

# Guidelines for Field Evaluation Agencies

## 1. Objective

- a) The objective of this document is to establish safety and operational guidelines for field evaluation of electrical equipment that all FE agencies shall follow.
- b) This guideline is not intended as a design specification or a replacement for CSA SPE-1000-09, Model Code for the Field Evaluation of Electrical Equipment, current version as amended by Section 3 of the Ontario Electrical Safety Code or for the mandatory provisions contained in Ontario Regulation 438/07.
- c) The guidelines are supplemental to the product safety regulation.

## 2. Definitions

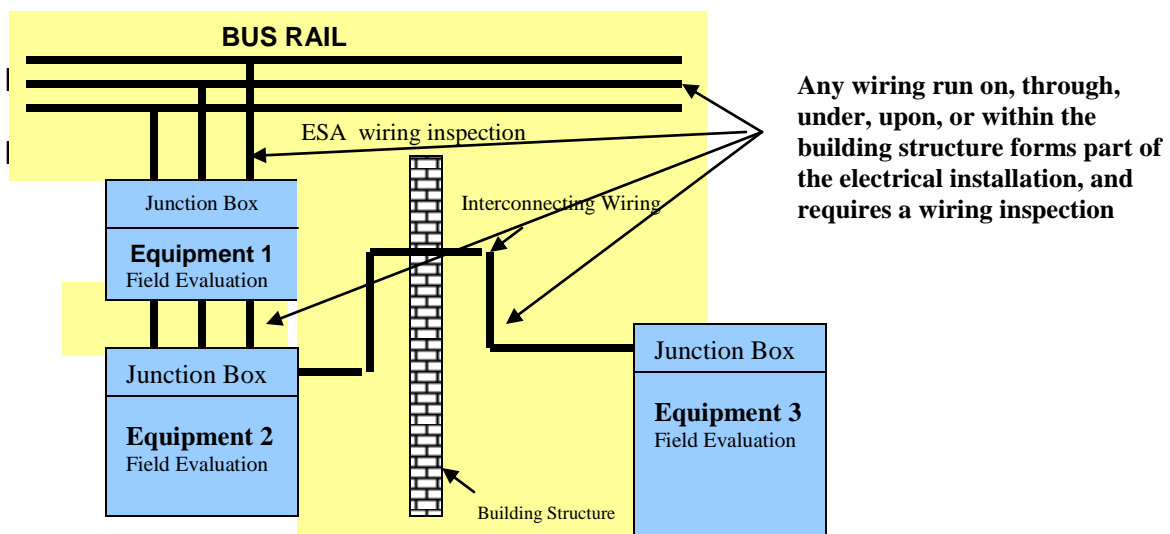
- a) **Acceptable** to the Electrical Safety Authority (ESA).
- b) **Director of Appeals** means a person appointed by THE INSPECTION DEPARTMENT as a director under this guideline.
- c) **Electrical Equipment** means an “electrical product or device: as defined in subsection 113.12.1 of part VIII of the Electricity Act, 1998 and means anything used or to be used in the generation, transmission, distribution, retail or use of electricity subject to the limitations contained in SPE-1000 and Section 3 of the Ontario Electrical Safety Code .  
*This includes any one piece of equipment or a collection of electrical components which can be totally self contained in a single piece without the need of interconnecting wiring run on, through, within or under the building structure*
- d) **Field Evaluation agency** means a “Field Evaluation agency “as defined in Ontario Regulation 438/07 which means an Inspection Body accredited in accordance with the Standards Council of Canada Act (Canada) to evaluate electrical products and devices and recognized by the Inspection Department..
- e) **Inspection department** means Electrical Safety Authority, as designated by regulation pursuant to the Electricity Act, 1998.
- f) **Process** means any installation which includes a collection of individual pieces of equipment or complete systems or subassemblies which form a part of manufacturing line (example: assembly line)
- g) **System or Subassembly** means controllers, welders, robots, or one or more pieces of electrical equipment that receives the supply voltage and control voltage from one source or one piece of equipment. (example: Two robots fed directly from one controller)

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## 3. Scope

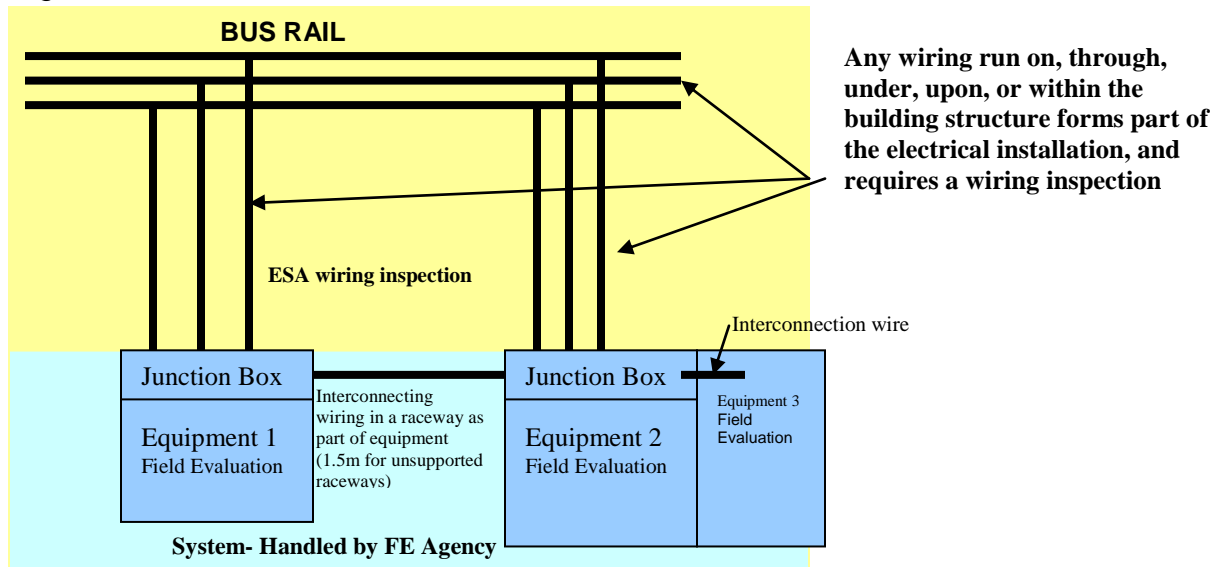
- a) FE shall apply to electrical equipment as identified in the Scope of SPE-1000-09.
- b) Field evaluation does not apply to:
  - i) wire and cable products;
  - ii) wiring devices;
  - iii) equipment for use in hazardous locations;
  - iv) electro medical, radiation-emitting, and laboratory equipment used in health care facilities and
  - v) components that will require further evaluation as part of a complete assembly, such as switches, relays, and timers.
- c) FE shall be limited to electrical equipment of less than 300 units of the same model per year. Above 300 units requires the FE agency obtaining permission from the Inspection Department.
- d) FE as it applies to complex installations which may include multiple pieces of equipment, systems or subassemblies, shall be in accordance with Figure 1 and 2 and subparagraph 4(i)

Figure 1



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Figure 2



- e) The equipment is within the scope of Section 3 of the Ontario Electrical Safety Code, and recognized by the Inspection Department.

## 4. Direction

- a) FE agency will contact the manufacturer to educate and reinforce the principle of certification of product before it arrives in Ontario.
- b) When an FE agency has undertaken the evaluation of electrical equipment, with identified deficiencies to be corrected, the FE agency shall notify the inspection department if the deficiencies have not been corrected in a timely manner, or the customer cancels the FE.
- c) When an FE agency is evaluating equipment at the location where it is to be installed, the FE agency shall verify that an application for inspection has been made for the connection of this equipment. Where there is no application for inspection, the FE agency shall notify the inspection department prior to labeling the equipment.
- d) The FE agency shall maintain a record of all field evaluations reports and shall produce this report to the Inspection Department upon request within 5 business days:
  - i. Information to be included shall be the FE Serialized label number, the voltage, current, name of manufacturer, Dielectric test results, and any additional tests that are required.
  - ii. If the equipment is a system or assembly, the following equipment info is to be included:
    - The manufacturer of all directly controlled and energized equipment including: The equipment serial number, Manufacturer name, etc

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- The FE agency shall apply only labels published in the Inspection Department's bulletins.
  - All labels to be applied by FE Agency staff. (leaving or mailing labels is not an acceptable practice)
  - A Field Evaluation shall include where necessary an onsite evaluation of the equipment, system, or subassembly where it is reassembled onsite.
- e) Where complex installations which might include multiple pieces of equipment, systems or subassemblies being installed that will be combined to form a process the FE agency and THE INSPECTION DEPARTMENT will discuss at the earliest opportunity to ensure that the scope of the FE agencies evaluation and scope of THE INSPECTION DEPARTMENT wiring inspections are understood and coordinated.
- i. The contractor (equipment owner or user) shall be responsible for applying for an inspection for the interconnecting wiring
  - ii. The FE agency shall contact the Technical Advisor or Senior Inspector for that area
- f) The FE agency shall notify the inspection department when systems, subassemblies, or a collection of equipment is used for a process installation.
- i. The FE agency shall perform all FE of the equipment, systems or assemblies,
  - ii. The inspector shall perform inspection of all interconnecting wiring, which includes but not limited to Buss Duct, power outlets connected to Buss Duct. The Buss Duct and any conduit that is installed on site.

## **4A – Guideline for Photovoltaic Panels**

Photovoltaic panels are permitted to be evaluated under the following guidelines:

- Field evaluation of PV panels that are currently certified to UL 1703 will only require a construction review to ensure compliance with ULC/ORD C1703 section 4.1 to 4.12.1. Testing requirements in these clauses shall be completed as required. The construction review must clearly be completed and documented in the form of a checklist or equivalent by the FE agency to support the acceptance of polymeric materials, components and their compliance to the appropriate material or component standard.
- In the case were 1703 test data has been generated by others parties other than a CB, such as a manufacturer or other party , the FE agency must comply with all accreditation criteria regarding the acceptance of this type of data, The procedure they follow must be documented with rationale and supporting documentation . The construction review must be completed and documented in the form of a checklist or equivalent by the FE agency to

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support the acceptance of polymeric materials, components and their compliance to the appropriate material or component standard.

- a) PV panels that have been tested to IEC 61730-1 and 2 will require additional testing. In addition to the mandatory tests contained in SPE-1000, the following additional tests from ULC/ORD C1703 are required:

cl. 5.4	Leakage current
cl. 5.5	Strain Relief
cl. 5.6	Push test
cl. 5.14.2, 5.14.3	Spread of flame and burning brand tests

## Notes:

- IEC 601730 makes reference to IEC 61215 and IEC 61646 for some tests and for some preconditioning to be performed prior to the test of IEC 61730. Therefore in the case of a panel tested to IEC 61730-1 and - 2, certain elements of IEC 61215 would have to have been applied in the proper sequence.
- It is possible for a panel to be tested to IEC 61215 or IEC 61646 without using IEC 61730, but it's not possible to properly test a panel to IEC 61730 without doing some of the testing of IEC 61215 or IEC 61646

The construction requirements contained in clauses 4.1 to 4.12.1 must also be clearly addressed and documented in the form of a checklist or equivalent. Testing requirements in these clauses shall be completed as required. Documented evidence must be provided to support the acceptance of polymeric materials, components and their compliance to the appropriate material or component standard.

- b) PV panels that have been tested to IEC 61215 or IEC 61646 will require additional testing. The additional testing will be limited in scope to the essential safety considerations. In addition to the mandatory tests contained in SPE-1000, the following additional tests are required. These tests are considered a minimum in the absence of other information. The FE agency may consider other additional safety-critical tests.

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Additional testing requirements:

ULC ORD/C1703:

- cl. 5.4 Leakage current
- cl. 5.5 Strain Relief
- cl. 5.6 Push test
- cl. 5.7 Cut test
- cl. 5.8 Bonding Path Resistance test
- cl. 5.9 Dielectric Voltage –withstand test( dc)
- cl. 5.10 Wet-Insulation resistance test
- cl. 5.11 Reverse Current overload test
- cl. 5.14.2, 5.14.3 Spread of flame and burning brand tests

Note:

- the requirements of cl 5.14.2, 5.14.3 may be waived provided that each PV panel marking and approval label clearly indicates that the panel is **intended for use on ground only and not intended to be attached to any building or mounted on roof tops**. The other flammability tests specified in UL 1703 section 4 are required to be verified in all cases

In addition, the water spray and humidity test requirements cl 5.15 and 5.18 are required, which means the dielectric and leakage current tests must be repeated as part of the overall testing.

ULC ORD C1703 also considers the sequence in which testing is performed, and this needs to be considered by the FE agency when conducting the above tests.

The construction requirements contained in clauses 4.1 to 4.12.1 must also be clearly addressed and documented in the form of a checklist or equivalent. Testing requirements in these clauses shall be completed as required. Documented evidence must be provided to support the acceptance of polymeric materials, components and their compliance to the appropriate material or component standard.

- c) PV panels which have been evaluated and tested to other IEC standards than what has been identified in these guidelines are beyond the scope of these guidelines.
- d) In all cases the above guidelines are considered a minimum in the absence of other information. The FE agency may consider other factors and safety critical tests in addition to what is in the guidelines to ensure a complete evaluation of the PV panel to the essential safety considerations.

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## **5. Reporting Serious Electrical Incidents or Accidents or Defects and Corrective Action**

Clause 8(2) of Ontario Regulation 438/07 requires that a certification body or field evaluation agency that becomes aware of a serious electrical incident or accident or a defect in the design, construction or functioning of an electrical product or device that was the subject of a report given by the certification body or field evaluation agency that affects or is likely to affect the safety of any person or cause damage to property shall report to the Authority as soon as practicable after becoming aware of the serious electrical incident or accident or defect.

Field evaluation agencies under their accreditation requirements are responsible for taking certain type of corrective actions (see SCC's CAN-P-1527). In addition to the SCC requirements the FEA shall meet its obligations under section 113 of Part VIII of the Electricity Act and the Product Safety Regulations 438/07 and work with the responsible parties and the ESA to resolve identified safety concerns with products they evaluated. See section 8 and 9 of Ontario Safety Regulation 438/07.

## **6. Requirements for FE agency to assist ESA in an investigation**

Field evaluation agencies shall be expected to provide available information or information that they would obtain through their normal processes to investigate an accident, incident or defect with a product they evaluated. This includes the following:

1. Responding to Product Incident Reports (PIR's) issued by ESA staff ,the FE agency shall provide all relevant information on any and all similar incidents with the same or similar product types that may provide evidence of a pattern of failure, a product defect or any other safety concern.

For the purposes of the regulation, the preliminary report should include as a minimum:

- a. The number of all reports to either the FE agency or the manufacturer of similar issues with either the same component or same product type but different model or color; or
  - b. any information that would establish a trend of a similar or same component failure; or
  - c. any similar incidents or design issues with similar components; and/or
  - d. identification of the design issue that could be the root cause of the suspected product defect.
2. Providing assistance in the investigation and assessment of accidents, incidents or defects involving products were evaluated as outlined below:

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When requested, the evaluator shall be expected to provide assistance in determining the root cause of the defect in the product, which may include testing of the product in question.

When requested, the FE agency shall assist in determining the appropriate corrective action that may be required to protect public safety.

For these investigations, there shall be a mutually agreed upon scope of work, timelines and outputs.

To respect confidentiality, test facilities and test results shall remain confidential unless maintaining confidentiality could result in undue hazard to the public.

### 3. Provide consultation on development of a corrective action as outlined below:

When requested, the FE agency shall provide assistance in consultation with ESA and the involved manufacturer, retailer, distributor or importer to determine and evaluate an appropriate corrective action when the need for such has been confirmed.

As indicated by the regulation, a FE agency would only be requested to provide assistance for products that they had evaluated.

ESA is making its prioritization methodology available to stakeholders to enhance the transparency of their decision-making processes and to better enable the responsible party (ies) assist and cooperate with ESA.

## **7. Obligations of FE agency**

The following are obligations recognized field evaluation agencies shall meet for products that bear their label:

1. their accreditation requirements as outlined in the latest applicable SCC policies and procedures. A complete list of SCC requirements is available at [www.scc.ca](http://www.scc.ca);
2. their obligations as outlined in Regulation 438/07, this guidelines document and any order issued by ESA under section 113(11) of the *Electricity Act, 1998*; and
3. any additional requirements contained in the terms and conditions that form part of the ESA formal recognition process.

For more information about Ontario Regulation 438/07 and the established guidelines, please visit [www.esasafe.com](http://www.esasafe.com).

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## 8. Reference Publications:

- a. Ontario Electrical Safety Code ,latest edition
- b. Directors Order OESC-01-07
- c. Ontario Regulation 438/07 Product Safety
- d. Final Industry Guidelines for the Management of Electrical Product Safety
- e. SPE1000-99 “Model Code for the Field Evaluation of Electrical Equipment” with amendments as identified in Section 3 of the Ontario Electrical Safety Code.
- f. CAN-P-1527 “Corrective action”