

Safety Screening Report

Report: 071-75924520-003 **Date:** 09/01/2014

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

Product: Electrical Accessory **ESC Sample Number:** 3

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

Summary

The product was of adequate construction although there is doubt about the authenticity of the plug and requires user instructions. The product failed to meet the requirements of BS EN 62684:2010 for output protection.

Figure 1



Assessed by:



Anna Jeeves
Consumer Product Technician

Reviewed by:



Greg Plummer
Consumer Product Test Engineer

Colour Code

Red = Fail/Major Fault

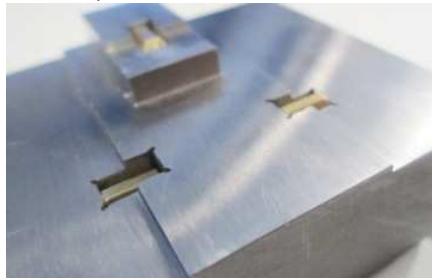

Amber = Improvements Required

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:	3
Product Information	
Product Description:	Trailing socket with Integrated USB Port & Battery Charging Bays
Rated Input Voltage:	250VAC
Rated Output:	USB - 5VDC / 2100mA Max. Battery Charger – 1.4VDC / 160mA
Protection Class:	Class I

Findings			
Markings/Warnings (BS 5733, Clause 8)			
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 adequately marked with all of the required information. This included the model reference, input rating, output ratings (covering each of the outputs), distributor trademark, CE marking and WEEE logo. The relevant standards were stated; however BS 5733 should be marked as BS 5733/A as it is a portable product.</p> <p>The product was supplied in an unmarked, plain white cardboard box with no instructional information. It is expected that guidance regarding general safety, operation and compatibility would be provided; however this was not supplied for the end user.</p>		
Rating Plate/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 5733, Clause 13)			
Product Build Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail		
Comments	The external construction was of an adequate standard and considered comparable to similar products already on the market. No sharp edges, burrs or pinch points were found; however some deformation of the sockets moulding was noted.		
Accessibility of Live Parts (BS 5733, Clause 8)			
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail		
Comments	The casings had been adequately secured with tamper-proof screws. Access to internal live parts could not be achieved when applying a 1.0mm calibrated test pin to potential areas of access.		



**Terminals & Terminations
(BS 5733, Clause 14)**





Constructional Quality	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail
Comments	<p>The product was supplied with a Scolmore branded, class I, BS1363 marked plug. The license number was verified online; however the quality of the materials used and lack of markings (part reference) were not considered to be of that usually seen by the brand. A check within a calibrated BS 1363 plug gauge revealed that the live pin was too short. Some lateral movement of the live pin was also observed. A check revealed that it was also difficult to insert / remove a number of BS 1363 approved plugs into the sockets. It was noted that the earth pin did not always fully engage before the live / neutral pins.</p> <div style="display: flex; justify-content: space-around;">   </div>

**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 contact or exposed to earth.

**Screws, Current Carrying Parts & Connections
(BS 5733, Clause 14 & 15)**

Constructional Quality	<input type="checkbox"/> -Pass <input checked="" type="checkbox"/> -Fail
Comments	<p>The connections to the circuit boards, switch and positive battery conductors were mechanically secured / soldered; however the connection to the negative battery conductor was soldered only. It is recommended that a secondary form of security is used. The quality of the manually soldered connections was considered poor. The neutral input connection to the switch was not secured. Some areas of corrosion to the battery conductors were also noted.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>The supply cords earthing conductor was found to be weaved through the switch's terminals which were not sleeved as expected. It was found that the sharp edges of the live connection had caused some damage to the sleeving.</p>

	 <p>The connections within the internal socket assembly were found to be either soldered or welded. It was found that that the quality of both methods of connection was inadequate.</p>  
Creepage Distances, Clearances & Distances Through Insulation (BS EN 61558-1, Clause 26)	
Constructional Quality	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	<p>A minimum creepage / clearance distance of 4.8mm was measured between the primary and secondary side of the circuit. The standard requires a minimum of 5.0mm; it was therefore considered to be on the limit. Better quality control would ensure this does not happen.</p> <p>The transformer was constructed with a triple-insulated secondary winding; therefore considered to provide 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	<p>A fusible resistor was fitted to the primary side of the control circuit. Thermal protection devices were also found on the control circuit (x1) surge protection circuit (x2); however these did not carry any verifiable approvals markings.</p>
Mechanical Strength (BS 5733, Clause 21)	
Result	<input checked="" type="checkbox"/> -Pass <input type="checkbox"/> -Fail
Comments	<p>The product was subjected to an impact test. This was carried out with the free end of the cable held against a wall with the cable held horizontally at 400mm above a hard floor then allowed to drop. This was repeated with the cord rotated through 45° at its fixing eight times. No damage was observed.</p>



	<p>A standard USB connector was placed into the socket. This was then subjected to an impact test of 5nm to all sides. Some deformation of the sockets metal casing was noted; however this did not affect the mechanical fit of a USB plug.</p>
<p>Insulation Resistance / Leakage Current (BS EN 61558-1, Clause 18.2)</p>	
<p>Result</p>	<p><input checked="" type="checkbox"/>-Pass <input type="checkbox"/>-Fail</p>
<p>Comments</p>	<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 >999MΩ was recorded across each path; therefore meeting the requirement of >5MΩ.</p>
<p>Electric Strength (BS 5733, Clause 19 / BS EN 61558-1, Clause 18)</p>	
<p>Result</p>	<p><input checked="" type="checkbox"/>-Pass <input type="checkbox"/>-Fail</p>
<p>Comments</p>	<p>The product was subjected to an electric strength test to 2121VDC. The mains output was tested to 4242VDC. No breakdown or flashover occurred.</p>
<p>Output Voltage & Current Under Load (BS EN 62684, Clause 5)</p>	
<p>Result</p>	<p><input type="checkbox"/>-Pass <input checked="" type="checkbox"/>-Fail</p>
<p>Comments</p>	<p>The device was plugged in and the open circuit voltage measured across the USB ground and supply. It was found to be 5.145 VDC and was between the limits of 4.75 – 5.25VDC.</p> <p>The stated output current was 2100mA which is above the required limit of 1500mA. Under short circuit conditions a current of 4.1A was observed. This is above the required limit of 3A.</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 2.6A and left to run. The temperature was monitored at five points around the device and the plug. After approximately 8 hours the device failed with no output.</p> <div data-bbox="491 1391 1394 1995" style="text-align: center;"> <p>The graph displays temperature in degrees Celsius on the y-axis (0.0 to 70.0) against time on the x-axis (10:20:00 to 22:50:00). Five data series are shown: T1 (blue), T2 (red), T3 (green), T4 (purple), and T5 (cyan). T1, T2, T3, and T4 all show a similar trend: they start at approximately 25°C, begin to rise around 12:50:00, reach a peak between 50°C and 65°C between 13:40:00 and 20:20:00, and then drop sharply to around 25°C by 21:10:00. T5 remains constant at approximately 22°C throughout the entire duration.</p> </div>



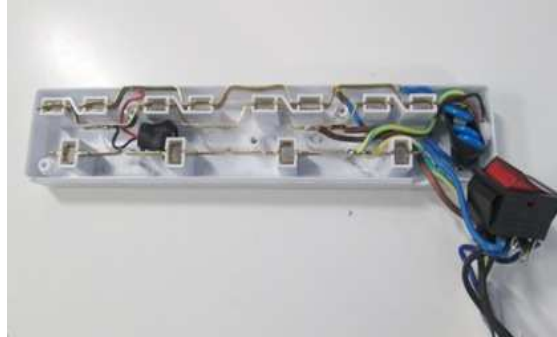
	<p>T1=Left of USB socket T2=Right of USB socket T3=Base under USB socket T4=Right of power switch T5=Plug</p> <p>The maximum recorded temperature was 64.3°C.</p>
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Product Images

Internal Overview (Main Assembly)



Internal overview (13A Sockets)



Markings



Control PCB



Plug



Fuse

