.2	Temperature conditions	14
5.4.3	Airflow conditions	14
5.4.4	Performance requirements	15
5.5	Condensate control and enclosure sweat performance test	15
5.5.1	General conditions	15
5.5.2	Temperature conditions	15
5.5.3	Airflow conditions	15
5.5.4	Test conditions	15
5.5.5	Performance requirements	15
6	Heating tests	16
6.1	Heating capacity tests	16
6.1.1	General conditions	16
6.1.2	Temperature conditions	17
6.1.3	Airflow conditions	17
6.1.4	Defrost operation	18
6.1.5	Test procedure -- General	18
6.1.6	Preconditioning period	18
6.1.7	Equilibrium period	18
6.1.8	Data collection period	18
6.1.9	Test procedure when a defrost cycle (whether automatically or manually initiated) ends the preconditioning period	19

6.1.10	Test procedure when a defrost cycle does not end the preconditioning period	19
6.1.11	Test procedure for transient tests	20
6.1.12	Heating capacity test results	21
6.2	Maximum heating performance test	21
6.2.1	General conditions	21
6.2.2	Temperature conditions	21
6.2.3	Airflow conditions	22
6.2.4	Test conditions	22
6.3	Minimum heating performance test	22
6.3.1	General conditions	22
6.3.2	Temperature conditions	22
6.3.3	Airflow conditions	23
6.3.4	Test condition	23
6.3.5	Performance requirements	23
6.4	Automatic defrost performance test	23
6.4.1	General conditions	23
6.4.2	Temperature conditions	23
6.4.3	Airflow conditions	23
6.4.4	Test conditions	24
6.4.5	Performance requirements	24
7	Test methods and uncertainties of measurements	24
7.1	Test methods	24
7.1.1	General	24
7.1.2	Calorimeter test method	24
7.1.3	Indoor air enthalpy test method	24
7.1.4	Capacity tests	25
7.2	Uncertainties of measurement	25
7.3	Test tolerances for steady-state cooling and heating tests	26
7.4	Test tolerances for performance tests	27
8	Test results	27
8.1	Capacity results	27
8.1.1	General	27
8.1.2	Adjustments	27
8.1.3	Cooling capacity calculations	28
8.1.4	Heating capacity calculations	28
8.2	Data to be recorded	29
8.3	Test report	29
8.3.1	General information	29
8.3.2	Capacity tests	31
8.3.3	Performance tests	31
9	Marking provisions	32
9.1	Nameplate requirements	32
9.2	Nameplate information	32
9.3	Split systems	32
10	Publication of ratings	33
10.1	Standard ratings	33
10.2	Other ratings	33
	Annex A (normative) Test requirements	34
	Annex B (informative) Airflow measurement	36
	Annex C (normative) Calorimeter test method	42
	Annex D (normative) Indoor air enthalpy test method	50
	Annex E (informative) Refrigerant enthalpy test method	56

Annex F (informative) Outdoor air enthalpy test method	58
Annex G (informative)Indoorcalorimeterconfirmativetestmethod	61
Annex H (informative)Outdoorcalorimeterconfirmativetestmethod	63
Annex I (informative)Balanced-typecalorimeterconfirmativetestmethod	65
Annex J (informative) Cooling condensate measurements	66
Annex K (informative) Pictorial examples of the heating capacity test procedures given in 6.1	67
Bibliography	74