



Purpose and Scope

The commissioning and testing of integrated fire protection and life safety systems within a building is governed by CAN/ULC – SI 001. The complexity of these systems and their interaction is dependent on the size, occupancy classification, construction type, applicable code requirements, and installation and performance standards governing individual systems and proprietary products.

Overview

CAN/ULC SI 001 outlines a process for verifying and documenting that fire protection and life safety systems work together and are tested to ensure their interdependent functionality. It supports the requirements for integrated system testing specified in the National Building Code (NBC (AE)) and National Fire Code (NFC (AE)). CAN/ULC SI 001 does not evaluate individual systems; instead, it assesses how these systems interact. Individual systems must still meet their respective standards and installation guidelines.

The testing categories in CAN/ULC SI 001 include assessing newly installed integrated systems in new buildings, evaluating upgraded or modified systems in existing buildings with prior integrated testing, retroactively testing systems that have not undergone initial integrated testing, and conducting periodic retesting of previously assessed systems as part of a maintenance program.

Fire and Life Safety Systems Considered*

- Fire alarm system
- Fixed fire suppression systems
- Mass notification systems
- Cooking suppression systems
- Elevators hold-open devices

- Audio visual and lighting control systems
- Electromagnetic locks
- Notification systems
- Smoke control systems
- Hazardous protection monitoring
- Smoke alarms
- Standpipe systems
- Pre-action systems
- Fire pumps
- Water supply control valve
- Water supply
- Freeze protection systems
- Sprinkler systems
- Emergency generators and power supply

*List is not exhaustive

Integrated Testing Plan

An integrated testing plan must be developed and implemented by an integrated testing coordinator, as defined in CAN/ULC SI 001-11. This coordinator is responsible for overseeing the plan’s creation and execution.

The plan must be submitted to the Authority Having Jurisdiction (AHJ) upon request before a building permit is issued.

Integrated Testing Coordinator

Integrated systems testing must be conducted by a professional engineer with a valid certificate of authorization or a ULC-certified Integrated Testing Coordinator. This individual, along with their accreditation and professional designation, must be identified on the Confirmation of Commitment by Owner form before a building permit is issued.



ULC Integrated Testing Coordinator Qualification

Underwriter Laboratories of Canada (ULC) has established a program for qualifying integrated testing coordinators. Only service providers assessed and qualified by ULC can assume the role of integrated systems coordinator. ULC advises that companies verifying fire alarm systems under CAN/ULC-S537 should not conduct integrated systems testing on the same building under CAN/ULC-SI 001. In case of a conflict, the Authority Having Jurisdiction (AHJ) may evaluate the situation and approve or reject acceptance.

Commissioning, Verification and Testing of Individual Fire Protection and Life Safety Systems

CAN/ULC – SI 001 requires all initial testing, commissioning and verification of individual fire protection and life safety systems to be completed prior to the integrated systems testing.

The person(s) responsible for acceptance testing of each system(s) are required to submit verification and commissioning reports to the building official in advance of a scheduled integrated systems test demonstration.

Testing of Integrated Systems

CAN/ULC SI 001 outlines categories of testing for new and existing buildings including mandating a schedule for follow up testing (maintenance) of fire protection and life safety systems beyond the completion of the construction.

Renovation & Extension of Existing Buildings Previously Tested

Where a fire or life safety system is modified or extended and the system was previously tested under CAN/ULC-S1001, only the portions affected by the alteration will require testing. The report addressing the previous test is required to be provided as a condition for accepting prior testing of existing systems.

Systems Not Previously Tested

Where an existing building undergoes construction (addition, alteration, or renovation), modified or extended fire or life safety systems that were not previously tested under CAN/ULC-SI 001 are required to be tested in accordance with the standard. Provision for testing the existing system is required to be identified in the integrated testing plan.



Maintenance of Existing Buildings

CAN/ULC — SI 001 includes provisions for ongoing monitoring and maintenance of integrated fire protection and life safety systems. It is the owner's responsibility to ensure the integrated systems are re-tested within intervals not exceeding 5 years in all categories listed in the standard.

Phased Occupancy

CAN/ULC SI 001 allows for phased occupancy of a building, provided the integrated testing plan meets the following conditions:

- The plan is developed for the entire building, accounting for the integrated tests required for each occupancy phase.
- The integrated systems are tested for proper operation in each area to be occupied during the phased occupancy.
- The provisions for phased occupancy comply with NBC(AE) conditions, including substantial completion.

Integrated Systems Testing Report

A final integrated testing report is completed by the integrated testing coordinator. As specified by CAN/ULC — SI 001, the report shall consist of the Integrated Testing Plan, documentation collected during integrated testing implementation phase, integrated testing forms for initial test, integrated testing forms for re-tests and schedules for life cycle and maintenance testing.

The final integrated test report may be submitted prior to occupancy or partial occupancy of a building or suite where phased construction is authorized. The final integrated test report is required to be submitted to the building official as a condition of final inspection.

CAN/ULC SI 001 also provides templates and sample forms to assist in preparing the plan, testing procedures, and the final integrated test report. Sample Integrated Testing Plan is provided in Appendix C of "CAN/ULC-SI 001-11 -REVI ", which is available for free viewing on shopulstandards.com (user account required).



Appendix – Checklist for Integrated Testing Report Requirements

General

Date of test and building being tested clearly identified	
Type of Integrated Systems Test Clearly Identified (Initial, Periodic, Retro, Modifications)	
Integrated Testing Coordinator Identified (with credentials noted)	
Participants are required to be present identified & confirmed present for testing	

Forms

Integrated Testing Plan* (see 'Specifics' below for the items required)	
Integrated Testing Forms	
Integrated Testing Re-test Form	
Documents required by Subsection 5.3 (confirmations, system verifications, etc.)	
Report clearly indicates: Testing Passed	
Report provided to owner, AHJ, and maintained on building site.	

Specifics – Integrated Testing Plan (ITP) includes the following:

Functional objectives of system integration	
Sequence of operations of systems (normal & fire conditions)	
Test procedures and results	
Procedure for notifying building occupants of the test	
Alternate measures to ensure occupant safety during the test	

Documentation required prior to testing provided with report:

Written confirmation from design professionals that system(s) are ready to test	
Written confirmation from installation contractors that system(s) are ready to test	
Verifications for each system (e.g., Fire alarm verification, Sprinkler Material and Testing Certificate, etc.)	



Appendix – Checklist for Integrated Testing Report Requirements

Confirmation that electrical inspection completed (if available)

Confirmation that elevator/escalator inspections done (if available)

Confirmation that building occupants have been notified

Confirmation that alternative safety measures have been implemented

Testing

Clearly show conformance to Section 6 for all applicable systems

Clearly indicate where previous system verification is being relied upon

Signatures provided from responsible parties for each system confirming passed

Timeline for next test identified

Failures noted, with re-testing showing passing result