



*World Leader in High Voltage Test and Measurement*

## **Ground Bond and Ground Continuity Testing**

*Apps Note: 11052*

**Ground Bond Testing** is the **integrity test** of the low resistance connection from the chassis of a Class I product to the earth ground; the third prong on 3-prong power cord.

**Ground Continuity Testing** is simply a test to confirm, without regard to the integrity of the connection, that a low resistance **connection exists** from the chassis of a Class I product to the earth ground; the third prong on 3-prong power cord.

### **Ground Continuity Test**

Most manufacturers of electrically powered equipment are well aware that a verification of the product's grounding circuit connection through its ground wire is mandatory for Safety Standards Compliance.

**Electrical Safety Standards (& Liability Insurance Policies)** require production verification that the grounding circuit for all electrical products, prior to shipment, are, indeed intact. In the past this test has been performed using low voltage low test current conditions.

### **Weaknesses of Ground Continuity Testing (Only)**

Because Low-voltage/Low-current testing of the ground wire connection only shows that there is a connection, it **does not verify the integrity of the connection**. In a Class I product, the earth ground conductor is tied directly to the chassis or other conductive enclosure to route any fault current back to the earth ground in case of an insulation failure. Although continuity exists, the question challenges the integrity of the connection by asking **"is this connection capable of withstanding high levels of fault current for sustained periods of time without blowing open?"** Most homes' and commercial buildings' circuit breakers and time-delay fuses can accommodate huge current overloads for as long as two minutes. Several **amps of fault current** for a very short period of time can **blow open** an inferior ground wire connection that passed a continuity test. **Continuity can exist via a single strand of magnet wire or an improper lug crimp so what good did the continuity test really contribute?**

### **Ground Bond Test**

A **Ground Bond Test verifies** that the **integrity of all conductive parts** of a product that are **exposed to user contact remain connected** to the **power line ground under adverse conditions**. The **Ground Bond Test verifies the integrity** of the **ground connection** by using **high current AC amperage**, as high as **40Amps**. **Proof that the product's ground wiring system can survive high levels of test current for a sustained period of time** provides **confidence for the integrity of the ground connection to remain intact** thereby **providing safety protection for the operator under adverse insulation failure conditions**. This test indeed verifies the current handling capability of the ground connecting system which could easily be missed in a Continuity Test only.

## **Vitrek Models Featuring High Current Ground Bond Test Capability**

**Model [952i](#) ~ Model [954i](#) ~ Model [959i](#) ~ Model [V4](#)**