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Application Note

Appliance Testing with the Guardian 5000 AC/DC/IR/GC Safety Analyzer

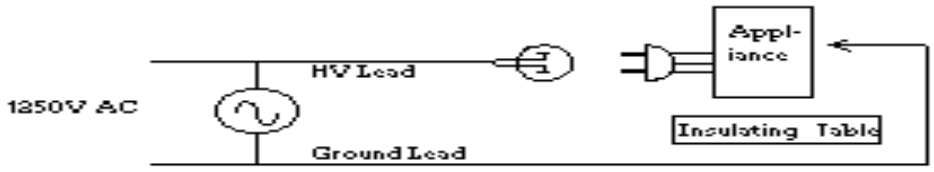
Introduction

One application for the Guardian 5000 AC/DC/IR/GC Safety Analyzer is electrical safety testing on appliances. The Guardian 5000 can perform the tests required by standards such as BAEB Document 40 Guidance Notes for E Products and UL982 House Hold Appliance Safety Testing.

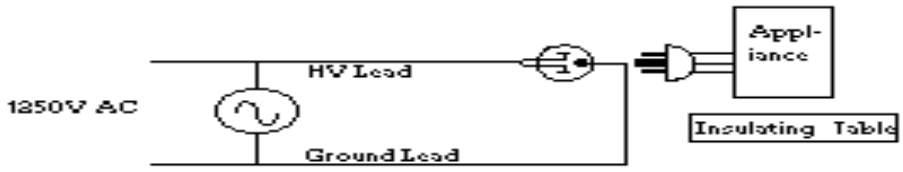
The BAEB Doc. 40 Standard recommends a ground bond test followed by a AC hipot test. The ground bond test which measures the resistance in the ground path of the appliance is performed at 25 Amps AC and less than 12Volts. The maximum allowable resistance is 100milliohms. A dielectric withstand test is then performed to check that there is no breakdown between the hot and neutral of the power cord and ground. This test is performed with a hipot test at 1250Volts AC for at least 1 second.

The UL982 House hold Appliance standard is similar to the BAEB test except that a ground continuity test is performed, to check connection between ground blade and any exposed metal on the appliance, in place of the ground bond test. The difference between ground bond and ground continuity is that ground continuity tests are not normally performed at high current levels. A ground bond test can be substituted for the ground continuity test and performed at 25Amps AC or lower current levels. The hipot test is performed at 1000Volts plus 2 time line voltage AC and no breakdown shall occur.

The general test setups are shown below for dielectric withstand and ground bond/continuity testing.



Dielectric Withstand Test on 2 wire 120V Appliance

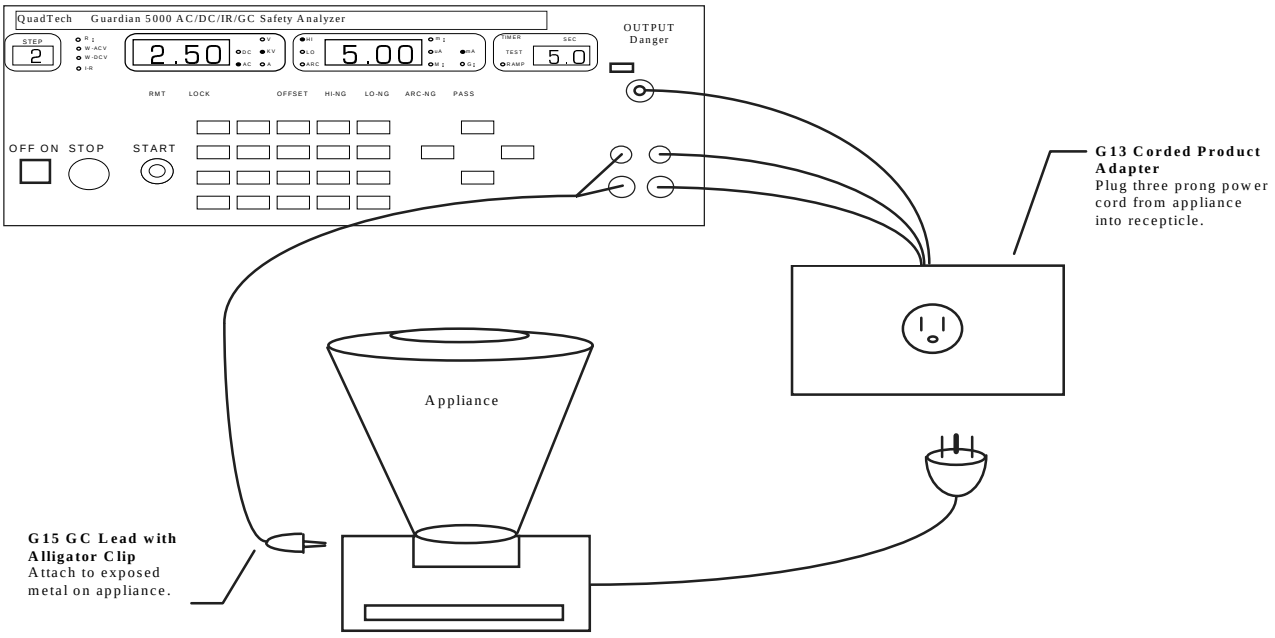


Dielectric Withstand Test on 3 wire 120V Appliance

Ground Continuity Test on 3 wire 120V Appliance

Solution

The solution was to use the setup shown below which consisted of a Guardian 5000 AC/DC/IR/GC Safety Analyzer and G13 Corded Product Adapter. The Guardian 5000 is configured to perform a 25A ground bond test followed by a 1250VAC hipot test. In addition the testing can be automated by using the remote interface on the Guardian 5000 or data can be transferred to a PC via the IEEE 488 interface for documentation or SPC.



Summary

Use of the Guardian 5000 allows the measurement of both ground bond and AC hipot with the push of one button. This can significantly reduce test time and increase reliability by using a single instrument to perform different measurements. The Guardian 5000 was designed to meet most of the electrical safety test requirements outlined by TÜV, IEC, VDE, BABT, CSA and UL.

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