

Safety Screening Report

Report: 071-75924520-801 **Date:** 18/12/2013

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

Product: Electrical Socket **ESC Sample Number:** 6

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 creepage and clearance, provision for earth and the electric strength tests. The product failed to meet the manufacturers stated maximum output but passed the requirements of BS EN 62684:2010 for over voltage.

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



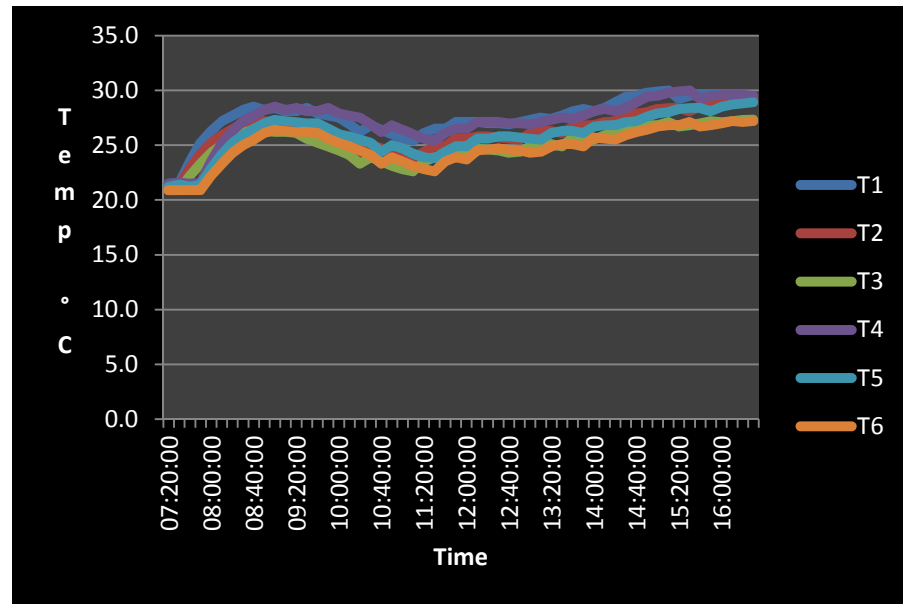
Testing Information	
Testing Laboratory:	TÜV SÜD Product Service
Location:	Octagon House, Concorde Way, Segensworth North, Fareham, Hampshire, PO15 5RL. UK.
Client:	The Electrical Safety Council
ESC Sample Number:	6
Product Information	
Product Description:	Wall socket with Integrated USB Ports
Rated Input Voltage:	250VAC
Rated Output:	1300mA / 5VDC x 2
Protection Class:	Class I

Findings			
Markings/Warnings (BS 1363-2, Clause 7)			
Marking of Product	<input type="checkbox"/> -Inadequate <input type="checkbox"/> -Poor <input checked="" type="checkbox"/> -Adequate <input type="checkbox"/> -Good <input type="checkbox"/> -Very Good <input type="checkbox"/> -N/A		
Comments	<p>The product was adequately marked with the distributors name, model reference, electrical ratings (covering both the socket and USB's) and CE marking. The USB ratings were noted to be clearly visible to the end user; however the WEEE logo was missing. This should be added.</p> <p>A generic instruction leaflet was supplied with the product. This was found to contain a good amount of installation, operational and safety information; however there was no compatibility advice. It is recommended that this is included.</p>		
Markings/Photo	<input checked="" type="checkbox"/> -Yes <input type="checkbox"/> -No <i>If yes see last page of report</i>	CE Marking	<input checked="" type="checkbox"/> -Yes <input type="checkbox"/> -No
External Construction (BS 1363-2, Clause 13)			
Product Build Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail		
Comments	<p>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.</p>		
Accessibility of Live Parts (BS 1363-2, Clause 9)			
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail		
Comments	<p>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 prior to installation or from insertion of a plug.</p>		
Terminals & Terminations (BS 1363, Clause 11)			
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail		
Comments	<p>A number of BS 1363 plugs could be comfortably inserted into the sockets: however it was noted that some manipulation was required to remove them. The earth pin fully engaged before the live / neutral pins. The input conductors were noted to be adequately secured within the mouldings.</p>		

	Appropriately sized / threaded screws were used.
Internal Wiring / Separation (BS EN 61558-1, Clause 21)	
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	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 internal wiring was UL marked. This was verified online.
Screws, Current Carrying Parts & Connections (BS 1363-2, Clause 13)	
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	<p>The switches, internal conductors and USB sockets were adequately retained by the structure of the mouldings which was then secured by screws and a riveted earthing brace. The connections to the PCB were mechanically secured / soldered in; however the connection to the neutral conductor had been soldered where means to secure it had not been utilised. It is recommended that a form of mechanical security is used in addition to soldering when provided.</p> 
Creepage Distances, Clearances & Distances Through Insulation (BS EN 61558-1, Clause 26)	
Constructional Quality	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail
Comments	<p>The minimum clearance distance measured between the primary and secondary sides of the circuit (3.25mm) does not meet the requirement of the standard of >5mm.</p> <p>The transformer was constructed with a triple insulated secondary winding; therefore providing an adequate barrier from the primary side.</p>
Short Circuit, Overload and Thermal Protection (BS EN 61558-1, Clause 15)	
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	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.
Mechanical Strength (BS 1363-2, Clause 20)	
Result	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	Standard USB connectors were placed into each socket. This was then subjected to an impact test of 5nM to all sides, the facia and switches. No

	damage was observed.
Insulation Resistance / Leakage Current (BS EN 61558-1, Clause 18.2)	
Result	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	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 >999MΩ was recorded across each path; therefore meeting the requirement of >5MΩ.
Electric Strength (BS 1363-2, Clause 15 / BS EN 61558-1, Clause 18)	
Result	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail
Comments	<p>The product was subjected to an electric strength test to 1500VAC no breakdown or flashover occurred. The mains output was tested to 4242VDC; however breakdown occurred at 800VDC. A burn test revealed arcing between the fusible resistor and the tail of X1 capacitor which were in direct contact with each other.</p> 
Provision for Earthing (BS 1363-2, Clause 10)	
Result	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	The product was subjected to an earth bond test. No breakdown was observed.
Output Voltage & Current Under Load (BS EN 62684, Clause 5)	
Result	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	<p>The device was plugged in and the open circuit voltage measured across the USB ground and supply. It was found to be 5.262VDC on both left and right hand USB sockets and was outside the limits of 4.75 – 5.25VDC.</p> <p>The stated output current was 1300mA for each USB port which is within the required limit of 1500mA.</p> <p>Under short circuit conditions a current of 1.37A at 0.691V and 1.33A at 0.673V for the left and right USB ports respectively was observed. The maximum sustainable load for the left channel was 0.714A and 0.422A for the right channel.</p> <p>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 0.714A and 0.711A for each port respectively and left to run. The temperature was monitored around the device. After an hour and a half the right channel output dropped. This was assumed to be a thermal protection device. The load was gradually backed</p>

off to 0.422A for the right channel until it became stable. After approximately 8 hours the test was stopped.



- T1=Top of left USB socket
- T2=Bottom of right USB socket
- T3= Base under right USB socket
- T4=Top of right USB socket
- T5=Bottom of left USB socket
- T6= Base under left USB socket

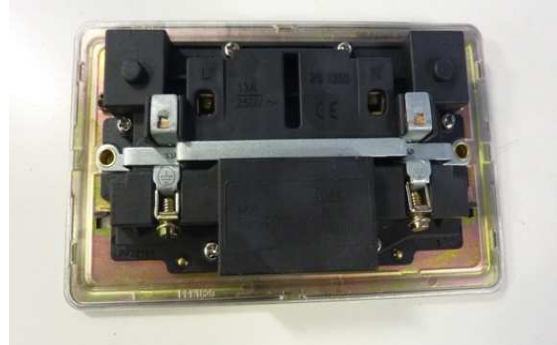
The maximum recorded temperature was 30.0°C.

Product Images

Facia (Internal)



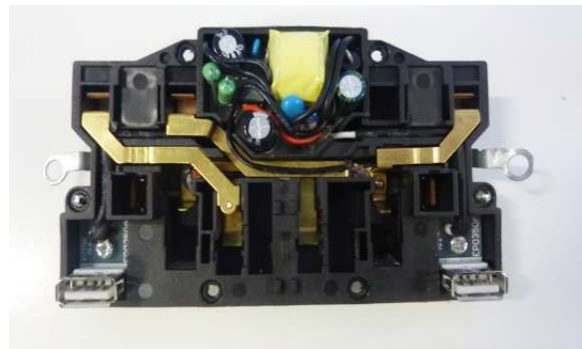
Rear View



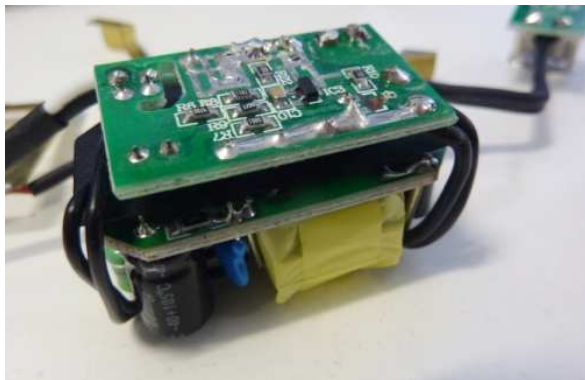
Markings



Internal Overview



PCB Assembly



Transformer

