

The following sample was submitted and identified on behalf of the client as:

<b>Test Report</b> <b>COMMISSION DELEGATED REGULATION (EU) No 812/2013</b> <b>supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of water heaters, hot water storage tanks and packages of water heater and solar device</b> <b>COMMISSION REGULATION (EU) No 814/2013</b> <b>implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks</b>	
Report Reference No. ....:	GZES200800046289
Tested by (name + signature) .....	David Lei 
Approved by (+ signature) .....	Sky Lin 
Date of issue .....	2020-08-07
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<b>Testing Laboratory</b> .....	SGS-CSTC Standards Technical Services Co., Ltd. Shunde Branch
Address .....	Building 1, European Industrial Park, No. 1, Shunhenan Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China
<b>Applicant's name</b> .....	SUMEC Machinery & Electric Co., Ltd.
Address .....	198 Changjiang Road 210018, Nanjing, P.R.China
<b>Test specification:</b>	
Standard .....	COMMISSION DELEGATED REGULATION (EU) No 812/2013, COMMISSION REGULATION (EU) No 814/2013 (See also: EN 50440:2015)
Test procedure .....	STR: COMMISSION REGULATION (EC) No 812/2013
Non-standard test method .....	None
<b>Test Report Form No.</b> .....	TRF_812-814/50440_C
Test Report Form(s) Originator .....	SGS-CSTC
Master TRF .....	2018-10
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Test item description..... :	Storage water heater
Trade Mark..... :	<b>THERMOFLOW, WAHLBACH</b>
Manufacturer..... :	Same as applicant
Model/Type reference..... :	UT10, UT10 Combi, UT10TAP, QWH03U, UT10 S, UT10 S Combi, UT10TAP S, QWH03U S
Ratings..... :	230 V; 50 Hz; 2000 W
Factory..... :	Changzhou Sumec Electric and Electricity Co., Ltd. 36 Lijiang Road, Xixiashu, Xinbei, Changzhou, 213135, Jiangsu, China

**Summary of testing:**

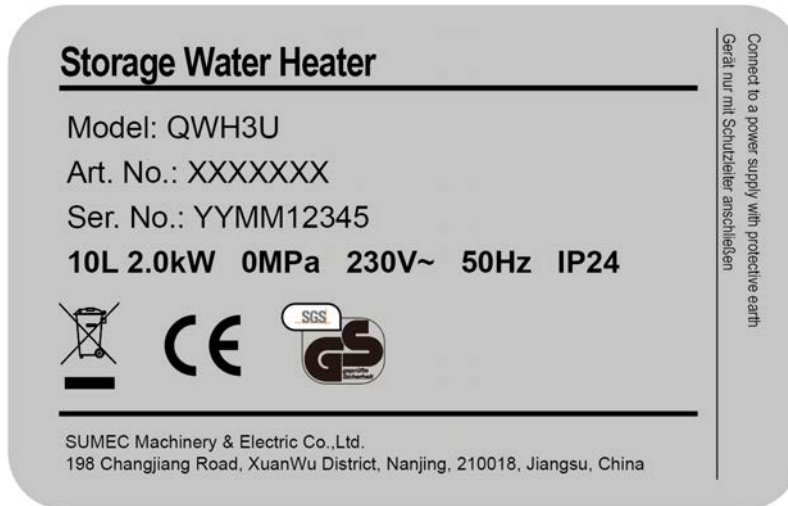
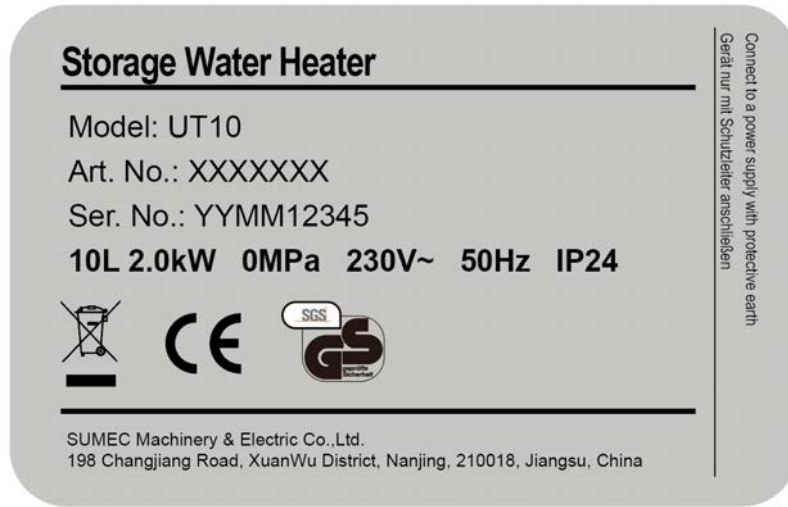
**Tests performed (name of test and test clause):**

COMMISSION DELEGATED REGULATION (EU) No 812/2013, COMMISSION REGULATION (EU) No 814/2013 (See also: EN 50440:2015)

**Testing location:**

Building 1, European Industrial Park, No.1, Shunhenan Road, Wusha, Daliang, Shunde District, Foshan, Guangdong, China

**Copy of marking plates:**



Remark: The marking plates of other models are same as above except the model number and trademark

<b>Test item particulars</b> .....	
Classification of installation and use .....	Fixed and indoor use
Supply Connection .....	Type Y
Type .....	Conventional water heaters
Smart controls .....	No
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object .....	N/A
- test object does meet the requirement .....	P (Pass)
- test object does not meet the requirement .....	F (Fail)
<b>Testing</b> .....	
Date of receipt of test item .....	2020-07-09
Date (s) of performance of tests .....	: From 2020-07-13 to 2020-08-04
<b>General remarks:</b>	
<p>The test results presented in this report relate only to the object tested.          This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.          "(see Enclosure #)" refers to additional information appended to the report.          "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>This document is issued by the Company subject to its General Conditions of Service, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx">http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.</p> <p>Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p> <p>Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the company.</p>	
<b>General product information:</b>	
<p>Storage water heater is for indoor use only.          All models listed in this testing report are all the same except the different model number and trademark.</p>	

COMMISSION REGULATION (EU) No 814/2013																																				
Cl.	Requirement-Test	Result-Remark									Verdict																									
ANNEX II	Ecodesign requirements										P																									
1.	ECODESIGN REQUIREMENTS FOR WATER HEATERS										P																									
1.1	Requirements for water heating energy efficiency										P																									
	(a) From 26 September 2015 the water heating energy efficiency of water heaters shall not fall below the following values:										P																									
	<table border="1"> <thead> <tr> <th>Declared load profile</th> <th>3XS</th> <th>XXS</th> <th>XS</th> <th>S</th> <th>M</th> <th>L</th> <th>XL</th> <th>XXL</th> <th>3XL</th> <th>4XL</th> </tr> </thead> <tbody> <tr> <td>Water heating energy efficiency</td> <td>22 %</td> <td>23 %</td> <td>26 %</td> <td>26 %</td> <td>30 %</td> <td>30 %</td> <td>30 %</td> <td>32 %</td> <td>32 %</td> <td>32 %</td> </tr> <tr> <td>In addition, for water heaters with smart being declared as '1': water heating energy efficiency calculated for smart = 0, tested under the declared load profile</td> <td>19 %</td> <td>20 %</td> <td>23 %</td> <td>23 %</td> <td>27 %</td> <td>27 %</td> <td>27 %</td> <td>28 %</td> <td>28 %</td> <td>28 %</td> </tr> </tbody> </table>	Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	Water heating energy efficiency	22 %	23 %	26 %	26 %	30 %	30 %	30 %	32 %	32 %	32 %	In addition, for water heaters with smart being declared as '1': water heating energy efficiency calculated for smart = 0, tested under the declared load profile	19 %	20 %	23 %	23 %	27 %	27 %	27 %	28 %	28 %	28 %		P
Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL																										
Water heating energy efficiency	22 %	23 %	26 %	26 %	30 %	30 %	30 %	32 %	32 %	32 %																										
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	(b) From 26 September 2017 the water heating energy efficiency of water heaters shall not fall below the following values:	Load profile: XXS									P																									
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Declared load profile	3XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL																										
Water heating energy efficiency	32 %	32 %	32 %	32 %	36 %	37 %	37 %	37 %	37 %	38 %																										
In addition, for water heaters with smart being declared as '1': water heating energy efficiency calculated for smart = 0, tested under the declared load profile	29 %	29 %	29 %	29 %	33 %	34 %	35 %	36 %	36 %	36 %																										
	(c) From 26 September 2018 the water heating energy efficiency of water heaters shall not fall below the following values:										N/A																									
	<table border="1"> <thead> <tr> <th>Declared load profile</th> <th>XXL</th> <th>3XL</th> <th>4XL</th> </tr> </thead> <tbody> <tr> <td>Water heating energy efficiency</td> <td>60 %</td> <td>64 %</td> <td>64 %</td> </tr> </tbody> </table>	Declared load profile	XXL	3XL	4XL	Water heating energy efficiency	60 %	64 %	64 %		N/A																									
Declared load profile	XXL	3XL	4XL																																	
Water heating energy efficiency	60 %	64 %	64 %																																	
1.2.	Requirements for storage volume of storage water heaters with declared load profiles 3XS, XXS, XS and S From 26 September 2015:										N/A																									
	(a) for storage water heaters with declared load profile 3XS the storage volume shall not exceed 7 litres;										N/A																									
	(b) for storage water heaters with declared load profiles XXS and XS, the storage volume shall not exceed 15 litres;										P																									
	(c) for storage water heaters with declared load profile S the storage volume shall not exceed 36 litres.										N/A																									
1.3.	Requirements for mixed water at 40 °C of storage water heaters with declared load profiles M, L, XL, XXL, 3XL and 4XL From 26 September 2015 the amount of mixed water at 40 °C shall not fall below the following values:										N/A																									

COMMISSION REGULATION (EU) No 814/2013								
Cl.	Requirement-Test						Result-Remark	Verdict
	Declared load profile	M	L	XL	XXL	3XL	4XL	-
	Mixed water at 40 °C	65 litres	130 litres	210 litres	300 litres	520 litres	1 040 litres	
1.4.	<p>Requirements for sound power level</p> <p>From 26 September 2015 the sound power level of heat pump water heaters shall not exceed the following values:</p>							N/A
	Rated heat output ≤ 6 kW		Rated heat output > 6 kW and ≤ 12 kW		Rated heat output > 12 kW and ≤ 30 kW		Rated heat output > 30 kW and ≤ 70 kW	N/A
	Sound power level (L <sub>WA</sub> ), indoors	Sound power level (L <sub>WA</sub> ), outdoors	Sound power level (L <sub>WA</sub> ), indoors	Sound power level (L <sub>WA</sub> ), outdoors	Sound power level (L <sub>WA</sub> ), indoors	Sound power level (L <sub>WA</sub> ), outdoors	Sound power level (L <sub>WA</sub> ), indoors	Sound power level (L <sub>WA</sub> ), outdoors
	60 dB	65 dB	65 dB	70 dB	70 dB	78 dB	80 dB	88 dB
1.5.	Requirements for emissions of nitrogen oxides							N/A
1.6.	Requirements for product information related to water heaters							Not check
	From 26 September 2015 the instruction manuals for installers and end-users, free access websites of manufacturers, their authorised representatives and importers and technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:							Not check
	(a) information identifying the model(s), including equivalent models, to which the information relates;							Not check
	(b) the results of the measurements for the technical parameters specified in point 6 of Annex III;							Not check
	(c) the results of the calculations for the technical parameters specified in point 2 of Annex IV;							Not check
	(d) any specific precautions that shall be taken when the water heater is assembled, installed or maintained;							Not check
	(e) for heat generators designed for water heaters and water heater housings to be equipped with such heat generators, their characteristics, the requirements for assembly, to ensure compliance with the ecodesign requirements for water heaters and, where appropriate, the list of combinations recommended by the manufacturer;							Not check
	(f) information relevant for disassembly, recycling and/or disposal at end-of-life.							Not check
2.	ECODESIGN REQUIREMENTS FOR HOT WATER STORAGE TANKS							N/A
2.1.	Requirement for standing loss From 26 September 2017 the standing loss S of hot water storage tanks with storage volume V, expressed in litres, shall not exceed the following limit							N/A
	$16,66 + 8,33 \cdot V^{0,4}$ Watts							N/A

<b>COMMISSION REGULATION (EU) No 814/2013</b>			
Cl.	Requirement-Test	Result-Remark	Verdict
2.2.	Requirements for product information related to hot water storage tanks		N/A
	From 26 September 2015 the instruction manuals for installers and end-users, the free access websites of manufacturers, their authorised representatives and importers and technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:		N/A
	(a) information identifying the model(s), including equivalent models, to which the information relates;		N/A
	(b) the results of the measurements for the technical parameters specified in point 7 of Annex III;		N/A
	(c) any specific precautions that shall be taken when the hot water storage tank is assembled, installed or maintained;		N/A
	(d) information relevant for disassembly, recycling and/or disposal at end-of-life.		N/A
ANNEX III	Measurements		P
1.	For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, 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 7.		P
2.	GENERAL CONDITIONS FOR TESTING WATER HEATERS		P
	(a) Measurements shall be carried out using the load profiles set out in Table 1;		P
	(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;		P
	(c) the declared load profile shall be the maximum load profile or the load profile one below the maximum load profile;		P
	(d) any heat generator designed for a water heater, and any water heater housing to be equipped with such a heat generator, shall be tested with an appropriate water heater housing and heat generator, respectively;		P
	(e) water heaters to be classified as off-peak water heaters are energised for a maximum period of 8 consecutive hours between 22:00 and 07:00 of the 24-hour tapping pattern. At the end of the 24-hour tapping pattern the water heaters are energised till the end of the step.		N/A

COMMISSION REGULATION (EU) No 814/2013			
Cl.	Requirement-Test	Result-Remark	Verdict
3.	CONDITIONS FOR TESTING THE SMART CONTROL COMPLIANCE (SMART) OF WATER HEATERS		N/A
4.	CONDITIONS FOR TESTING SOLAR WATER HEATERS		N/A
5.	CONDITIONS FOR TESTING HEAT PUMP WATER HEATERS		N/A
	— Heat pump water heaters shall be tested under the conditions set out in Table 4; — heat pump water heaters which use ventilation exhaust air as the heat source shall be tested under the conditions set out in Table 5.		N/A
6.	TECHNICAL PARAMETERS OF WATER HEATERS		P
	The following parameters shall be established for water heaters:		P
	(a) the daily electricity consumption $Q_{elec}$ in kWh, rounded to three decimal places;		P
	(b) the declared load profile, expressed by the appropriate letter in accordance with Table 1 of this Annex;		P
	(c) the sound power level $L_{WA}$ , in dB, indoors, rounded to the nearest integer (for heat pump water heaters, if applicable);in addition, for water heaters using fossil and/or biomass fuels:		N/A
	(d) the daily fuel consumption $Q_{fuel}$ in kWh in terms of GCV, rounded to three decimal places;		N/A
	(e) the emissions of nitrogen oxides, expressed in nitrogen dioxide, in mg/kWh fuel input in terms of GCV, rounded to the nearest integer; in addition, for water heaters for which the value of smart is declared as being '1':		N/A
	(f) the weekly fuel consumption with smart controls $Q_{fuel,week,smart}$ in kWh in terms of GCV, rounded to three decimal places;		N/A
	(g) the weekly electricity consumption with smart controls $Q_{elec,week,smart}$ in kWh, rounded to three decimal places;		N/A
	(h) the weekly fuel consumption without smart controls $Q_{fuel,week}$ in kWh in terms of GCV, rounded to three decimal places;		N/A
	(i) the weekly electricity consumption without smart controls $Q_{elec,week}$ in kWh, rounded to three decimal places; in addition, for storage water heaters with declared load profiles 3XS, XXS and XS:		N/A
	(j) the storage volume $V$ in litres, rounded to one decimal place; in addition, for storage water heaters with declared load profiles M, L, XL, XXL, 3XL and 4XL:	load profile: XXS	P
	(k) the mixed water at 40 °C $V_{40}$ in litres, rounded to the nearest integer;		N/A
	In addition, for solar water heaters:		N/A



<b>COMMISSION REGULATION (EU) No 814/2013</b>			
Cl.	Requirement-Test	Result-Remark	Verdict
	in addition, for heat pump water heaters:		N/A
	(s) the sound power level $L_{WA}$ in dB, outdoors, rounded to the nearest integer.		N/A
7.	<b>TECHNICAL PARAMETERS OF HOT WATER STORAGE TANKS</b>		N/A
	The following parameters shall be established for hot water storage tanks:		N/A
	(a) the storage volume $V$ in litres, rounded to one decimal place;		N/A
	(b) the standing loss $S$ in W, rounded to one decimal place.		N/A
ANNEX IV	Calculations		P
1.	For the purposes of compliance and verification of compliance with the requirements of this Regulation, calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union, or using other appropriate calculation methods that take into account the generally recognised state-of-the-art methods. They shall meet the technical parameters and calculations set out in points 2 to 5.		P
	Technical parameters used for the calculations shall be measured in accordance with Annex III.		P
2.	<b>TECHNICAL PARAMETERS OF WATER HEATERS</b>		P
	The following parameters shall be calculated for water heaters under average climate conditions:		P
	(a) the water heating energy efficiency $\eta_{wh}$ in %, rounded to one decimal place;	36,0%	P
	in addition, for solar water heaters under average climate conditions:		N/A
	(b) the annual non-solar heat contribution $Q_{nonsol}$ in kWh in terms of primary energy for electricity and/or in kWh in terms of GCV for fuels, rounded to one decimal place;		N/A
	(c) the heat generator water heating energy efficiency $\eta_{wh,nonsol}$ in %, rounded to one decimal place;		N/A
	(d) the annual auxiliary electricity consumption $Q_{aux}$ in kWh, rounded to one decimal place.		N/A
3.	<b>CALCULATION OF THE WATER HEATING ENERGY EFFICIENCY <math>\eta_{wh}</math></b>		P
	(a) Conventional water heaters and heat pump water heaters The water heating energy efficiency is calculated as follows:		P
	$\eta_{wh} = \frac{Q_{ref}}{(Q_{fuel} + CC \cdot Q_{elec})(1 - SCF \cdot smart) + Q_{cor}}$		P
	For water-/brine-to-water heat pump water heaters, the electricity consumption of one or more ground water pumps shall be taken into account.		N/A

COMMISSION REGULATION (EU) No 814/2013																																				
Cl.	Requirement-Test	Result-Remark	Verdict																																	
	(b) Solar water heaters		N/A																																	
4.	DETERMINATION OF THE SMART CONTROL FACTOR SCF AND OF SMART CONTROL COMPLIANCE smart		N/A																																	
5.	DETERMINATION OF THE AMBIENT CORRECTION TERM $Q_{cor}$ The ambient correction term is calculated as follows		P																																	
	(a) for conventional water heaters using electricity:		P																																	
	$Q_{cor} = -k \cdot (CC \cdot (Q_{elec} \cdot (1 - SCF \cdot smart) - Q_{ref}))$	CC=2,5; $Q_{cor} = -0,175$	P																																	
	(b) for conventional water heaters using fuels:		N/A																																	
	$Q_{cor} = -k \cdot (Q_{fuel} \cdot (1 - SCF \cdot smart) - Q_{ref})$		N/A																																	
	(c) for heat pump water heaters:		N/A																																	
	$Q_{cor} = -k \cdot 24h \cdot P_{stby}$		N/A																																	
	Where: the k-values are given in Table 6 for each load profile. Table 6:		P																																	
	<table border="1"> <thead> <tr> <th colspan="11">k-values</th> </tr> <tr> <th></th> <th>XS</th> <th>XXS</th> <th>XS</th> <th>S</th> <th>M</th> <th>L</th> <th>XL</th> <th>XXL</th> <th>3XL</th> <th>4XL</th> </tr> </thead> <tbody> <tr> <td>k</td> <td>0,23</td> <td>0,23</td> <td>0,23</td> <td>0,23</td> <td>0,23</td> <td>0,23</td> <td>0,23</td> <td>0,0</td> <td>0,0</td> <td>0,0</td> </tr> </tbody> </table>	k-values												XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL	k	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,0	0,0	0,0	K= 0,23	P
k-values																																				
	XS	XXS	XS	S	M	L	XL	XXL	3XL	4XL																										
k	0,23	0,23	0,23	0,23	0,23	0,23	0,23	0,0	0,0	0,0																										

Table 1	Test parameters for measurements	Pass
The measurement method used.....:	EN 50440:2015	
Rated input power ( W).....:	2000	
hot water storage volume(l ).....:	10	
Ambient temperature (°C).....:	20	
Water supply $\theta_c$ and pressure .....	10 °C/ 300 kPa	
Test voltage in V and frequency in Hz.....:	230 V, 50 Hz	
The declared load profiles of the water heater.....:	XXS	
Test procedure for storage water heaters:		
The test procedure for storage water heaters to establish the daily electricity consumption $Q_{elec}$ during a 24-hour measurement cycle is the following:		
<p>(a) Installation</p> <p>The product is installed in test environment according to manufacturer’s instructions. Designated floor-standing appliances may be placed on the floor, on a stand supplied with the product, or on a platform for easy access. Wall-mounted products are mounted on a panel at least 150 mm from any structural wall with a free space of at least 250 mm above and below the product and at least 700 mm to the sides. Products designated to be built-in are mounted according to manufacturer’s instructions. The product is shielded from direct solar radiation .</p>		
<p>(b) Stabilisation</p> <p>The product is kept at ambient conditions until all parts of the product have reached ambient conditions <math>\pm 2</math> K, at least 24 hours for storage type products.</p>		
<p>(c) Filling and heat-up</p> <p>The product is filled with cold water. Filling stops at the applicable cold water pressure.</p> <p>The product is energized in ‘out of the box-mode’ to reach its operating temperature, controlled by the product’s own means of control (thermostat).The next stage starts at thermostat cut out.</p>		
<p>(d) Stabilisation at zero-load</p> <p>The product is kept at this condition, without draw-offs during at least 12 hours.</p> <p>Subject to a control cycle this stage ends — and next stage starts — at the first thermostat cut-out after 12 hours.</p> <p>During this stage, the total electricity consumption in kWh in terms of final energy and the exact time elapsed in h are recorded.</p>		
<p>(e) Water draw-offs</p> <p>For the declared load profile, draw-offs are made in accordance with the specifications of the appropriate 24 h tapping pattern. This stage starts directly after thermostat cut out from stabilisation part with the first tapping at the time-value according to the appropriate tapping load profile (see Regulation (EU) No 814/2013, Annex III point 2 and Delegated Regulation (EU) No 812/2013, Annex VII point (2). From end of last water draw-off until 24:00, no water is tapped.</p> <p>During the water draw-offs relevant technical parameters (power, temperature, etc.) are established. For dynamic parameters the overall sample rate is 60 s or less. During draw-offs the recommended sample rate is 5 s or less.</p> <p>The electricity consumption over the 24-hour measurement cycle, <math>Q_{testelec}</math> is corrected as specified in point (h).</p>		

(f) Re-stabilisation at zero-load

The product is kept at nominal operating conditions without draw-offs during at least 12 hours.

Subject to a control cycle this stage ends at the first thermostat cut-out after 12 hours.

During this stage the total fuel consumption in kWh in terms of GCV, the total electricity consumption in kWh final energy and the exact time elapsed in hours are recorded.

(g) Mixed water at 40 °C ( $V_{40}$ )

Mixed water at 40 °C ( $V_{40}$ ) is the quantity of water at 40 °C, which has the same heat content (enthalpy) as the hot water which is delivered above 40 °C at the output of the water heater, expressed in litres.

Immediately following measurement according to point (f) a quantity of water is withdrawn through the outlet by supplying cold water. The flow of water from open outlet water heaters is controlled by the inlet valve. The flow in any other type of water heaters is controlled by means of a valve fitted in the outlet or the inlet. The measurement is ended when the outlet temperature drops below 40 °C.

The rate of flow is adjusted to the maximum value according to the declared load profile

The normalised value of the average temperature is calculated according to the following equation:

$$\vartheta_p [^{\circ}\text{C}] = (T_{\text{set}} - 10) \times \frac{(\vartheta'_p - \vartheta_c)}{(T_{\text{set}} - \vartheta_c)} + 10$$

Where:

— $T_{\text{set}}$  in °C is the water temperature, without withdrawal of water, measured with a thermocouple placed inside the upper section of the tank. For metal tanks the thermocouple may be placed on the outer surface of the tank as well. This value is the water temperature measured after the last cut-out of the thermostat during the step set out in point (f),

— $\vartheta_c$  in °C is the average temperature of inlet cold water during the test,  $\vartheta_c$  in °C is the average temperature of inlet cold water during the test,

— $\vartheta'_p$  in °C is the average temperature of outlet water and its normalized value is named  $\vartheta_p$  in °C

Temperature readings are preferable taken continuously. Alternatively, they may be taken at equal intervals evenly spread over the discharge, for example every 5 litres (maximum). If there is a sharp drop in temperature, additional readings may be necessary in order to correctly calculate the average value  $\vartheta'_p$ . Outlet water temperature is always  $\geq 40$  °C which is to be taken into account for the calculation of  $\vartheta_p$ . Quantity of hot water  $V_{40}$  in litres delivered with a temperature of at least 40 °C will be calculated by the following equation:

$$V_{40}[\text{litres}] = V_{40\text{exp}} \times \frac{(\vartheta_p - 10)}{30}$$

Where:

the volume  $V_{40\_exp}$  in litres corresponds to the quantity of water delivered at least 40 °C.

(h) Reporting of  $Q_{elec}$

$Q_{testelec}$  is corrected for any energy surplus or deficit outside the strict 24-hour measurement cycle, i.e. a possible energy difference before and after is taken into account. Furthermore, any surplus or deficit in the delivered useful energy content of the hot water is taken into account in the following equations for  $Q_{elec}$ :

$$Q_{elec} = \left( \frac{Q_{ref}}{Q_{H_2O}} \right) \times \left\{ Q_{testelec} + \frac{1,163 \times C_{act} \times (T_3(t_3) - T_5(t_5))}{1000} \right\}$$

Where:  
 —  $Q_{H_2O}$  in kWh is the useful energy content of the hot water drawn-off,  
 —  $T_3$  and  $T_5$  are water temperatures measured at the dome of water heater, respectively at the beginning ( $t_3$ ) and at the end ( $t_5$ ) of the 24 h measurement cycle  
 —  $C_{act}$  in litres is the actual capacity of water heater.  $C_{act}$  is measured as stated in following

Filling and storage volume (actual capacity  $C_{act}$ )  
 The volume of the tank is measured as follows.  
 The empty water heater is to be weighted; the weight of taps on inlet and/or outlet pipes shall be considered.  
 Then the storage water heater is filled with cold water in accordance with the manufacturer's instruction at cold water pressure. The water supply is then cut off.  
 The filled water heater is to be weighted.  
 The difference of the two weights ( $m_{act}$ ) is to be converted into the volume in litres ( $C_{act}$ ).

$$C_{act} = \frac{m_{act}}{0,9997}$$

This volume is to be reported in litres to the nearest one-tenth litres. The measured value ( $C_{act}$ ) shall not be more than 2 % lower than the rated value.

The sum of the useful energy content of water draw-offs ( $Q_{ref}$ ), expressed in kWh, in Table 1:	2,100
Sum of energy contents of water draw-offs ( $Q_{H_2O}$ ), expressed in kWh, in Table 1	2,108
The water temperatures $T_3$ :	40,4
The water temperatures $T_5$ :	40,7
The measured value ( $C_{act}$ ):	10,1
The electricity consumption over the 24-hour measurement cycle, $Q_{testelec}$ :	2,410
The consumption of electricity over 24 consecutive hours under the declared load profile ( $Q_{elec}$ ), expressed in kWh in terms of final energy:	2,405
The water temperature $T_{set}$ in °C:	-
The average temperature of inlet cold water during the test $\theta_c$ in °C :	-
The average temperature of outlet water $\theta_p$ in °C:	-
Mixed water at 40 °C ( $V_{40}$ ) in litre:	-

Information of efficiency class according to (EU) No 812/2013								
Item	Measured value							Verdict
Declared load profile	XXS							Pass
Water heating energy efficiency class, categorised by declared load profiles $\eta_{wh}$ in %	36,0							A
Smart value	0							--
Annual electricity consumption in kWh	513							--
Water heating energy efficiency classes of water heaters, categorised by declared load profiles, $\eta_{wh}$ in %								
	3XS	XXS	XS	S	M	L	XL	XXL
A <sup>+++</sup>	$\eta_{wh} \geq 62$	$\eta_{wh} \geq 62$	$\eta_{wh} \geq 69$	$\eta_{wh} \geq 90$	$\eta_{wh} \geq 163$	$\eta_{wh} \geq 188$	$\eta_{wh} \geq 200$	$\eta_{wh} \geq 213$
A <sup>++</sup>	$53 \leq \eta_{wh} < 62$	$53 \leq \eta_{wh} < 62$	$61 \leq \eta_{wh} < 69$	$72 \leq \eta_{wh} < 90$	$130 \leq \eta_{wh} < 163$	$150 \leq \eta_{wh} < 188$	$160 \leq \eta_{wh} < 200$	$170 \leq \eta_{wh} < 213$
A <sup>+</sup>	$44 \leq \eta_{wh} < 53$	$44 \leq \eta_{wh} < 53$	$53 \leq \eta_{wh} < 61$	$55 \leq \eta_{wh} < 72$	$100 \leq \eta_{wh} < 130$	$115 \leq \eta_{wh} < 150$	$123 \leq \eta_{wh} < 160$	$131 \leq \eta_{wh} < 170$
A	$35 \leq \eta_{wh} < 44$	$35 \leq \eta_{wh} < 44$	$38 \leq \eta_{wh} < 53$	$38 \leq \eta_{wh} < 55$	$65 \leq \eta_{wh} < 100$	$75 \leq \eta_{wh} < 115$	$80 \leq \eta_{wh} < 123$	$85 \leq \eta_{wh} < 131$
B	$32 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 35$	$35 \leq \eta_{wh} < 38$	$35 \leq \eta_{wh} < 38$	$39 \leq \eta_{wh} < 65$	$50 \leq \eta_{wh} < 75$	$55 \leq \eta_{wh} < 80$	$60 \leq \eta_{wh} < 85$
C	$29 \leq \eta_{wh} < 32$	$29 \leq \eta_{wh} < 32$	$32 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 35$	$36 \leq \eta_{wh} < 39$	$37 \leq \eta_{wh} < 50$	$38 \leq \eta_{wh} < 55$	$40 \leq \eta_{wh} < 60$
D	$26 \leq \eta_{wh} < 29$	$26 \leq \eta_{wh} < 29$	$29 \leq \eta_{wh} < 32$	$29 \leq \eta_{wh} < 32$	$33 \leq \eta_{wh} < 36$	$34 \leq \eta_{wh} < 37$	$35 \leq \eta_{wh} < 38$	$36 \leq \eta_{wh} < 40$
E	$22 \leq \eta_{wh} < 26$	$23 \leq \eta_{wh} < 26$	$26 \leq \eta_{wh} < 29$	$26 \leq \eta_{wh} < 29$	$30 \leq \eta_{wh} < 33$	$30 \leq \eta_{wh} < 34$	$30 \leq \eta_{wh} < 35$	$32 \leq \eta_{wh} < 36$
F	$19 \leq \eta_{wh} < 22$	$20 \leq \eta_{wh} < 23$	$23 \leq \eta_{wh} < 26$	$23 \leq \eta_{wh} < 26$	$27 \leq \eta_{wh} < 30$	$27 \leq \eta_{wh} < 30$	$27 \leq \eta_{wh} < 30$	$28 \leq \eta_{wh} < 32$
G	$\eta_{wh} < 19$	$\eta_{wh} < 20$	$\eta_{wh} < 23$	$\eta_{wh} < 23$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 27$	$\eta_{wh} < 28$

Ecodesign requirements according to (EU) No 814/2013				Pass
Model identification	See model/type reference as above			
Declared load profile	XXS			
Items	Measured value	Stage 1	Stage 2	Verdict
Water heating energy efficiency $\eta_{wh}$ in %	36,0	<input checked="" type="checkbox"/> From 26 September 2015 $\geq 23$	<input checked="" type="checkbox"/> From 26 September 2017 $\geq 32$	Pass
Storage volume	10,1	Not be more than 2 % lower than the rated value: 10,0 litres		Pass
Mixed water at 40 °C in litres	-	-		N/A

## Photo documents:

Details of: General View

View:

- general
- front
- rear
- right
- left
- top
- bottom



Details of: Control panel

View:

- general
- front
- rear
- right
- left
- top
- bottom



--- End of Report ---