Bi-Directional Amplifier (BDA) Solutions

# Reliable Two-Way Emergency Radio Communication Enhancement

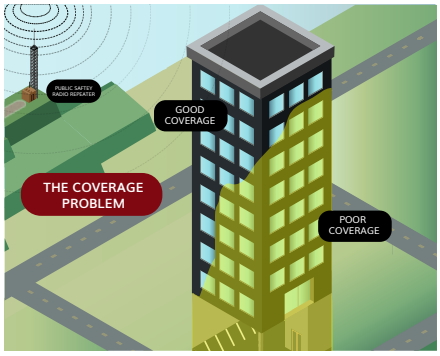
NOTIFIER®
by Honeywell

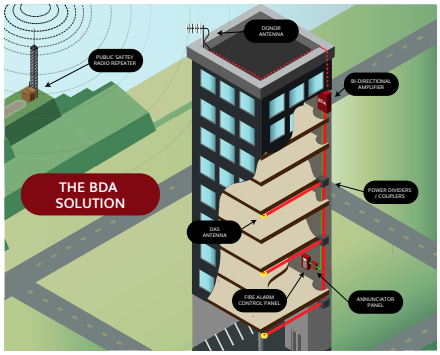
**During an emergency, reliable communication is critical. Staying informed with clear radio transmissions between first responders inside a building and emergency personnel outside the building can help prevent further injuries and save more lives.**

**Emergency Responders lose communications when in-building radio signals are weakened by structures such as concrete, windows, and metal. To solve these communication challenges, look no further than NOTIFIER.**

**NOTIFIER's Bi-Directional Amplifier (BDA) System is a signal boosting solution designed to enhance in-building radio frequency (RF) signal coverage for public safety radio. When combined with NOTIFIER's fire system, NOTIFIER provides the reliability and quality expected from a life safety solution.**

# Code Compliance




A BDA System is a Life Safety System. Similar to fire alarm, BDA is a code driven requirement. The BDA system must be monitored by the building's fire alarm system and annunciate the status of any signal booster(s). The monitoring panel shall provide visual and labeled indication of the following for each signal booster:

- Normal AC power
- Signal booster trouble
- Loss of normal AC power
- Failure of battery charger
- Low-battery capacity
- Donor antenna trouble

NFPA, IFC, and IBC includes requirements for the installation, performance, and strength of Emergency Radio Communication Enhancement Systems (ERCES) for commercial facilities.

- The International Fire Code (IFC - Section 510)
- NFPA 1221 (2016 Edition), NFPA 72 (2013, 2010 Edition)
- IBC Section 916 (2015 Edition), IBC Section 915 (2012 Edition)

| Conditions | NFPA 1221 Section 9.6 – 2016 edition | IFC 510 – 2015 edition (2018 ed. avail. Oct 2017) |
|---|---|---|
| Antenna Malfunction | Applicable – System and BDA | Not specifically – AHJ may require |
| Signal Booster Failure | Yes | Yes |
| Low Battery 70% | Yes | Not specifically – AHJ may require |
| Loss of Normal A.C. | Yes | Yes |
| Failure of Battery Charger | Yes | Not specifically – AHJ may require |
| Backup Duration | 12 Hours | 24 Hours* (12 hours 2018 IFC) |
| Signal Coverage | >=95 dBm (DAQ3.0 2016 edition) / 90% / 99% | >=95 dBm (DAQ3.0) / 95% |
| Monitoring / Maintenance | Yes | Yes |
| Battery Backup Cabinets | NEMA4 | NEMA4 (NEMA3R 2018 IFC) |

Within these codes, criteria for Emergency Radio Communication Enhancement Systems address In-building protection for first responders, emergency personnel and the public, and enforce public safety grade qualifiers for the installation and installer. As local jurisdictions continue to adopt these codes, buildings will need to meet the signal strength required by the Authority Having Jurisdiction (AHJ).

# The Challenge: A Weak Radio Signal

The performance of emergency responders and public safety radio systems can be affected by building construction, building size, construction features and other elements that absorb or block radio communications. Signal strength can be negatively impacted by:

- Concrete or metal construction
- Large buildings
- Underground structures
- Low-E glass windows

An RF survey is conducted to determine if a building requires a BDA system. This survey, typically conducted by a specialized FCC GROL certified technician and some fire department radio personnel, measures the current buildings Downlink/Uplink signal strengths in decibels-milliwatts (dBm). Survey results are submitted to the Authority Having Jurisdiction – who will determine if a BDA solution is required.

# The Solution: A Strong NOTIFIER BDA System

Tested and evaluated in accordance with UL 2524 requirements for In-building 2-Way Emergency Radio Communication Enhancement Systems, NOTIFIER's BDA solution enhances two-way radio signal strength inside buildings, tunnels and other structures. The design delivers reliable performance to meet signal strength requirements, even in the most challenging RF environments.

NOTIFIER's Class B, Bi-Directional Amplifier Solutions are a high power, band-selective radio signal booster system that can be designed and customized to meet all public safety frequency band ranges. NOTIFIER's state of the art BDA System is developed to provide a high rejection of interfering signals, convenient quick-disconnect terminals and built-in End Of Line (EOL) resistors for alarm connections, that allow for easy troubleshooting and channel expansion. At the same time, the signal booster is designed for excellent heat dissipation, corrosion resistance and ease of wall-mounting.

**System Components**

NOTIFIER offers all the components required for designing and installing the Emergency Radio Communication Enhancement Systems

- Signal Boosters / Bi-Directional Amplifiers (BDA) with in-built NOTIFIER Fire Alarm Panel Monitor Module
- Batteries and Battery Enclosure
- Donor Antennas
- Distributed Antenna System (DAS) Antennas
- Coaxial Cable
- Connectors and Lightning Arrestors
- Power Dividers and Hybrid Couplers
- Design Services and Training

**Integrated, All Inclusive Solution:**

- Single portfolio to meet any application across US supporting all public safety frequency bands
- Various models available for UHF, VHF, 700MHz, 800 MHz and multi-band
- Integrated dual power supply and battery charger with intelligent battery monitoring
- NEMA 4 Type (UL Type-4) Approved Equipment Enclosure and NEMA 3R Type (UL Type-3R) Approved Battery Enclosure
- Supports higher system gain for efficient link budgeting

**Specifiable Offering:**

- UL2524 In-building 2-Way Emergency Radio Communication Enhancement Systems listing, CSFM listing, NFPA 72 2010 Edition, NFPA 1221 2016 Edition and IFC 2018 compliant

**Ease of Installation and Monitoring:**

- Integrates directly to NOTIFIER Fire Alarm Panel for BDA monitoring
- Compact size and weight saves premium space in a 2-hour rated room
- Field tuning or programming not required, simplifying setup
- Supervised SD card on-board for event logging provides audit and troubleshooting support
- Modular design for easier troubleshooting and field component replacement

**Lower Total Life Cycle Cost:**

- Built-In NOTIFIER addressable monitor module eliminates additional wiring costs
- Single BDA to cover multiple sub-bands with a wider bandpass
- RF resiliency, oscillation prevention and automatic uplink squelch support for safe operation and non-interference with public safety radio system
- Lower power consumption for long term reliability and lower cost

For over 60 years, NOTIFIER has been a leader in the fire alarm industry. By selecting NOTIFIER, be confident that you will not only receive the very best in fire alarm and emergency communication systems, but also the knowledge, expertise, and service from NOTIFIER distributors that will exceed your expectations.

**NOTIFIER**
12 Clintonville Road
Northford CT 06472
203.484.7161
www.notifier.com

This document is not intended to be used for installation purposes.
We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

©2018 NOTIFIER by Honeywell International Inc. All rights reserved.
Unauthorized use of this document is strictly prohibited.

NF_BR_Bi-DirectionalAmp | Rev 04 | 2018-12-18

NOTIFIER® by Honeywell