

October 2019

## OPEN LETTER TO ALL APPLICANTS AND MANUFACTURERS

Subject: Production Line Testing Certification Requirements

One of the areas of confusion that often exists at the time of the first Follow-up Factory Audit or Initial Factory Assessment (IFA), for use of the ETL Listing Mark, is the issue of Production Line Testing. As a requirement for ETL certification the manufacture shall conduct regular production line tests in the factory on all products as described in the ETL Listing Report. It is extremely important that you be aware of this requirement now, rather than at the time an Intertek Field Representative arrives to conduct the IFA. If you do not know if the Listing Report (the descriptive report of your product) will require such Production Line Testing, have your evaluating engineer to explain this to you or contact Intertek for assistance.

The most common types of Production Line Testing that are required are Dielectric Withstand (sometimes called, "Hi-pot"), Grounding Continuity, Pressure, Torque, and Gas Tests. In all cases, prior to purchasing new equipment, you should determine the usage, requirements, demand, and calibration of such equipment.

**Dielectric Withstand:** Equipment shall be of sufficient size to accommodate the voltage demands of the equipment and electrical ratings of the product to be tested. The equipment shall be capable of generating a test potential of the value required by the standard and should have a meter or other means to determine the set voltage value. It should have an audible and/or visual indicator of dielectric breakdown. You should make sure that the equipment is ordered pre-calibrated and traceable to national standards. Some manufacturers sell dielectric equipment that will arrive not having been calibrated.

Intertek recommends that the Dielectric Withstand equipment be checked for sensitivity at the beginning of each production day or shift. One such method is to use a 120,000-ohm resistor. Upon applying the required test potential while loaded with this resistance, the test equipment should indicate unacceptable performance within 0.5 seconds. When ordering a Dielectric Withstand test machine, such a resistor may be ordered with the machine.

Intertek also recommends that the manufacturer document the functionality checks should a problem be encountered with the test equipment to easily identify the time when the equipment problem started. During inspections at manufacturing facilities, Intertek inspectors will ask to see the functionality test of the test equipment that is being used. If functionality cannot be witnessed, or documented functionality checks shown, a possible product hold may occur.

If there is no production at the time of the inspection, then records of past tests will be reviewed. If multiple items of test equipment are being used for ETL marked product then that equipment must also show functionality or be placed in a "Do not use" status.

**Grounding Continuity:** Products may be evaluated by any current checking meter or equipment able to show electrical conductivity (including a pilot lamp) test for continuity of the grounding path between the ground pin on the attachment plug cap or ground wire and the exposed dead metal cover or housing of the product. All meters or other means should be capable of being calibrated.

### **Pressure Tests, for Leakage and Strength:**

One hundred percent of production of each product listed below shall be subjected to a routine production-line test to determine that each refrigerant-containing part of an air conditioner is pressure tight at not less than the minimum factory test pressures.



Pressure vessels with marked working pressure higher than the pressures indicated above shall be tested and proven tight at not less than the marked working pressure. The leakage tests on the complete system may be conducted at the indicated low-side pressure if final assembly of the air conditioner is completed with flare-type fittings or equivalent means. In this case, the high-side parts shall be individually tested at not less than the high-side pressure indicated.

**UL 1598 (Luminaires) Ground Screw Torque Test:**

One sample of each luminaire design provided with a screw for securing the branch circuit equipment grounding conductor shall be tested at least once per quarter to determine compliance with the ground-screw assembly strength test.

A 12 AWG (3.3 mm<sup>2</sup>) solid-copper, insulated conductor shall be stripped to a length of 2.5 cm (1 inch) minimum. The wire shall be wrapped around the screw under the screw head so that it makes a minimum 180° turn. The conductor shall be seated to follow any wire guides or dimples provided to align the conductor with the mating surface. The ground screw shall be tightened with a calibrated torque screwdriver to 1.6 N·m (14 lb-in). When tested as described in this section, there shall not be:

- (a) damage to the head of the ground screw which would prevent the 1.6 N·m (14 lb-in) of tightening torque to be achieved; or (b) stripping of the ground screw assembly.

Test Equipment  
Calibrated torque screwdriver

**Gas Tests:**

Gas product production tests can include any of the following depending upon product type:

- Dielectric
- Electric Igniter
- Pressure
- Burner Operating Characteristics (BOC)
- Heat Exchanger

Please review your Listing report thoroughly in order to identify and establish test equipment/procedures.

\*\*\*\*\*

**Calibration requirements.** The policy of Intertek is that if Production Line test equipment is required by your Listing Report, then all such equipment should be kept in current calibration. Evidence of such calibration is required to be shown to the Intertek Field Representatives or Inspectors performing Factory Audits for ETL Listing Mark use.

Acceptable evidence should be the presentation of a calibration certificate showing traceability to the National Institute of Standards and Technology in the United States or, for manufacturers outside the U.S., traceability to the national standards body of that country. Calibration stickers on the equipment are a good reminder but are not evidence of compliance with these requirements. All equipment specified by the Listing Report and used in Production Line Testing shall be calibrated at least once per year. Self-calibration within the company is acceptable so long as the equipment used shows the same traceability as detailed above.

We hope that this letter will help explain the procedures and will help you comply with the Safety Certification requirements. Please contact us if you have questions.

**L. Matthew Snyder**  
Intertek Certification Director - Electrical

**Michael Puls**  
Intertek Inspection Manager