ANNEX III

Measurements and calculations

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using [**F1**designated standards], or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods. They shall meet the conditions and technical parameters set out in points 2 to 5.

2. General conditions for measurements and calculations

    (a) For the purposes of the measurements set out in points 2 to 5, the indoor ambient temperature shall be set at 20 °C ± 1 °C.

    (b) For the purposes of the calculations set out in points 3 to 5, consumption of electricity shall be multiplied by a conversion coefficient CC of 2,5.

    (c) Emissions of nitrogen oxides shall be measured as the sum of nitrogen monoxide and nitrogen dioxide, and expressed in nitrogen dioxide.

    (d) For heaters equipped with supplementary heaters, the measurement and calculation of rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and emissions of nitrogen oxides shall take account of the supplementary heater.

    (e) Declared values for rated heat output, seasonal space heating energy efficiency, water heating energy efficiency, sound power level and emissions of nitrogen oxides shall be rounded to the nearest integer.

    (f) Any heat generator designed for a heater, and any heater housing to be equipped with such a heat generator, shall be tested with an appropriate heater housing and heat generator, respectively.

3. Seasonal space heating energy efficiency of boiler space heaters, boiler combination heaters and cogeneration space heaters

    The seasonal space heating energy efficiency η_s shall be calculated as the seasonal space heating energy efficiency in active mode η_{son}, corrected by contributions accounting for temperature controls, auxiliary electricity consumption, standby heat loss, ignition burner power consumption (if applicable) and, for cogeneration space heaters, corrected by adding the electrical efficiency multiplied by a conversion coefficient CC of 2,5.

4. Seasonal space heating energy efficiency of heat pump space heaters and heat pump combination heaters

    (a) For establishing the rated coefficient of performance COP_{rated} or rated primary energy ratio PER_{rated}, the sound power level or emissions of nitrogen oxides, the operating conditions shall be the standard rating conditions set out in Table 3 and the same declared capacity for heating shall be used.

    (b) The active mode coefficient of performance $SCOP_{on}$ or active mode primary energy ratio $SPER_{on}$ shall be calculated on the basis of the part load for heating $Ph(T_j)$, the supplementary capacity for heating $sup(T_j)$ (if applicable) and the bin-specific coefficient of performance $COPbin(T_j)$ or bin-specific

primary energy ratio $PERbin(T_j)$, weighted by the bin-hours for which the bin conditions apply, using the following conditions:

— the reference design conditions set out in Table 4;

— the European reference heating season under average climate conditions set out in Table 5;

— if applicable, the effects of any degradation of energy efficiency caused by cycling depending on the type of control of the heating capacity.

(c) The reference annual heat demand Q_H shall be the design load for heating *Pdesignh* multiplied by the annual equivalent active mode hours H_{HE} of 2 066.

(d) The annual energy consumption Q_{HE} shall be calculated as the sum of:

— the ratio of the reference annual heating demand Q_H and the active mode coefficient of performance $SCOP_{on}$ or active mode primary energy ratio $SPER_{on}$ and

— the energy consumption for off, thermostat-off, standby, and crankcase heater mode during the heating season.

(e) The seasonal coefficient of performance *SCOP* or seasonal primary energy ratio *SPER* shall be calculated as the ratio of the reference annual heat demand Q_H and the annual energy consumption Q_{HE}.

(f) The seasonal space heating energy efficiency η_s shall be calculated as the seasonal coefficient of performance *SCOP* divided by the conversion coefficient *CC* or the seasonal primary energy ratio *SPER*, corrected by contributions accounting for temperature controls and, for water-/brine-to-water heat pump space heaters and heat pump combination heaters, the electricity consumption of one or more ground water pumps.

5. Water heating energy efficiency of combination heaters

The water heating energy efficiency η_{wh} of a combination heater shall be calculated as the ratio between the reference energy Q_{ref} of the declared load profile and the energy required for its generation under the following conditions:

(a) measurements shall be carried out using the load profiles set out in Table 7;

(b) measurements shall be carried out using a 24-hour measurement cycle as follows:

— 00:00 to 06:59: no water draw-off;

— from 07:00: water draw-offs according to the declared load profile;

— from end of last water draw-off until 24:00: no water draw-off;

(c) the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile;

(d) for heat pump combination heaters, the following additional conditions apply:

— heat pump combination heaters shall be tested under the conditions set out in Table 3;

— heat pump combination heaters which use ventilation exhaust air as the heat source shall be tested under the conditions set out in Table 6.

Textual Amendments

F1   Words in Annex 3 para. 1 substituted (31.12.2020) by The Ecodesign for Energy-Related Products and Energy Information (Amendment) (EU Exit) Regulations 2019 (S.I. 2019/539), reg. 1(3), **Sch. 2 para. 19(9)**; 2020 c. 1, Sch. 5 para. 1(1)

TABLE 3

Standard rating conditions for heat pump space heaters and heat pump combination heaters

Heat source	Outdoor heat exchanger	Indoor heat exchanger			
	Inlet dry bulb (wet bulb) temperature	Heat pump space heaters and heat pump combination heaters, except low-temperature heat pumps		Low-temperature heat pumps	
		Inlet temperature	Outlet temperature	Inlet temperature	Outlet temperature
Outdoor air	+ 7 °C (+ 6 °C)	+ 47 °C	+ 55 °C	+ 30 °C	+ 35 °C
Exhaust air	+ 20 °C (+ 12 °C)				
	Inlet/outlet temperature				
Water	+ 10 °C/+ 7 °C				
Brine	0 °C/– 3 °C				

TABLE 4

Reference design conditions for heat pump space heaters and heat pump combination heaters, temperatures in dry bulb air temperature (wet bulb air temperature indicated in brackets)

Reference design temperature	Bivalent temperature	Operation limit temperature
$T_{designh}$	T_{biv}	TOL
– 10 (– 11) °C	maximum + 2 °C	maximum – 7 °C

TABLE 5

European reference heating season under average climate conditions for heat pump space heaters and heat pump combination heaters

bin_j	T_j [°C]	H_j [h/annum]
1 to 20	− 30 to − 11	0
21	-10	1
22	-9	25
23	-8	23
24	-7	24
25	-6	27
26	-5	68
27	-4	91
28	-3	89
29	-2	165
30	-1	173
31	0	240
32	1	280
33	2	320
34	3	357
35	4	356
36	5	303
37	6	330
38	7	326
39	8	348
40	9	335
41	10	315
42	11	215
43	12	169
44	13	151
45	14	105
46	15	74
Total hours:		4 910

TABLE 6

Maximum ventilation exhaust air available [m³/h], at humidity of 5,5 g/m³

Declared load profile	XXS	XS	S	M	L	XL	XXL	3XL	4XL

Maximum ventilation exhaust air available	109	128	128	159	190	870	1 021	2 943	8 830

TABLE 7

Water heating load profiles of combination heaters

h	3XS			XXS			XS			S			
	Q_{tap}	f	T_m	Q_{tap}	f	T_m	Q_{tap}	f	T_m	Q_{tap}	f	T_m	T_p
	kWh	l/min	°C	kWh	l/min	°C	kWh	l/min	°C	kWh	l/min	°C	°C
07:00	0,015	2	25	0,105	2	25				0,105	3	25	
07:05	0,015	2	25										
07:15	0,015	2	25										
07:26	0,015	2	25										
07:30	0,015	2	25	0,105	2	25	0,525	3	35	0,105	3	25	
07:45													
08:01													
08:05													
08:15													
08:25													
08:30				0,105	2	25				0,105	3	25	
08:45													
09:00	0,105	2	25										
09:30	0,105	2	25	0,105	2	25				0,105	3	25	
10:00													
10:30													
11:00													
11:30	0,015	2	25	0,105	2	25				0,105	3	25	
11:45	0,015	2	25	0,105	2	25				0,105	3	25	
12:00	0,015	2	25	0,105	2	25							
12:30	0,015	2	25	0,105	2	25							
12:45	0,015	2	25	0,105	2	25	0,525	3	35	0,315	4	10	55
14:30	0,015	2	25										
15:00	0,015	2	25										
15:30	0,015	2	25										

h	Qtap	f	Tm	Tp	Qtap	f	Tm	Tp	Qtap	f	Tm	Tp	Qtap	f	Tm	Tp
16:00	**0,015**	2	25													
16:30																
17:00																
18:00					**0,105**	2	25						**0,105**	3	25	
18:15					**0,105**	2	25						**0,105**	3	40	
18:30	**0,015**	2	25		**0,105**	2	25									
19:00	**0,015**	2	25		**0,105**	2	25									
19:30	**0,015**	2	25		**0,105**	2	25									
20:00					**0,105**	2	25									
20:30									**1,05**	3	35		**0,42**	4	10	55
20:45					**0,105**	2	25									
20:46																
21:00					**0,105**	2	25									
21:15	**0,015**	2	25		**0,105**	2	25									
21:30	**0,015**	2	25										**0,525**	5	45	
21:35	**0,015**	2	25		**0,105**	2	25									
21:45	**0,015**	2	25		**0,105**	2	25									
Q_{ref}	**0,345**				**2,1**				**2,1**				**2,1**			

h	M				L				XL			
	Q_{tap}	f	T_m	T_p	Q_{tap}	f	T_m	T_p	Q_{tap}	f	T_m	T_p
	kWh	l/min	°C	°C	kWh	l/min	°C	°C	kWh	l/min	°C	°C
07:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
07:05	**1,4**	6	40		**1,4**	6	40					
07:15									**1,82**	6	40	
07:26									**0,105**	3	25	
07:30	**0,105**	3	25		**0,105**	3	25					
07:45					**0,105**	3	25		**4,42**	10	10	40
08:01	**0,105**	3	25						**0,105**	3	25	
08:05					**3,605**	10	10	40				
08:15	**0,105**	3	25						**0,105**	3	25	
08:25					**0,105**	3	25					
08:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
08:45	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
09:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	

	Qtap	f	Tm	Tp	Qtap	f	Tm	Tp	Qtap	f	Tm	Tp
09:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
10:00									**0,105**	3	25	
10:30	**0,105**	3	10	40	**0,105**	3	10	40	**0,105**	3	10	40
11:00									**0,105**	3	25	
11:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
11:45	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
12:00												
12:30												
12:45	**0,315**	4	10	55	**0,315**	4	10	55	**0,735**	4	10	55
14:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
15:00									**0,105**	3	25	
15:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
16:00									**0,105**	3	25	
16:30	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
17:00									**0,105**	3	25	
18:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
18:15	**0,105**	3	40		**0,105**	3	40		**0,105**	3	40	
18:30	**0,105**	3	40		**0,105**	3	40		**0,105**	3	40	
19:00	**0,105**	3	25		**0,105**	3	25		**0,105**	3	25	
19:30												
20:00												
20:30	**0,735**	4	10	55	**0,735**	4	10	55	**0,735**	4	10	55
20:45												
20:46									**4,42**	10	10	40
21:00					**3,605**	10	10	40				
21:15	**0,105**	3	25						**0,105**	3	25	
21:30	**1,4**	6	40		**0,105**	3	25		**4,42**	10	10	40
21:35												
21:45												
Q_{ref}	**5,845**				**11,655**				**19,07**			
h	XXL				3XL				4XL			
	Q_{tap}	f	T_m	T_p	Q_{tap}	f	T_m	T_p	Q_{tap}	f	T_m	T_p
	kWh	l/min	°C	°C	kWh	l/min	°C	°C	kWh	l/min	°C	°C
07:00	**0,105**	3	25		**11,2**	48	40		**22,4**	96	40	

07:05												
07:15	**1,82**	6	40									
07:26	**0,105**	3	25									
07:30												
07:45	**6,24**	16	10	40								
08:01	**0,105**	3	25		**5,04**	24	25		**10,08**	48	25	
08:05												
08:15	**0,105**	3	25									
08:25												
08:30	**0,105**	3	25									
08:45	**0,105**	3	25									
09:00	**0,105**	3	25		**1,68**	24	25		**3,36**	48	25	
09:30	**0,105**	3	25									
10:00	**0,105**	3	25									
10:30	**0,105**	3	10	40	**0,84**	24	10	40	**1,68**	48	10	40
11:00	**0,105**	3	25									
11:30	**0,105**	3	25									
11:45	**0,105**	3	25		**1,68**	24	25		**3,36**	48	25	
12:00												
12:30												
12:45	**0,735**	4	10	55	**2,52**	32	10	55	**5,04**	64	10	55
14:30	**0,105**	3	25									
15:00	**0,105**	3	25									
15:30	**0,105**	3	25		**2,52**	24	25		**5,04**	48	25	
16:00	**0,105**	3	25									
16:30	**0,105**	3	25									
17:00	**0,105**	3	25									
18:00	**0,105**	3	25									
18:15	**0,105**	3	40									
18:30	**0,105**	3	40		**3,36**	24	25		**6,72**	48	25	
19:00	**0,105**	3	25									
19:30												
20:00												
20:30	**0,735**	4	10	55	**5,88**	32	10	55	**11,76**	64	10	55

20:45											
20:46	**6,24**	16	10	40							
21:00											
21:15	**0,105**	3	25								
21:30	**6,24**	16	10	40	**12,04**	48	40		**24,08**	96	40	
21:35											
21:45											
Q_{ref}	**24,53**				**46,76**				**93,52**			

Changes to legislation:
Commission Regulation (EU) No 813/2013, ANNEX III is up to date with all changes known to be in force on or before 10 August 2024. There are changes that may be brought into force at a future date. Changes that have been made appear in the content and are referenced with annotations.
View outstanding changes

> **Changes and effects yet to be applied to the whole legislation item and associated provisions**
> –   Art. 4(3.1)-(3.3) substituted for Art. 4(3) by S.I. 2024/696 reg. 6(2)(a)