

# Safety Screening Report

**Report:** 071-75924520-402 **Date:** 09/01/2014

**Client:** The Electrical Safety Council  
Unit 331 Great Guildford Business  
Square 30 Great Guildford Street  
London  
SE1 0HS

**Product:** Electrical Socket **ESC Sample Number:** 2

**Summary:** TÜV SÜD Product Service was commissioned by The Electrical Safety Council to evaluate an Electrical Socket (see figure 1). The aim of the assessment is to assess the product against the clients Safety Screening Test Plan.

## Conclusion

The product was of adequate external construction. Internal construction was poor and the product failed the provision for earth and the creepage and clearance tests. Several markings were also missing from the product.

Figure 1



Assessed by:



Anna Jeeves  
Consumer Product Technician

Reviewed by:



Greg Plummer  
Consumer Product Test Engineer

## Colour Code

**Red** = Fail/Major Fault

**Amber** = Improvements Required

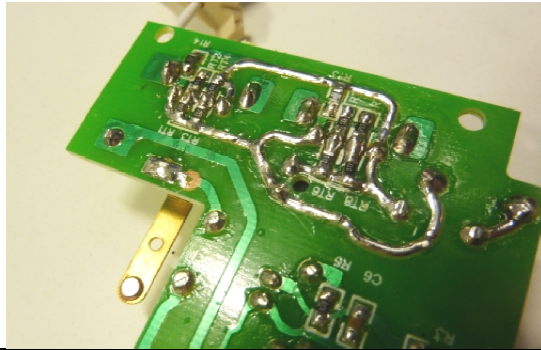
**Green** = Pass

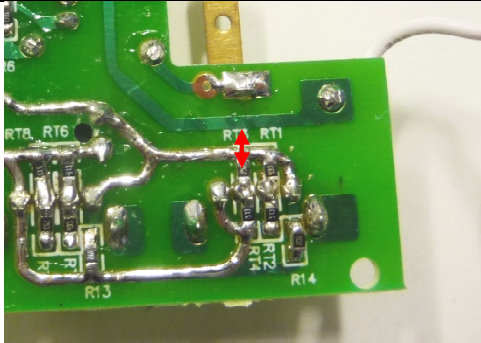


Testing Information	
Testing Laboratory:	TÜV SÜD Product Service
Location:	Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL. UK.
Client:	The Electrical Safety Council
ESC Sample Number:	2
Product Information	
Product Description:	Wall socket with Integrated USB Ports
Rated Input Voltage:	200-250VAC
Rated Output:	1000mA / 5VDC x 2
Protection Class:	Class I

Findings	
Markings/Warnings (BS 1363-2, Clause 7)	
Marking of Product	<input checked="" type="checkbox"/> -Inadequate <input type="checkbox"/> -Poor <input type="checkbox"/> -Adequate <input type="checkbox"/> -Good <input type="checkbox"/> -Very Good <input type="checkbox"/> -N/A
Comments	<p>The product was marked with a model reference, electrical ratings (covering both the BS 1363 sockets / USB outputs); however 200-250V AC is not considered a known range in the UK. 220-240VAC would be expected. The USB ratings were seen on the back; however this information would not be seen by the end user once installed.</p> <p>The distributor's name / trademark, WEEE logo and CE marking were missing. These must be added. It was noted that the input terminals and USB's current rating were clearly marked. BS 1363, BS 5733 and EN 60950 were also stated. It is considered that the product could also be assessed against BS EN 61558-1 (Safety of power transformers, power supplies, reactors and similar products General requirements and tests).</p> <p>A small folded leaflet was supplied which provided circuit diagrams for a number of standard BS 1363 electrical sockets and switches with a brief disclaimer covering installation. There was no safety / USB compatibility guidance provided for the end user.</p>
Markings/Photo	<input checked="" type="checkbox"/> -Yes <input type="checkbox"/> -No <i>If yes see last page of report</i>
CE Marking	<input type="checkbox"/> -Yes <input checked="" type="checkbox"/> -No

External Construction (BS 1363-2, Clause 13)	
Product Build Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	The external construction was of a good standard and considered comparable to similar products already on the market. No sharp edges, burrs or pinch points were found.
Accessibility of Live Parts (BS 1363-2, Clause 9)	
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	The product was supplied with a removable metal facia. Access to internal live parts could not be achieved when applying a 1.0mm calibrated test pin to potential areas of access, other than those intended to be exposed when being installed or from inserting a plug.

<b>Terminals &amp; Terminations (BS 1363, Clause 11)</b>	
<b>Constructional Quality</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
<b>Comments</b>	Some resistance was felt when a number of BS 1363 plugs were inserted into the sockets however the earth pin fully engaged before the live / neutral pins. The input conductors were noted to be adequately secured within the mouldings. Appropriately sized / threaded screws were used.
<b>Internal Wiring / Separation (BS EN 61558-1, Clause 21)</b>	
<b>Constructional Quality</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
<b>Comments</b>	The output (SELV) circuit was found to be adequately separated from the input circuit. The Live parts of the SELV circuit were not in direct contact with the protective earth. There was insufficient information on the wiring to enable verification of any 3 <sup>rd</sup> party approvals.
<b>Screws, Current Carrying Parts &amp; Connections (BS 1363-2, Clause 13)</b>	
<b>Constructional Quality</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
<b>Comments</b>	<p>The switches, internal conductors and USB sockets were adequately retained within the internal structure of the back cover. This was then secured by a riveted earthing conductor which acted as a brace around it. The connections (conductor / wiring) to the PCB were mechanically secured and soldered in place.</p> <p>The tracks on the secondary side of the PCB had been built up with additional solder. It is considered that this was done to ensure the track could withstand the flow of the current; however this method is not considered good practice.</p> 
<b>Creepage Distances, Clearances &amp; Distances Through Insulation (BS EN 61558-1, Clause 26)</b>	
<b>Constructional Quality</b>	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail
<b>Comments</b>	The minimum creepage / clearance distance measured between the primary and secondary sides of the circuit board (1.9mm) was outside the limit specified by the standard. A minimum of 5mm is required.

		
<p>The transformer was constructed with a triple insulated secondary winding; therefore providing an adequate barrier from the primary side.</p>		
<p align="center"><b>Short Circuit, Overload and Thermal Protection (BS EN 61558-1, Clause 15)</b></p>		
<b>Constructional Quality</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail	
<b>Comments</b>	<p>A fusible resistor was fitted to the primary side of the PCB; however there was no thermal protection present. Although not a requirement it is recommended that a thermal link is incorporated into the circuit.</p>	
<p align="center"><b>Mechanical Strength (BS 1363-2, Clause 20)</b></p>		
<b>Result</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail	
<b>Comments</b>	<p>Standard USB connectors were placed into each socket then subjected to an impact test of 5nM to each side and around the facia. Some deformation of the sockets metal casing was noted; however this did not affect the mechanical fit of a USB plug or mechanical operation of the switches.</p>	
<p align="center"><b>Insulation Resistance / Leakage Current (BS EN 61558-1, Clause 18.2)</b></p>		
<b>Result</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail	
<b>Comments</b>	<p>The product was subjected to an insulation resistance test with a voltage of 500VDC applied. This was measured between live / neutral and the USB output. A measurement of &gt;999MΩ was recorded across each path; therefore meeting the requirement of &gt;5MΩ.</p>	
<p align="center"><b>Electric Strength (BS 1363-2, Clause 15 / BS EN 61558-1, Clause 18)</b></p>		
<b>Result</b>	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail	
<b>Comments</b>	<p>The product was subjected to an electric strength test to 1500VAC. The mains output was tested to 4242VDC. No breakdown or flashover occurred.</p>	
<p align="center"><b>Provision for Earthing (BS 1363-2, Clause 10)</b></p>		
<b>Result</b>	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail	
<b>Comments</b>	<p>The product was subjected to an earth bond test. This revealed that there was intermittent continuity to the metal facia. It is considered that the lacquer coating to the inner side of the plate may have contributed to this.</p>	



**Output Voltage & Current Under Load  
(BS EN 62684, Clause 5)**

**Result**       -Pass     -Fail

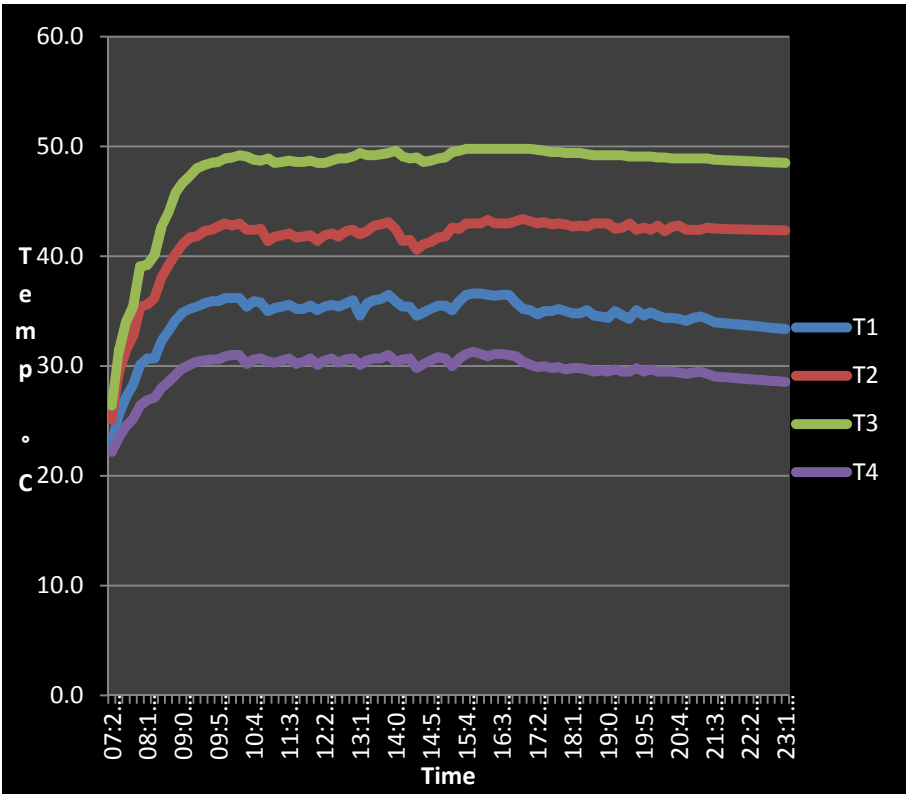
**Comments**

The device was plugged in and the open circuit voltage measured across the USB ground and supply. It was found to be 4.97VDC on both left and right hand USB sockets and was between the limits of 4.75 – 5.25VDC.

The stated output current was 1000mA for each USB port which is within the required limit of 1500mA.

Under short circuit conditions a current of 1.85A at 1.07V and 1.86A at 1.01V for the left and right USB ports respectively was observed, this is within the required limit of 3A. The maximum sustainable load was just over 1.15A on either port which is 150mA greater than stated.

The device was setup with a load bank and the load slowly increased until the voltage output dropped significantly. The load was then backed off until the voltage remained stable at a current of 1.085A for each port and left to run. The temperature was monitored around the device. After approximately 8 hours the test was stopped.



T1=Between the two USB sockets  
 T2=Left of the USB sockets  
 T3=Right of the USB sockets  
 T4=Base under USB sockets

The maximum recorded temperature was 49.8°C.

**Product Images**

**Facia (Internal)**



**Rear View**



**Markings**



**Internal Overview**

