Note: Items in **RED BOXES** all reference requirements stipulated in CAN/ULC-S524-06 (current Fire Alarm Installation Standard referenced by NBC 2010) or NBC 2010, and will result in a FAILED Verification Appendix "C" report (CAN/ULC-S537-04) and create additional issues in the ANNUAL test report (CAN/ULC-S536-04) if the equipment is installed as a **PRIMARY** signalling means. In addition anyone with an existing home automation system that uses power-line technology (X-10) may create problems for the Fire-Link® II System. We have elected to include an isolator in our example to provide maximum protection of the in-suite signal circuit. This is a "best case" scenario (also referred to as "good engineering practice").

In-suite Buzzer **with Isolator**	Fire-Link® II In-suite Signalling Appliance
PURPOSE: As the **PRIMARY** signalling means in units of a residential occupancy. NBC 2010 requires 75dBA at the pillow with all doors between the in-suite signalling appliance and the bedrooms closed. Most designs we have reviewed require buzzers IN the bedrooms in order to ensure compliance.	**PURPOSE:** As a **SUPPLEMENTAL** signalling means, the intent behind the ULC Listing is to provide a RETROFIT solution that achieves compliance with NBC 2010 audibility requirements for buildings constructed to a pre-2005 Code only (or where hard-of-hearing tenants require a VISUAL signalling means to augment the audible component already installed). Fire-Link® II cannot be considered as a **PRIMARY** signalling means for new construction or in an upgrade that requires modern Code compliance.
CAN/ULC-S524-06 requires a minimum height of 1200mm and maximum of 1400 mm above the floor to the centre of the silencing means (It's normally mounted next to the bedroom light switch).	The typical household outlet is installed at 350mm, and not normally in an ideal location for this purpose (can be covered by furnishings or draperies). Automatic FAIL. CAN/ULC-S524-06 Clause 5.4.3.1
Located in the bedroom to guarantee 75dBA at the pillow.	Located in the bedroom to guarantee 75dBA at the pillow.
Separate signal circuit from common hallway notification appliances (NBC 2010 requirement).	Separate signal circuit from common hallway notification appliances (NBC 2010 requirement).
Signal circuit serves in-suite appliances in the floor area.	Signal circuit serves in-suite appliances with no differentiation for floor area. Automatic FAIL. NBC 2010 Clause 3.2.4.19(9)
Short on in-suite appliance will cause a trouble signal at the common control but will not affect buzzers installed in other suites served by the circuit.	Short on in-suite appliance may cause a FIRE in the suite, but should not affect other buzzers installed in other suites. Automatic FAIL. **We do not recommend this test be attempted.**
An "open" circuit fault on an in-suite appliance will cause a trouble signal at the common control but will not affect buzzers installed in other suites served by the circuit.	An "open" circuit fault (missing device), or local low battery will cause a trouble signal at the common control but will not affect buzzers installed in other suites served by the circuit.
Compromising the circuits in a suite will not affect other signal appliances on other floors (or in another floor area).	Compromising the circuits in a suite will not affect other signal appliances on other floors (or in another floor area).
Compromising the circuit AT THE COMMON CONTROL will not affect other signal appliances on other floors (or in another floor area).	Compromising the phase coupler or the circuits to which it's attached (considered a data buss) will take down the entire Fire-Link® II system and could damage the unit. Automatic FAIL. CAN/ULC-S524-06 Clause 4.2.7 **We do not recommend this test be attempted.**
Batteries in the common control provide emergency power for system (often a convenient single test point except for systems which may employ remote booster power supplies). Battery stand-by requirements must be tested at the Verification (CAN/ULC-S537) and during each annual test (CAN/ULC-S536)	Batteries in the common control interface unit and in each signalling appliance will have to be tested INDIVIDUALLY on an ANNUAL BASIS to conform with CAN/ULC-S536-04. How does the technician actually TEST the batteries in accordance with CAN/ULC-S536 and CAN/ULC-S537 requirements? There are NO INSTRUCTIONS we could find for this test provided by the manufacturer. As an ancillary appliance, testing of the batteries may also not apply (which raises a number of other concerns that relate to system operation in an extended power failure). Automatic FAIL. NBC 2010 Clause 3.2.7.8(3)
Both the Verification (CAN/ULC-S537-04) and Annual Inspection (CAN/ULC-S536-04) tests requires a technician to prove that the ENTIRE system will be able to continue to function in the presence of a single ground fault.	Faulting a Fire-Link® II appliance to ground may start a FIRE in the suite. A ground at the phase coupler will take down the entire Fire-Link® II system and could damage the phase coupler. Automatic FAIL. CAN/ULC-S524-06 Clause 3.3.1.5 **We do not recommend this test be attempted.**
	The manufacturer has inferred that an "approved" (and specific) *ULC Commissioning Test* for the Fire-Link® II system is to be performed in lieu of the testing mandated by CAN/ULC-S537. **** Please see page three of this document for further clarification.**

Code and Standard References:

CAN/ULC-S524-06 (Standard for Installation of Fire Alarm Systems)

Clause 5.4.3.1: "Where silencing means are separately installed or incorporated in the audible signal device, the silencing means shall be clearly identified and located not less than 1200 mm and not more than 1400 mm above the finished floor level measured from the centre of the silencing means."

Clause 4.2.7: "Where a data communication link utilizing active field devices or supporting field devices serves more than one National Building Code of Canada required fire alarm zone, a fault within one fire alarm zone shall not prevent the normal operation of other input or output field devices in another fire alarm zone, except as noted in Clause 4.2.8.
Note: See also Clause 3.3.1.9"

Clause 3.3.1.5: "Except as noted in Clause 3.3.1.6, each circuit of a fire alarm system shall be installed such that open circuit faults or ground faults shall not interfere with the operation of other circuits of the fire alarm system, and such faults shall initiate a trouble signal.
Note: In conventional two-stage systems, input circuits for first stage and second stage shall not share conductors."

NBC 2010 (British Columbia Building Code 2012)

Clause 3.2.4.19(9): "In a building or part thereof classified as a residential or care occupancy,

a) separate circuits shall be provided for audible signal devices on each floor area, and
b) audible signal devices within dwelling units or suites of residential or care occupancy shall be wired on separate signal circuits from those not within dwelling units or suits of residential or care occupancy.

(See A-3.2.4.19.(8) in Appendix A.)"

Clause 3.2.7.8(3): "The emergency power supply required by Sentence (1) shall be capable of providing

a) supervisory power for not less than 24 h, and
b) immediately following that period, emergency power under full load for not less than
    i) 2 h for building within the scope of Subsection 3.2.6,
    ii) 1 h for building classified as a Group B major occupancy that is not within the scope of Subsection 3.2.6,
    iii) 5 min for a building not required to be equipped with an annunciator, and
    iv) 30 min for any other building.

(See Appendix A.)"

Comments:

The fire alarm SYSTEM must be installed in accordance with CAN/ULC-S524-06 and NBC 2010. You could use the Signalink Fire-Link® II equipment in an upgrade to **supplement** the in-suite signalling appliances required by NBC 2010 to ensure you achieve the 75dBA at the pillow. You would still be required to provide installation of signalling appliances within the suite, connected, isolated, and supervised by an output circuit serving the suites on that floor (or within the specific floor area) in order to achieve compliance with NBC 2010.

The Signalink equipment may well represent a viable solution to the problem of achieving the required sound pressure levels when retrofitting signalling appliances in older buildings. Its use, however, must still be carefully considered, strictly monitored, and regulated to ensure we're not compromising the safety of residents or recommending an alternative that may, in fact, compromise the Building Code and the Installation Standard. In older apartment buildings which may employ aluminum or other substandard wiring components, it is even more important, in our view, to carefully examine any formal submission in which the use of the Signalink equipment is proposed. Keep in mind that if the fire is electrical in nature (the single most likely cause in older buildings), the ability of the Signalink system to notify occupants may become impaired (or completely compromised) because it's utilizing that same wiring that could have sparked the fire in the first place in order to transmit the alarm signals.

**The "Commissioning Test":

The manufacturer's referenced "commissioning test" is generated through the Fire-Link® II system configuration software. While a "before" and "after" comparison is listed as an acceptable alternative to performing a full Verification in Section 6 (entitled "System Modifications") of CAN/ULC-S537-04, this is NOT, in our opinion, a correct application of Clause 6.11 when referencing a NEW INSTALLATION of a signalling controller (and associated devices).

CAN/ULC-S537-04 (Standard for Verification of Fire Alarm Systems)

Clause 6.11 states:

"Software modifications shall be tested by one of the following methods:

A Reverifying all system functions that could be affected by the modifications with the exception of wiring supervision; or
B A comparison of the 'before' and 'after software utilizing mediums such as a printout or compare program."

Clause 6.7 states:

"Where a control unit or transponder is added to an existing system, the control unit or transponder and all new and existing field devices connected to it shall be verified in accordance with this Standard. (Refer to Clause 6.10)"

Clause 6.10 states:

"Modifications to a control unit or transponder and those circuits affected shall require the modifications to be verified in accordance with Subsection 4, Verification Procedure – Control Unit and Transponders."

Disclaimer:

We wish to assert that it is NOT our intention to suggest that the SignaLink Fire-Link® II System is not suitable in a RETROFIT application as a supplemental signalling component. We are also not denigrating, vilifying, or impugning the technology, the Mircom Group of Companies, their management, employees, or authorized distributors through the publication of this document. This article is the carefully considered opinion of the author, and its sole purpose is to provide a CANADIAN Code and Standard referenced interpretation of the equipment's application so that it is not incorrectly utilized where a current Code compliant upgrade is being considered.

More information regarding SignaLink Fire-Link® II can be found at www.signalink.com and at http://www.firetechs.net/library/SpecialReports/use_of_signalink-firelinkii.asp.

Questions or comments about this article can be directed to: tech@firetechs.net, the *CONTACT US* page at https://ssl9.ehosting.ca/firetechs.net/www/contact_us.asp, or by calling 1-888-340-3473 (toll free in North America).

Frank Kurz
Vancouver, British Columbia
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