

GUIDELINES FOR
**Field Evaluation
Agencies**





**Electrical
Safety
Authority**

Guidelines for Field Evaluation Agencies

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**The Electrical Safety Authority
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Guidelines for Field Evaluation Agencies

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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 Field Evaluation (FE) agencies shall follow.
- B. This guideline is not intended as a design specification or a replacement for CSA SPE-1000 Model Code for the field evaluation of electrical equipment and SPE-3000 Model Code for the field evaluation of medical electrical equipment and systems 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 Reviews and Appeals** means a person appointed by the Electrical Safety Authority, authorized by the ESA and the legislation.
- 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.
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** (FE 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 Electrical Safety Authority.
- E. **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)
- F. **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)
- G. **Complex installation** (multiple interconnected system) – power-driven devices or assemblies designed to work together, including interconnecting wiring, which may

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run through, under, or upon a building, and may receive power from more than one source.

3. Scope

- A. Field Evaluation shall apply to electrical equipment as identified in the Scope of SPE-1000 and medical electrical equipment and systems as identified in the Scope of SPE-3000.
- B. Field evaluation does not apply to:
- i) Wire and cable products;
 - ii) Wiring devices;
 - iii) Equipment for use in hazardous locations;
 - iv) Equipment connected to line voltage in excess of 46kV;
 - v) Manlifts, elevators, climb assists and similar systems (other than their associated control panels);
 - vi) Components that will require further evaluation as part of a complete assembly, such as switches, relays, and timers;
 - vii) Any equipment that is not permitted to be field evaluated as directed by an AHJ (such as air-cleaning equipment that intentionally produces ozone)

In addition to exclusions above contained in the scope of SPE-1000, ESA excludes the following products from FE (see Section 8 for details):

- viii) Any cord connected, plug-in or permanently connected air quality equipment that intentionally produces ozone;
- ix) Swimming pool salt water chlorinators;
- x) Multimeters;
- xi) Infrared saunas where the heaters do not bear a component certification mark;

In addition to exclusions described above, ESA sets limitations on FE for the following product:

- xii) Baby spas or similar equipment.

- C. FE shall be limited to electrical equipment of not more than 500 units of the same model per year per FE agency. Quantities above 500 units requires that the FE agency obtains prior permission from the Electrical Safety Authority.
- 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.F. and 4.G., and labelled in accordance with 4.H.

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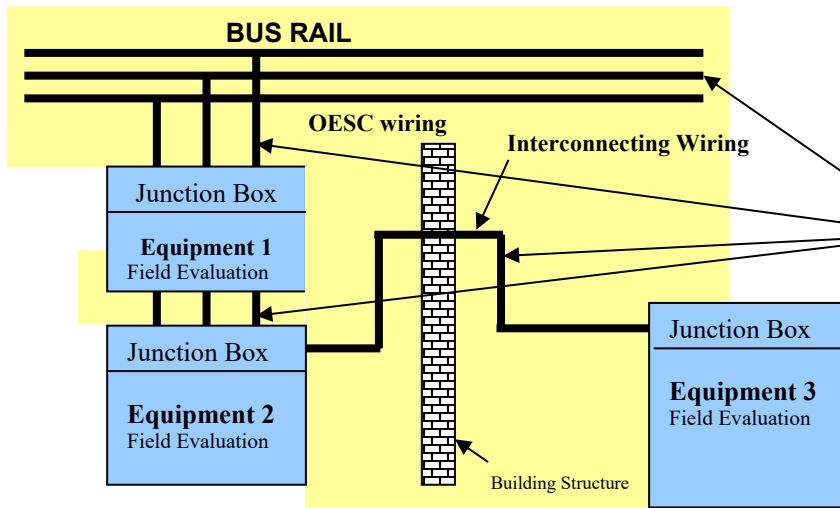


Figure 1

Any wiring run on, through, under, upon, or within the building structure forming part of the electrical installation requires a Notification to be filed with ESA (OESC Rule 2-004) and shall meet the requirements of the OESC. As such, any portion of the installation which requires a Notification of work cannot be included as part of a SPE-1000 Field Evaluation.

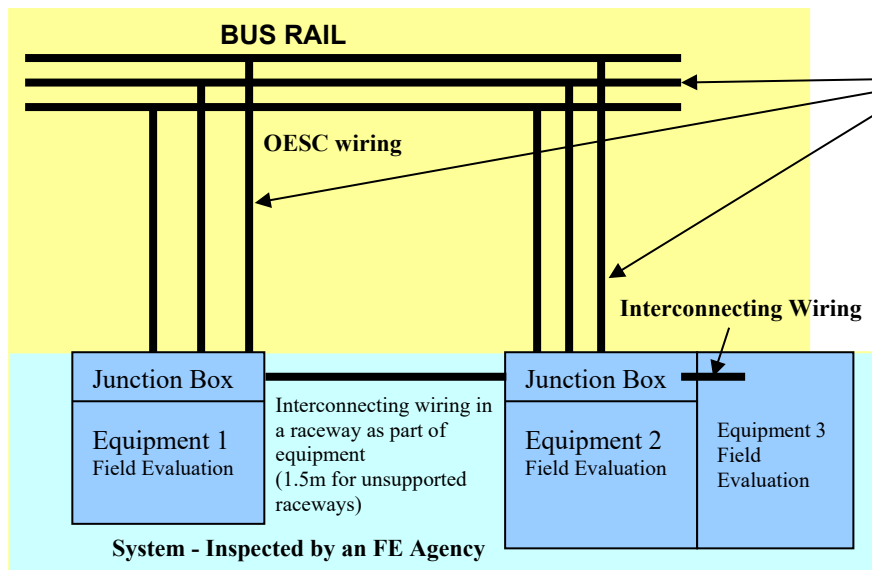


Figure 2

4. Direction

- A. As per Section 2 of Ontario Regulation 438/07, Deemed approvals, the electrical product or device is approved if it conforms to the applicable standards for the electrical product or device.
- B. FE agency will contact the manufacturer to educate and reinforce the principle of certification of product before it arrives in Ontario.
- C. When an FE agency has undertaken the evaluation of electrical equipment, with identified deficiencies to be corrected, the FE agency shall notify the Electrical

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Safety Authority if the deficiencies have not been corrected in a timely manner, or the customer cancels the FE.

- D. When an FE agency is evaluating equipment at the location where it is to be installed, the FE agency shall verify that a notification of work has been made for the connection of this equipment. Where there is no notification of work, the FE agency shall notify the Electrical Safety Authority prior to labeling the equipment.
- E. The FE agency shall maintain a record of all field evaluations reports and shall produce this report to the Electrical Safety Authority 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 information is to be included:
 - The manufacturer of all directly controlled and energized equipment including: The equipment serial number, Manufacturer name, etc.
 - The FE agency shall apply only labels published in the Electrical Safety Authority'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.
- F. Field Evaluation of complex installations

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 Electrical Safety Authority will discuss at the earliest opportunity to ensure that the scope of the FE agencies evaluation and scope of the Electrical Safety Authority wiring inspections are understood and coordinated.

- i. The contractor (equipment owner or user) shall be responsible for applying for a notification of work as per Rule 2-004 of the OESC for the interconnecting wiring.
 - ii. The FE agency shall contact ESA Product Safety by email Unsafe.Products@electricalsafety.on.ca or telephone 905-507-4949 ext. 5687 or ext. 7834.
- G. The FE agency shall notify the Electrical Safety Authority 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 FE agency 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.

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H. Application of FE labels on complex installations.

When a field evaluation of a complex installation/multiple interconnected system is performed by a single inspection body, each subsystem of the complex installation/multiple interconnected system shall be identified on a master label. The master label should be located on the first part of the system that receives power. Where the system is supplied by more than one source of power, the master label should be located on the main control panel.

The master label shall contain, at a minimum, the following information:

- i. Title: master or system label;
- ii. Unique identifier of each subsystem;
- iii. Field evaluation label (for the overall system); and
- iv. A statement that identifies whether the interconnecting wiring was evaluated as part of the complex installation.

I. Lighting retrofit kits installation

When retrofitted luminaires are field evaluated, the applicable warning labels shall be applied to the retrofitted luminaire.

The retrofitted luminaire shall be marked in accordance with CSA C22.2 No. 250.1 Retrofit kits for luminaire conversion.

J. Service Entrance Equipment

- i. Service equipment shall comply with the requirements of CSA C22.2 No. 0.19 disconnecting means and associated overcurrent devices, and shall be marked with the following or equivalent wording:

SUITABLE FOR USE AS SERVICE EQUIPMENT;
and
ACCEPTABLE COMME APPAREILLAGE DE BRANCHEMENT.

- ii. Transfer switch suitable for use as service entrance equipment shall comply with the requirements of CSA C22.2 No. 178.1 and shall be marked with the following or equivalent wording:

SUITABLE FOR USE AS SERVICE EQUIPMENT;
and
ACCEPTABLE COMME APPAREILLAGE DE BRANCHEMENT.

K. Energy Storage Systems

Field Evaluation shall be done by an accredited inspection body to the requirements of the SPE-1000 model code and applicable requirements of the ANSI/CAN/UL 9540-16 Energy Storage Systems and Equipment. When separate equipment is combined to form an ESS, these are to be considered as complex installations and interconnected wiring attached to the building structure needs to be installed as per

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the OESC and the complex installation marking requirement as per the Guidelines would apply (sections 4.F. – 4.H.)

Refer to ESA Bulletin 64-7-* for more information about ESS approval.

L. High Voltage Equipment

Refer to ESA Bulletin 36-15-* for more information about high voltage equipment approval.

5. Requirements for Corrective Actions

Field evaluation agencies under their accreditation requirements are responsible for taking certain type of corrective actions (see ISO Guide 27:1983). In addition to the SCC requirements, the FE agency shall meet its obligations under section 113 of Part VIII of the Electricity Act and Ontario Regulations 438/07 Product Safety 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 Regulation 438/07.

6. Requirements for FE agency to assist ESA in an investigation of industrial and commercial products

Field evaluation agencies shall provide 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:

- A. Responding to Product Incident Reports (PIR's) issued by ESA, 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:

- i. 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
- ii. Any information that would establish a trend of a similar or same component failure; or
- iii. Any similar incidents or design issues with similar components; and/or
- iv. Identification of the design issue that could be the root cause of the suspected product defect.

- B. 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 FE agency 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.

C. 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:

- A. 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;
- B. Their obligations as outlined in the Regulation 438/07, this guidelines document and any order issued by ESA under section 113(11) of the *Electricity Act, 1998*; and
- C. 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.

8. **Products Excluded from the Field Evaluation process under the Scope of SPE-1000**

In Section 3.B. of this document according to Sub-Clause 1.6 (h) of SPE-1000, ESA lists the following products, which shall not to be approved under SPE-1000:

(1) Cord connected, plug-in or permanently connected air quality equipment that intentionally produces ozone

Background: In 2003, Environment Canada and Health Canada declared ozone as a “toxic substance” under the Canadian Environmental Protection Act (CEPA), 1999, SCHEDULE 1 “List of Toxic Substances”.

Manufacturers are calling some of household plug-in air cleaners intended for use in occupied areas as "Air Cleaners", “Air purifiers” or "Air Fresheners" and avoid the use of the word "Ozone."

Air quality equipment intended for use in unoccupied areas by trained individuals that produces ozone create potential of toxic hazard and, therefore, should meet the requirements of CSA C22.2 No. 187 which includes provisions on ozone emission control, safety labelling and other measures.

Direction: Do not approve any cord connected, plug-in or permanently connected air quality equipment that intentionally produces ozone.

(2) Swimming pool salt water chlorinators

Background: A "Swimming Pool Salt Water Chlorinator" is an electrolytic cell and a control panel. The swimming pool water is made slightly salty. A plumbing fitting that has electrodes (electrolytic cell) is added to the water system. A control panel provides a low dc voltage to the plumbing fitting that holds the "electrolytic cell." This converts the salt water into chlorine that sanitizes the pool. Additional information can be found at: www.saltwaterchlorinators.com

There is a CSA standard C22.2 No. 218.1 that addresses obvious safety issues such as the supply voltage shorting out to the low voltage and limiting the leakage current to a safe limit in the salty water. But installation practices are not well defined (i.e. Can the electrolytic cell be on the far side of the pool remote from the control panel?). The package should be approved together (both the electrolytic cell and the control panel).

Direction: Due to the extensive leakage current testing required by the Standard used for certification of these devices, and that these tests are not reasonably achievable outside of a laboratory environment, Field Evaluation is not permitted on these products. In addition, there is opportunity for a primary fault to be imposed on the secondary circuit, elevating the leakage current to unacceptable levels in the salty water.

(3) Multimeters

Background: ESA has investigated a number of reported incidents concerning personnel injuries where a multimeter has failed. We have come to the conclusion that many incidents were a result of the multimeter being used on the wrong setting. Even though this constitutes to user error, this type of injury could have been avoided. One item that has been brought forward during ESA's investigation is the need to have

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multimeters certified to the current standard. A number of meters which ESA has investigated were field evaluated. The Model Code for Field Evaluation (edition SPE-1000-13) does not verify class rating as well as testing for any possible combination of rated input voltages, currents and resistances with different settings of function, and range controls. These different combinations shall not cause a hazard. The current CSA standard C22.2 No. 61010-1 has added provisions to safeguard against this.

CSA standard C22.2 No. 61010-1 has added a number of additional tests to multimeters which are not required by the SPE-1000-13. The SPE-1000-13 does not address the safety provisions that have been incorporated in the CSA standard C22.2 No. 61010-1.

Direction: Only multimeters that are certified in accordance with the CSA standard C22.2 No. 61010-1 will be accepted in the province of Ontario if they require certification. Multimeters will not be accepted if they are Field Evaluated to the SPE-1000 in the province of Ontario

(4) Infrared Saunas where the heaters do not bear a component certification mark

Background: In some cases, the Sauna represents high risk involving heaters, over temperature controllers and the wood enclosures etc. Therefore, it is not only required that all components be certified, but also certified for their very specific application. In addition, for the safety of the users, all the requirements of the sauna standard must be met.

Direction: The infrared saunas where the heater is not approved require to be certified under a certification program for safety reasons. Field Evaluation is not sufficient to satisfy the testing required under the Standard.

(5) Baby Spas or similar equipment

Background: Baby Spas are identified as products where babies are allowed to float in a tub, pool or similar vessel containing water with a floatation device around their necks. This type of equipment may contain various electrical components such as pumps, lights and control switches. Field Evaluation of these products are limited in their scope. The additional applicable requirements of the CSA Standard C22.2 No. 218.1-13 Spas, Hot Tubs and associated equipment, which may include destructive testing, cannot be done during Field Evaluation.

Direction: Field Evaluation of Baby Spas and similar equipment is not acceptable in Ontario as a method of approval. If the Baby Spas or similar product have been previously certified to the UL Standard 1563, then Field Evaluation of these products will be accepted in Ontario.

9. Reference Publications:

- a. Ontario Electrical Safety Code, latest edition
- b. Ontario Regulation 438/07 Product Safety
- c. SPE-1000 “Model Code for the Field Evaluation of Electrical Equipment”, latest edition
- d. ISO Guide 27:1983 Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity
- e. SPE-3000, Model Code for the field evaluation of medical electrical equipment and systems, latest edition.

10. Revision History

- July 4, 2022 - ESA SPEC-008 R1
- October 25, 2019 – ESA SPEC-008 R1
- March 24, 2014
- August 24, 2010
- September 13, 2002.