

Zone Enhancers

Acronyms in the Glossary on Page 2.

Zone enhancer devices such as a bi-directional amplifier (BDA) are used to increase in-building radio coverage. To operate a zone enhancer for in-building coverage using public safety radio frequencies, an Innovation, Science and Economic Development Canada (ISED) licence and authorization from CREST is required. During the design of a new building, plan for the addition of zone enhancer system as it may be required. This document will cover the process to apply for authorization.

Application Process

An Owner/Developer will hire a CREST authorized designer and installer of zone enhancers (CADI) to perform the following:

- An initial test application form will be sent to CREST with a request for a date of testing. The application will include the site location and the applicant's contact information. The requested coverage test date must be at least 3 business days from the date of submission.
- Crest will provide a tracking number CR-BDA_####, the name and location of the donor site and the testing frequency. The tracking number will be used in all correspondence moving forward.
- The coverage results will be sent to CREST. If the in-building coverage is insufficient, a design for a distributed antenna system (DAS) and zone enhancer licence application will be submitted.
- CREST will apply for a licence with ISED after reviewing the design and application. CREST is the Frequency Licence Holder and will hold the licence for all zone enhancers using the public safety radio frequencies in the Capital Regional District.
- During the waiting period, the DAS can be installed. The zone enhancer is not permitted to be connected or switched on.
- Once the licence is granted from ISED, CREST will provide a notification that work may proceed and a commissioning date can be set. This is not approval to switch on the zone enhancer. The zone enhancer may be switched on during commissioning then must be switched off.
- Final authorization will be granted after the commissioning results, final design and calculations have been submitted and approved by CREST. Once approved the zone enhancer can be switched on permanently. These documents must be reviewed and sealed by a Professional Engineer.
- After Crest has reviewed these documents a notice of final authorization will be sent to the designated party. This will include the ISED license number and CREST tracking number.

Once approved, a test should be conducted with the respective fire department in accordance with the municipalities Fire Code Bylaw.

Annual Inspection

An annual inspection must be performed, and the form submitted to CREST. This is a requirement for the renewal of the zone enhancer license. Failure to inspect the installed zone enhancer will result in the involvement of the respective fire department.

Every five years, an in-building coverage test must be submitted with the annual inspection form. Any required changes to the design of the zone enhancer system must be reviewed and accepted by a Professional Engineer. Once approved, design changes will be submitted to CREST.

Test Methodology

CREST will assign a test channel and turn on a V.52 test pattern. The testing agency will use this frequency and test pattern for measuring Bit Error Rate (BER) and Received Signal Strength Indicator (RSSI).

Coverage Testing Thresholds

The criteria to pass:

- Minimum RSSI of -95.0 dBm.
- BER of 2.0% or lower.

95% of all areas on each floor must pass, with no two adjacent grid failures. 99% of all critical areas must pass. Critical areas include mechanical rooms, electrical rooms, elevator lobbies, stairways and exit passageways. These strict thresholds are in place to account for degradation to the radio signal due to weather, as well as objects that will be added in the building after testing.

If a building has insufficient coverage, a zone enhancer will be required.

Glossary

Term of Acronym	Definition or Meaning
BDA	Bi-Directional Amplifier
BER	Bit Error Rate
CADI	CREST authorized designer and installer of zone enhancers
CREST	Capital Region Emergency Service Telecommunications Inc.
DAS	Distributed Antenna System
ISED	Innovation, Science and Economic Development Canada
RSSI	Receive Signal Strength Indicator