

Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 60335-2-23</b> <b>Part 1: Safety of household and similar electrical appliances</b> <b>Part 2: Particular requirements for appliances for skin or hair care</b>	
<b>Report Number</b> ..... :	EFSH18052923-IE-02-L01-A1
<b>Date of issue</b> ..... :	2018-07-17; Amendment 1: 2018-09-19
<b>Total number of pages</b> .....	17 pages
<b>Name of Testing Laboratory preparing the Report</b> .....	Eurofins Product Testing Service (Shanghai) Co., Ltd.
<b>Applicant's name</b> .....	
<b>Address</b> ..... :	
<b>Test specification:</b>	
<b>Standard</b> .....	<input checked="" type="checkbox"/> EN 60335-2-23:2003 + A1:2008 + A11:2010 + A2:2015 <input checked="" type="checkbox"/> EN 60335-1:2012+A11:2014+A13:2017 <input checked="" type="checkbox"/> EN 62233:2008 <input type="checkbox"/> IEC 60335-2-23:2003 (Fifth Edition) incl. Corr.2:2008 + A1:2008+ A2:2012 in conjunction with <input type="checkbox"/> IEC 60335-1:2010 (Fifth Edition) incl. Corr. 1:2010 and Corr. 2:2011 + A1:2013
<b>Test procedure</b> .....	CE-LVD
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IEC60335_2_23J
<b>Test Report Form(s) Originator</b> .... :	VDE Prüf- und Zertifizierungsinstitut GmbH
<b>Master TRF</b> .....	Dated 2018-01-12
<b>Copyright © 2018 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</b> This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
<b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.</b>	
<b>General disclaimer:</b> 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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

<b>Test item description</b> ..... :		Hot Brush	
<b>Trade Mark</b> ..... :		N/A	
<b>Manufacturer</b> .....		Same as applicant	
<b>Model/Type reference</b> ..... :		MK-708, MK-919	
<b>Ratings</b> ..... :		220-240V~, 50-60Hz, Class II for both models MK-708: 55W; MK-919: 25W	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>			
<input checked="" type="checkbox"/>	<b>Testing Laboratory:</b>	Eurofins Product Testing Service (Shanghai) Co., Ltd.	
<b>Testing location/ address</b> .....		No. 395 West Jiangchang Road, Jing'an District, Shanghai, China	
<b>Tested by (name, function, signature)</b> ..... :		Nicx Ni Project Engineer	<i>Nicx Ni</i>
<b>Approved by (name, function, signature) ..</b>		Brian Pan Project Engineer	<i>Brian Pan</i>
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	N/A	
<b>Testing location/ address</b> .....		N/A	
<b>Tested by (name, function, signature)</b> ..... :		N/A	
<b>Approved by (name, function, signature) ..</b>		N/A	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	N/A	
<b>Testing location/ address</b> .....		N/A	
<b>Tested by (name + signature)</b> ..... :		N/A	
<b>Witnessed by (name, function, signature) ..</b>		N/A	
<b>Approved by (name, function, signature) ..</b>		N/A	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	N/A	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	N/A	
<b>Testing location/ address</b> .....		N/A	
<b>Tested by (name, function, signature)</b> ..... :		N/A	
<b>Witnessed by (name, function, signature) ..</b>		N/A	
<b>Approved by (name, function, signature) ..</b>		N/A	
<b>Supervised by (name, function, signature) :</b>		N/A	

**List of Attachments (including a total number of pages in each attachment):**

- Photo document: 2 pages (in the main report);
- Constructional data form (CDF): 4 pages (separate file)

**Summary of testing:**

**From the result of our inspection and tests on the submitted samples, we conclude they comply with requirements of the standard.**

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

- Cl.10 Power input and current
- Cl.11 Heating
- Cl.13 Leakage current and electric strength at operating temperature
- Cl.19 Abnormal operation
- Cl.23 Internal wiring
- Cl.30 Resistance to heat and fire

**Testing location:**

Eurofins Product Testing Service (Shanghai) Co., Ltd.  
 No. 395 West Jiangchang Road, Jing'an District, Shanghai, China

**Summary of compliance with National Differences (List of countries addressed):**

European Group Differences.

**Copy of marking plate:**

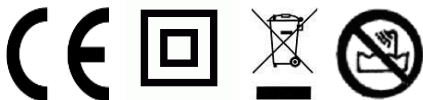
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

**Hot Brush**

Model name: MK-919

Serial No./batch No.: xxxx-xxxx

220-240V~, 50-60Hz, 25W



Imported by:

(Full Name of the EU importer)

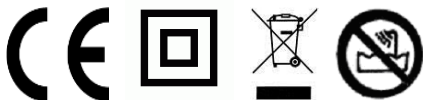
(Full EU Address of the importer)

**Hot Brush**

Model name: MK-708

Serial No./batch No.: xxxx-xxxx

220-240V~, 50-60Hz, 55W



Imported by:

(Full Name of the EU importer)

(Full EU Address of the importer)

<b>Test item particulars</b> .....	
<b>Classification of installation and use</b> ..... : Hand-held appliance for household and indoor use	
<b>Supply Connection</b> ..... : Type Y	
..... :	
<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> .....	
<b>Date of receipt of test item</b> ..... : 2018-09-06	
<b>Date (s) of performance of tests</b> ..... : 2018-09-06 to 2018-09-19	
<b>General remarks:</b>	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
<p><b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b>  <b>Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.</b>  <b>The related applicable CTL/OSM decisions have been considered and the requirements found fulfilled.</b></p> <p>Because PTC heating elements are incorporated in, the appliance was tested under:          For Cl.11, Cl.13 and Cl.19.4, <math>\sqrt{(1,15) \times 240} = 257,4V \sim</math>          For Cl.19.3, <math>\sqrt{(1,24) \times 240} = 267V \sim</math></p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-2-23:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> ..... : Same as the applicant.	

**General product information:**

The products tested in this test report are Hot Brushes for household and indoor use.

After review, full tests were performed on MK-708 and MK-919 and the most unfavourable values were recorded.

**Amendment 1:**

The original Test Report Ref. EFSH18052923-IE-02-L01, dated 2018-07-17 were modified on 2017-09-19 to include the following changes and/or additions, which were considered technical modifications:

1. Correct photos of PCB view.
2. Add a new size of PTC heating element.

After review, MK-708 with new size of PTC heating element was subjected to test of cl.10, cl.11.8, cl.11.Z101, cl.13, cl.19.2, cl.19.3, cl.19.4, cl.19.6, cl.23.5 and cl.30.1.

This report is only valid in conjunction with the original test report No. EFSH18052923-IE-02-L01.

IEC 60335-2-23			
Clause	Requirement + Test	Result - Remark	Verdict
<b>10</b>	<b>POWER INPUT AND CURRENT</b>		--
10.1	Power input at normal operating temperature, rated voltage and normal operation not deviating from rated power input by more than shown in table 1.. :	(see appended table)	P
	If the power input varies throughout the operating cycle and the maximum value of the power input exceeds, by a factor greater than two, the arithmetic mean value of the power input occurring during a representative period, the power input is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the power input is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated power input is related to the arithmetic mean value		P
	Representative period for appliances incorporating PTC heating elements is 30 min. (IEC 60335-2-23)		P
10.2	Current at normal operating temperature, rated voltage and normal operation not deviating from rated current by more than shown in table 2 .....	(see appended table)	N/A
	If the current varies throughout the operating cycle and the maximum value of the current exceeds, by a factor greater than two, the arithmetic mean value of the current occurring during a representative period, the current is the maximum value that is exceeded for more than 10 % of the representative period		N/A
	Otherwise the current is the arithmetic mean value		N/A
	Test carried out at upper and lower limits of the ranges for appliances with one or more rated voltage ranges, unless		N/A
	the rated current is related to the arithmetic mean value of the range		N/A
	Representative period for appliances incorporating PTC heating elements is 30 min. (IEC 60335-2-23)		N/A
<b>11</b>	<b>HEATING</b>		--
11.1	No excessive temperatures in normal use		P
	For appliances incorporating swivel connection, compliance also checked by test of clause 11.101 (IEC 60335-2-23)		P
11.2	The appliance is held, placed or fixed in position as described .....	Held in normal use	P

<b>IEC 60335-2-23</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	Appliances intended to be used on a stand or attached to a support placed to give most unfavourable results (IEC 60335-2-23)		N/A
	Hand-held appliances with an integral rest are also tested when placed on their rest away from the walls of the test corner. (IEC 60335-2-23)		P
11.3	Temperature rises, other than of windings, determined by thermocouples		P
	Temperature rises of windings determined by resistance method, unless		N/A
	the windings are non-uniform or it is difficult to make the necessary connections		N/A
11.4	Heating appliances operated under normal operation at 1,15 times rated power input (W) ..... :	Refer to general remarks	P
	Temperature rise limits exceeded in appliances incorporating motors, transformers or electronic circuits, and power input is lower than rated power input, test repeated with appliance supplied at 1,06 times rated voltage (IEC 60335-2-23)		N/A
11.5	Motor-operated appliances operated under normal operation at most unfavourable voltage between 0,94 and 1,06 times rated voltage (V) ..... :		N/A
11.6	Combined appliances operated as heating appliances (IEC 60335-2-23)		N/A
11.7	Appliances without timer operated (IEC 60335-2-23):		--
	- for 30 min, for hand-held appliances (IEC 60335-2-23);		P
	- in cycles of 30 s on and 5 s off until steady conditions established, for hand dryers that automatically controlled by presence of hands (IEC 60335-2-23);		N/A
	- until steady conditions established, for other appliances (IEC 60335-2-23).		N/A
	Appliances incorporating timer operated in cycles until steady conditions established. Each cycle consists of maximum operating time of timer (min) followed by rest period of 5 s (IEC 60335-2-23)..... :		N/A
11.8	Temperature rises monitored continuously and not exceeding the values in table 3 ..... :	(see appended table)	P
	If the temperature rise of a motor winding exceeds the value of table 3, or		N/A
	if there is doubt with regard to classification of insulation,		N/A
	tests of annex C are carried out		N/A
	Sealing compound does not flow out		N/A
	Protective devices do not operate, except		P

<b>IEC 60335-2-23</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	components in protective electronic circuits tested for the number of cycles specified in 24.1.4		N/A
	The temperature rise of detachable curlers is not measured. (IEC 60335-2-23)		N/A
<b>19</b>	<b>ABNORMAL OPERATION</b>		--
19.1	The risk of fire, mechanical damage or electric shock under abnormal or careless operation obviated		P
	Electronic circuits so designed and applied that a fault will not render the appliance unsafe .....	(see appended table)	P
	Appliances incorporating heating elements subjected to the tests of 19.2 and 19.3, and		P
	if the appliance also has a control that limit the temperature during clause 11 it is subjected to the test of 19.4, and		P
	if applicable, to the test of 19.5		N/A
	Appliances incorporating PTC heating elements are also subjected to the test of 19.6		P
	Appliances incorporating motors subjected to the tests of 19.7 to 19.10, as applicable		N/A
	Appliances incorporating electronic circuits subjected to the tests of 19.11 and 19.12, as applicable		P
	Appliances incorporating contactors or relays subjected to the test of 19.14, being carried out before the tests of 19.11		N/A
	Appliances incorporating voltage selector switches subjected to the test of 19.15		N/A
	Unless otherwise specified, the tests are continued until a non-self-resetting thermal cut-out operates, or		N/A
	until steady conditions are established		P
	If a heating element or intentionally weak part becomes open-circuited, the relevant test is repeated on a second sample		N/A
	Hairdryers also subjected to tests of clause 19.101 and 19.102 (IEC 60335-2-23)		N/A
19.2	Test of appliances with heating elements with restricted heat dissipation; test voltage (V), power input of 0,85 times rated power input (W).....	98,9V, 55,3W	P
	Restricted heat dissipation is obtained as follows (IEC 60335-2-23):		--
	- motors disconnected (IEC 60335-2-23);		N/A
	- hand-held hairdryers placed on floor of test corner in any stable position likely to occur (IEC 60335-2-23);		N/A

<b>IEC 60335-2-23</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	- appliances intended to be filled with water operated empty (IEC 60335-2-23).		N/A
	- hand-held appliances without an integral rest are placed on the floor of the test corner in any stable position likely to occur (IEC 60335-2-23/A2).		P
	Hairdryers with flexible hood attachment also tested with motor operating, airflow through hose being restricted to give most unfavourable result (IEC 60335-2-23)		N/A
	Heaters for detachable curlers placed on piece of low-density glass-fibre insulation having coefficient of thermal insulation of approximately 2,5 m <sup>2</sup> K/W (IEC 60335-2-23)		N/A
19.3	Test of 19.2 repeated; test voltage (V), power input of 1,24 times rated power input (W) .....	Refer to general remarks	P
19.4	Test conditions as in clause 11, any control limiting the temperature during tests of clause 11 short-circuited	Short circuit of NTC sensor (Only for MK-708)	P
19.6	Appliances with PTC heating elements tested at rated voltage, establishing steady conditions		P
	The working voltage of the PTC heating element is increased by 5 % and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1,5 times working voltage or until the PTC heating element ruptures (V) .....	Under 1,5 times working voltage: 360V and operated until steady conditions are established.	P
<b>13</b>	<b>LEAKAGE CURRENT AND ELECTRIC STRENGTH AT OPERATING TEMPERATURE</b>		--
13.1	Leakage current not excessive and electric strength adequate		P
	Heating appliances operated at 1,15 times the rated power input (W).....	Refer to table 13.2	P
	Motor-operated appliances and combined appliances supplied at 1,06 times the rated voltage (V) .....		N/A
	Protective impedance and radio interference filters disconnected before carrying out the tests		N/A
13.2	The leakage current is measured by means of the circuit described in figure 4 of IEC 60990:1999		P
	For class 0I appliances and class I appliances, except parts of class II construction, C may be replaced by a low impedance ammeter		N/A
	Leakage current measurements .....	(see appended table)	P
13.3	The appliance is disconnected from the supply		P
	Electric strength tests according to table 4 .....	(see appended table)	P
	No breakdown during the tests		P

<b>IEC 60335-2-23</b>			
Clause	Requirement + Test	Result - Remark	Verdict
<b>23</b>	<b>INTERNAL WIRING</b>		--
23.5	The insulation of internal wiring subjected to the supply mains voltage withstanding the electrical stress likely to occur in normal use		P
	Basic insulation electrically equivalent to the basic insulation of cords complying with IEC 60227 or IEC 60245, or		N/A
	no breakdown when a voltage of 2000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation		P
	For class II construction, the requirements for supplementary insulation and reinforced insulation apply,		N/A
	except that the sheath of a cord complying with IEC 60227 or IEC 60245 may provide supplementary insulation.		N/A
	A single layer of internal wiring insulation does not provide reinforced insulation		N/A
<b>30</b>	<b>RESISTANCE TO HEAT AND FIRE</b>		--
30.1	External parts of non-metallic material,		P
	parts supporting live parts, and		P
	parts of thermoplastic material providing supplementary or reinforced insulation		P
	sufficiently resistant to heat		P
	Ball-pressure test according to IEC 60695-10-2		P
	External parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 75 °C, whichever is the higher; temperature (°C)..... :	(see appended table 30.1)	P
	Parts supporting live parts tested at 40 °C plus the maximum temperature rise determined during the test of clause 11, or at 125 °C, whichever is the higher; temperature (°C)..... :	(see appended table 30.1)	P
	Parts of thermoplastic material providing supplementary or reinforced insulation tested at 25 °C plus the maximum temperature rise determined during clause 19, if higher; temperature (°C)..... :	(see appended table 30.1)	P
	Hand dryers and hairdryers, temperature rises occurring during tests of clause 19 not taken into account (IEC 60335-2-23)		N/A

IEC 60335-2-23			
Clause	Requirement + Test	Result - Remark	Verdict

10.1	TABLE: Power input deviation					P
Input deviation of/at:	P rated (W)	P measured (W)	$\Delta P$	Required $\Delta P$	Remark	
MK-708	55	54,2	-1,5%	-10%~+10%	Supplied at 230V, 50Hz	
Supplementary information: N/A						

10.2	TABLE: Current deviation					N/A
Current deviation of/at:	I rated (A)	I measured (A)	$\Delta I$	Required $\Delta I$	Remark	
Supplementary information:						

11.8	TABLE: Heating test		MK-708	P
	Test voltage (V) .....		257,4V	—
	Ambient (°C) .....		20,0	—
Thermocouple locations		Max. temperature rise measured, $\Delta T$ (K)	Max. temperature rise limit, $\Delta T$ (K)	
Supply cord		3,1	50	
Internal wire for PTC heating element		115,5	175(T200-25)	
Handle		31,1	50	
Switch button		3,7	50	
Enclosure close to heating element		37,9	--	
Polyimide film		145,2	--	
Heating surface		180,2	--	
Indicator		20,4	50	
PCB		38,2	120	
VDR		13,2	60(T85)	
Swivel connection insulation		6,3	--	
Comb teeth		27,3	60	
Supplementary information: N/A				

IEC 60335-2-23			
Clause	Requirement + Test	Result - Remark	Verdict
<b>13.2</b>	<b>TABLE: Leakage current</b>		<b>P</b>
	Heating appliances: 1,15 x rated input (W) ..... :	257,4 V	—
	Motor-operated and combined appliances: 1,06 x rated voltage (V) ..... :	N/A	—
Leakage current between		I (mA)	Max. allowed I (mA)
Not exceed the following values:		--	--
L/N – Enclosure (with metal foil or ungrounded metal parts)		0,012 / 0,013	0,35(peak)
L/N – Switch/knob/handle		0,013 / 0,013	0,35(peak)
Supplementary information: N/A			

<b>13.3</b>	<b>TABLE: Dielectric strength</b>		<b>P</b>
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
Basic insulation (live part to enclosure of wire)		1000	No
Supplementary insulation (Basic insulation to enclosure /switch/knob/handle)		1750	No
Reinforced insulation(live part to enclosure /switch/knob/handle)		3000	No
Supplementary information: N/A			

IEC 60335-2-23							
Clause	Requirement + Test			Result - Remark			Verdict
<b>19</b>	<b>Abnormal operation conditions</b>						<b>P</b>
Operational characteristics		YES/NO	Operational conditions				
Are there electronic circuits to control the appliance operation?		YES	Manual operation				
Are there "off" or "stand-by" position?		YES	Manual operation				
The unintended operation of the appliance results in dangerous malfunction?		NO	N/A				
Sub-clause	Operating conditions description	Test results description	PEC description	EMP 19.11.4	Software type required	19.11.3 PEC	Final result
19.2	Refer to Cl.19.2	No hazard	N.A	N.A	N.A	N.A	P
19.3	Refer to Cl.19.3	No hazard	N.A	N.A	N.A	N.A	P
19.4	Refer to Cl.19.4	No hazard	N.A	N.A	N.A	N.A	P
19.5	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.6	Refer to Cl.19.6	No hazard	N.A	N.A	N.A	N.A	P
19.7	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.8	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.9	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.10	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.11.2	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.11.4.8	N.A	N.A	N.A	N.A	N.A	N.A	N.A
19.10X	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Supplementary information: N/A							

<b>19.13</b>	<b>TABLE: Abnormal operation, temperature rises</b>		<b>P</b>
Thermocouple locations		Max. temperature rise measured, $\Delta T$ (K)	Max. temperature rise limit, $\Delta T$ (K)
19.2			
Test corner		85,2	150
Supply cord		2,1	150
Enclosure		140,1	--
Polyimide film		142,3	--
19.3			
Test corner		112,4	150
Supply cord		4,5	150

IEC 60335-2-23			
Clause	Requirement + Test	Result - Remark	Verdict
Enclosure		140,2	--
Polyimide film		148,8	--
19.4			
Supply cord		3,0	150
Enclosure		140,5	--
Polyimide film		147,6	--
19.6			
Supply cord		6,2	150
Enclosure		141,1	--
Polyimide film		146,5	--
Supplementary information: The most unfavourable values were recorded.			

30.1	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm) .....	≤2,0			—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	Refer to table 24.1	77,9	1,2	
Supplementary information: N/A				

Table Z101 - Maximum temperature rises under normal operating conditions (EN 60335-2-23/A11)				P
	Test voltage (V) .....	257,4		—
	Ambient (°C) .....	20,0		—
Surface	Surfaces of appliances likely to be touched			
		measured ΔT (K)	max. ΔT (K)	
Bare metal		--	45	
Coated metal		--	55	
Glass and ceramic		--	60	
Plastic and plastic coating > 0,3 mm		32,9	65	

Photo 1

Description: Internal view of MK-708

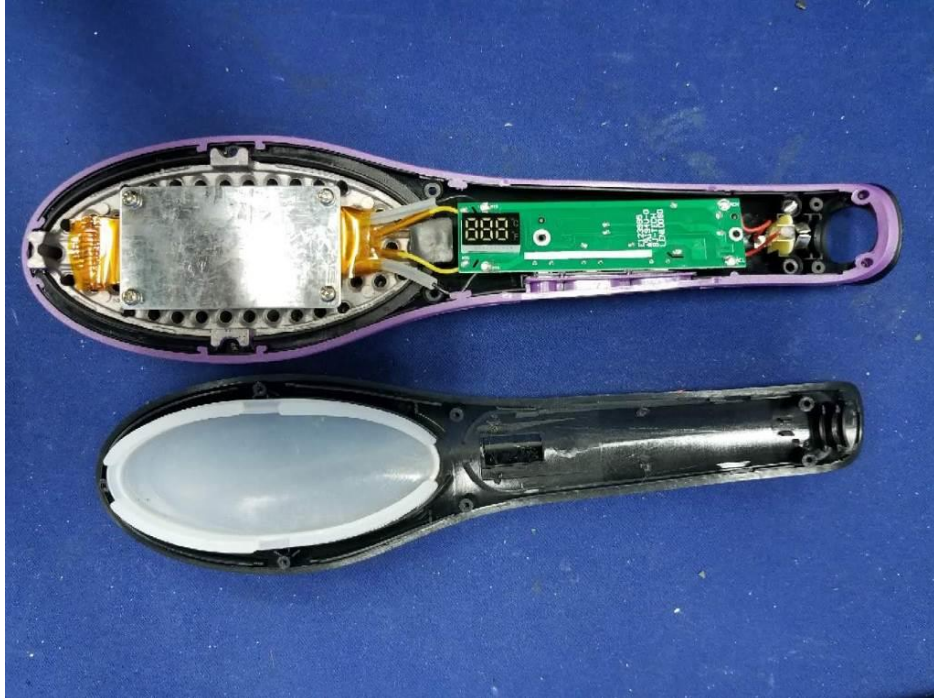


Photo 2

Description: PCB for MK-708

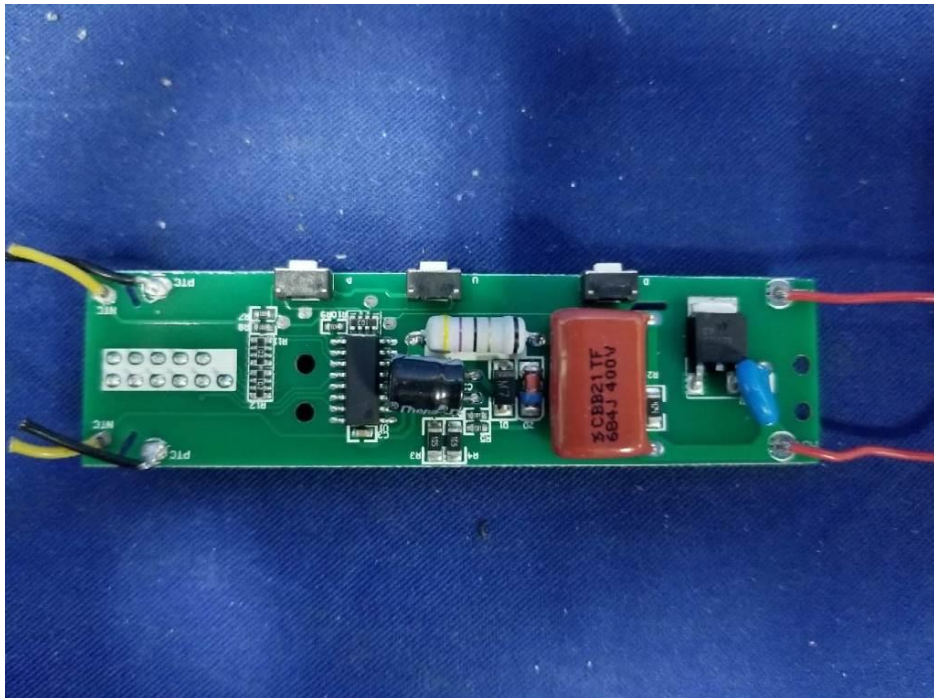


Photo 3

Description: PCB for MK-708

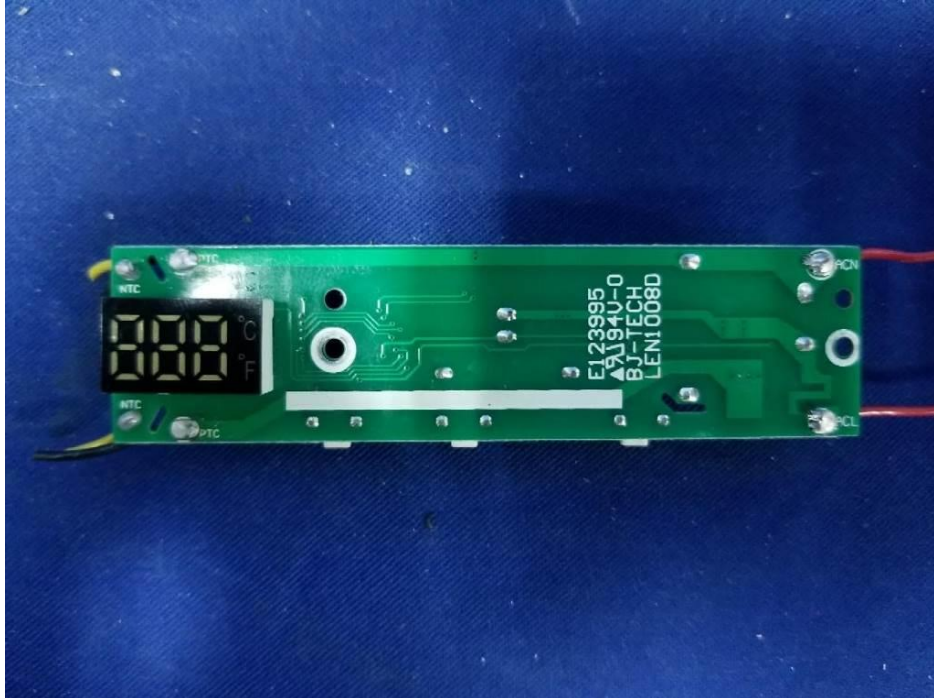


Photo 4

Description: PTC for MK-708

