

## IEC/UL 60950-1 Application Guideline 1.5-1

STANDARD:	IEC/UL 60950-1
APPLICABILITY:	UL(C-UL)-only
(Sub)CLAUSE/ANNEX NUMBER:	1.5
(Sub)CLAUSE/ANNEX HEADING:	Components
OTHER RELEVANT (Sub)CLAUSES/ANNEXES (as Applicable):	Annex P

### DESCRIPTION OF ISSUE:

Type of Issue:  
**Certification**

Sub-clause 1.5 states that where safety is involved, components shall comply with either the requirements of the Standard or with the safety aspects of the relevant component standard.

What is the UL Certification Policy on acceptance of components in ITE certified by UL?

### APPLICATION GUIDELINE:

#### Introduction:

This UL Certification Policy is based on several basic premises:

- ITE certified by UL will be investigated to both U.S. and Canadian requirements and will be marked with both the UL and cUL marks. This is a valid assumption since UL 60950-1 is U.S./Canadian bi-national, and the UL ITE Certification Program includes UL and cUL as a base certification service offering.
- A UL certification (ITE w/appropriate UL Mark) includes both application of “technical” requirements from the published standard, and “certification” requirements based on UL Corporate policy.
- A “safety-critical component” – herein identified as a S-C Component – can range in scope from a single device serving a simple function (e.g., EMI filter) through a more complex sub-system serving multiple functions and consisting of multiple components (e.g., server blade sub-assembly w/embedded power supply).
- CSA/UL 60950-1 contains two component Annexes that provide guidance on the equivalency of, and differences between IEC, UL and CSA

components based on the technical requirements for the components. The information in Annexes P.1 and P.2 has been associated with the bi-national standard CSA/UL 60950-1 since its original publication in 1995 and provides key guidance on initial acceptance of components in ITE evaluated to the Standard.

- S-C Components in Annex P.1 are components for which the UL/CSA component requirements *replace* the IEC component requirements. Components designated with an “\*” are designated as components for which the UL and CSA standards have equivalent levels of safety within the meaning of UL 60950-1. Components designated with an “\*\*” are components for which the UL and CSA components are equivalent except under conditions specified in the table (which for the most part are the exception to the rule).
- S-C Components in Annex P.2 are components for which the UL/CSA component requirements *may alternatively satisfy* the IEC component requirements. The introduction to Annex P.2 states that in the U.S. and Canada these components are considered an acceptable alternative to the reference IEC component standard.
- Note: The component requirements specified in Annexes P.1 and P.2 are Canadian/U.S. National Differences and may not be compatible with IEC 60950-1 and IECEE CB Scheme requirements.
- Components that do not serve a “safety critical function” are not subject to this policy and generally may be accepted regardless of the type of certification or mark associated with them, if marked at all.
  - For components used in ITE, the determination of whether they

serve a “safety critical function,” will be made during the engineering investigation through a “component hazard analysis.” Such an analysis will determine could the operation of the component under normal and single fault conditions result in a subsequent condition that results in an increased risk of fire, electric shock, energy, heat, mechanical radiation, chemical or similar hazards in the end product. Components that could present such potential hazards under normal and single-fault conditions are considered “safety critical.” Components that would pose no such hazard are considered “non safety critical” and are not subjected to this policy.

#### **Policy:**

When UL considers S-C Components in ITE intended to be marked with the UL Mark, the policy described below is applied based on the mark or marks associated with the S-C Component being considered.

There are three general scenarios associated with this policy: **Scenario No. 1:** S-C Component marked with UL Mark; **Scenario No. 2:** S-C Component marked with CSA mark and/or CSA NRTL mark only; **Scenario No. 3:** S-C Component marked with mark(s) of other U.S. (NRTL) and Canadian (SCC) testing laboratories only.

#### **Scenario No. 1:**

**S-C Component marked with UL Mark: (may additionally be marked with the cUL mark, or CSA mark or CSA NRTL mark)**

(a) If the S-C Component is specified in Annex P.1 or P.2, the UL Mark satisfies both UL and cUL and no further evaluation applies other than consideration of any applicable conditions of acceptability.

The UL Report will describe the component

and UL certification.

(b) If the S-C Component is specified in the body of the Standard but not Annex P.1/P.2 (e.g., S-C Component required to comply with IEC component standard as required by sub-clause 1.5.1), the UL Mark satisfies both UL and cUL “certification requirements.” The “technical requirements” also are met if the S-C Component has the Mark of, or a CB Certificate from an accredited NCB that participates in the IECEE CB Scheme for the component category (e.g., 60127/PROT), which may include UL for some components for which UL has IEC-harmonized component standards. For NCBs also participating in the CENELEC ENEC Mark Program, the ENEC Mark, which includes a two-digit number that identifies the certification organization, may be accepted as an alternative to the NCB’s own mark.

The UL Report will describe the component and UL certification mark, and the mark of an accredited NCB, if applicable.

(c) If the S-C Component is a sub-system consisting of multiple S-C Components (such as a server blade) and was certified to a CSA/UL 60950 series standard, the UL Mark on the S-C Component satisfies both UL and cUL and no further evaluation required, other than consideration of any applicable conditions of acceptability if the component was Component Recognized.

The UL Report will describe the component and UL certification.

#### **Scenario No. 2:**

##### **S-C Component marked with CSA mark and/or CSA NRTL mark only (non-UL):**

(a) If the S-C Component is specified in Annex P.1 or P.2, the CSA Mark satisfies the “technical” requirements of CSA/UL 60950 series standards, pending a review of the CSA Report, including Test Record, and consideration of any applicable conditions of acceptability. Testing of the S-C Component will take place in the end product. Exception: Switches (per Annex P.1 (2.8.7, 3.4) are

required to comply with the appropriate UL component standards.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the “**UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service**” section of this Application Guideline (see below).

The UL Report will describe the component and CSA certification, and either the Unlisted Component information, or Component description information depending on the selected UL Follow-up Service Option.

(b) If the S-C Component is specified in the body of the Standard but not Annex P.1/P.2 (e.g., S-C Component required to comply with IEC component standard), the “technical requirements” are met if the S-C Component has the Mark of, or a CB Certificate from an accredited NCB that participates in the IECEE CB Scheme for the component category (e.g., 60127/PROT), which may include UL for some components for which UL has IEC-harmonized component standards. For NCBs also participating in the CENELEC ENEC Mark Program, the ENEC Mark, which includes a two-digit number that identifies the certification organization, may be accepted as an alternative to the NCB’s own mark. Testing of the S-C Component will take place in the end product.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the “**UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service**” section of this Application Guideline (see below).

The UL Report will describe the component and CSA certification, and either the Unlisted Component information, or Component description information depending on the selected UL Follow-up Service Option. The

mark of an accredited NCB also will be indicated, if applicable.

(c) If the S-C Component is a sub-system consisting of multiple S-C Components (such as a server blade) and was certified to a CSA/UL 60950 series standard, the CSA Mark satisfies the “technical” requirements of CSA/UL 60950 series standards, pending a review of the CSA Report, including Test Record, and consideration of any applicable conditions of acceptability. Testing of the S-C Component will take place in the end product.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the “**UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service**” section of this Application Guideline (see below).

The UL Report will describe the component and CSA certification, and either the Unlisted Component information, or Component description information depending on the selected UL Follow-up Service Option.

### **Scenario No. 3:**

#### **S-C Component marked with mark(s) of other U.S. (NRTL) and Canadian (SCC) testing laboratories only (non-UL):**

(a) If the S-C Component is described in Annex P.1 or P.2, the other Mark may satisfy the “technical” requirements of CSA/UL 60950 series standards, pending a review of the Certifier’s Report, including Test Record, and consideration of any applicable conditions of acceptability. A higher level of testing than normal on the S-C Component in the end product may be necessary depending on the function/complexity of the component.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the “**UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That**

**Have Not Previously Been Subjected to UL Follow-up Service”** section of this Application Guideline (see below).

The UL Report will describe the component and NRTL- or SCC-accredited certification, and either the Unlisted Component information, or Component description information depending on the selected UL Follow-up Service Option.

(b) If the S-C Component is specified in the body of the Standard but not Annex P.1/P.2 (e.g., S-C Component required to comply with IEC component standard), the “technical requirements” are met if the S-C Component has the Mark of, or a CB Certificate from an accredited NCB that participates in the IECEE CB Scheme for the component category (e.g., 60127/PROT), which may include UL for some components for which UL has IEC-harmonized component standards. For NCBs also participating in the CENELEC ENEC Mark Program, the ENEC Mark, which includes a two-digit number that identifies the certification organization, may be accepted as an alternative to the certification organization’s own mark. A higher level of testing than normal on the S-C Component in the end product may be necessary depending on the function/complexity of the component.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the **“UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service”** section of this Application Guideline (see below).

The UL Report will describe the component and NRTL- or SCC-accredited certification, and either the Unlisted Component information, or Component description information depending on UL Follow-up Service Option. The mark of an accredited NCB also will be indicated, if applicable.

(c) If the S-C Component is a sub-system consisting of multiple S-C Components (such as a server blade) and was certified to a

CSA/UL 60950 series standard, the other Mark may satisfy the “technical” requirements of CSA/UL 60950 series standards, pending a review of the NRTL/SCC Report, including Test Record, and consideration of any applicable conditions of acceptability. A higher level of testing than normal on the S-C Component in the end product may be necessary depending on the function/complexity of the component.

To satisfy the UL “certification” requirements, the SC Component also is required to be subjected to UL Follow-up Service as described in the “**UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service**” section of this Application Guideline, see below.

The UL Report will describe the component and NRTL- or SCC-accredited certification, and either the Unlisted Component information, or Component description information depending on the selected UL Follow-up Service Option.

#### **Other Scenarios:**

Other more unique scenarios will be addressed on a case-case basis, following the requirements in the Standard, the principles in this Application Guideline, and in conjunction with the input of the UL Principal Engineer for ITE. This Application Guideline/Policy will be periodically updated as needed as further global technical and certification considerations dictate.

#### **UL Continuing Compliance Surveillance (Follow-up Service) Options for S-C Components That Have Not Previously Been Subjected to UL Follow-up Service:**

For S-C Components that have not previously been subjected to UL Follow-up Service (Scenarios 2-3 above), manufacturers integrating these components into their product/system have the following options to satisfy UL Certification requirements, including UL Follow-up Service:

**Option A:** An alternate component that is already UL Recognized or Listed may be identified and substituted for the non-UL Certified component. UL may be able to assist in a search for such alternate components and may be able to accomplish the substitution without additional testing based on the test data in the UL component report. Where possible, generic descriptions for UL Listed or Recognized Components can be included in the end-product description to allow component substitutions, as applicable.

**Option B:** An (Regular or Unlisted) Component Procedure Volume will be established, which will include a description of the S-C Component, and which will entail UL Follow-up Service at the manufacturing facility(ies) where the S-C Component was originally manufactured.

**Option C:** The S-C Component will be described in moderate detail in the end-product UL Follow-up Service Procedure, and the UL Follow-up Service will be conducted at the manufacturing facility(ies) where the end product is manufactured, typically relying on a visual inspection of the S-C Component in conjunction with a review of any necessary vendor certifications.

**Option D:** The component and its associated certifications are to be described in the end product report, if it can be validated by markings on the component that the component is certified by CSA to UL 60950-1 (this would also include a review of the component report as described above to determine conditions of use, rating and the appropriate edition of standards used, etc.) and the component is additionally certified under a program that includes control of quality process elements at the manufacturing location via periodic audits (examples of such certifications include, GS, D, CCC, etc.)

**Note:** This option is only applicable for ITE components certified in accordance with UL 60950-1 (components typically covered under UL's Categories of Information Technology Equipment (NWGQ/2) or Power Supplies – For Use in Information Technology Equipment (QQGQ/2)).

**RATIONALE:**

The bi-national standard, CSA C22.2 No. 60950-1/UL 60950-1, is a joint UL and CSA publication containing identical requirements. A single standard is used in the U.S. and Canada, and all requirements are applicable whether the product will be introduced into both the U.S. and Canada, or the U.S. or Canada individually. The standard is developed using a consensus process, with input provided from UL, CSA, the IT and telecommunications industries, authorities having jurisdiction (AHJs), and other interested parties who provide public comments.

Since components are an integral part of any certified ITE, they must comply with the applicable technical requirements for the component. The process for identifying the “technical requirements” for components is outlined in sub-clause 1.5, Components. This sub-clause describes the basic philosophy for considering technical requirements for safety critical components used in equipment falling under the Scope of this Standard.

In summary,

- a component that has been demonstrated to comply with a standard harmonized with the relevant IEC component standard is to be checked for correct application and use in accordance with its rating. It is to be subjected to the applicable tests of this standard as part of the equipment with the exception of those tests that are part of the relevant IEC component standard;
- a component that has not been demonstrated to comply with a relevant standard as above is checked for correct application and use in accordance with its specified rating. It is subjected to the applicable tests of this standard, as part of the equipment, and to the applicable tests of the component standard, under the conditions occurring in the equipment;
- where no relevant IEC component standard exists, or where components are used in circuits not in accordance with their specified ratings, the

components are tested under the conditions occurring in the equipment. The number of samples required for test is, in general, the same as required by an equivalent standard.

However, in CSA/UL 60950-1 there also exists a Component (DC) Deviation in sub-clause 1.5.1 that supplements the basic IEC 60950 technical requirement for components and states (a) all requirements in IEC component standards are replaced by UL (or CSA) component standards if listed in Annex P.1; and (b) UL (or CSA) component can replace stated IEC component requirements if listed in Annex P.2.

This DC Deviation in the body of UL 60950-1 sets the foundation for the UL component acceptance policy: the technical requirements in UL and CSA Standards listed in Annexes P.1 and P.2 either replace, or are permitted alternatives to IEC component requirements. As a result, the resulting certification strategy is structured in such a way that there is acknowledgement that some components will not be evaluated to UL component standards.

When considering UL “certification requirements” associated with this bi-national standard, one has to keep in mind that UL 60950-1 does not document certification requirements in the body of the Standard. The Standard only documents technical requirements. Therefore certification requirements associated with UL Corporate policy need to be communicated outside of the Standard. While UL believes that the application of certification requirements should be flexible, it is also important that they be structured enough to maintain the integrity of the UL Mark and what it represents as it is placed on UL certified products.

As stated in the Guideline, components certified by other agencies may be accepted in end products certified by UL. Whether components have been certified by others or are covered under UL's Component Recognition Program, the objective is the same; namely to simplify the investigation of the end product.

Continuing compliance or follow-up surveillance is a key aspect of a UL certification. Reasonable assurance that a product or component continues to be manufactured in a manner consistent as that reviewed during the original type investigation is a large part of what a UL Mark means. To this end, UL will verify that the organization has testing capability and follow-up surveillance for the components they certify that approximate UL's.

When considering components certified by other organizations other than UL, key is that there be confidence that the technical evaluation is properly done and the component is subjected to a level of follow-up surveillance similar to that required by UL.

In each case, available information such as accreditations, MOUs, data sheets, test reports and similar information will be used and reviewed to assist in the determination of the suitability for use of the component in an end product Listed by UL.

The information discussed in this Application Guideline demonstrates UL's commitment to the principle that equipment with the UL Mark means that the equipment meets the technical requirements associated with the applicable standard, in addition to being subjected to a system of production monitoring to provide this assurance on a continuous basis. This principle enables users of the equipment, and regulatory and inspection authorities to be confident that the product has been evaluated to all the relevant safety requirements. UL considers this principle to be consistent with the fundamental purpose of a binational standard (as agreed to by UL and CSA) and, therefore, the integrity of the bi-national standard is not compromised.

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**OTHER:**

Comments:

Interpretation Systems:

**RELATED APPLICATION GUIDELINE(S):**

NONE

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