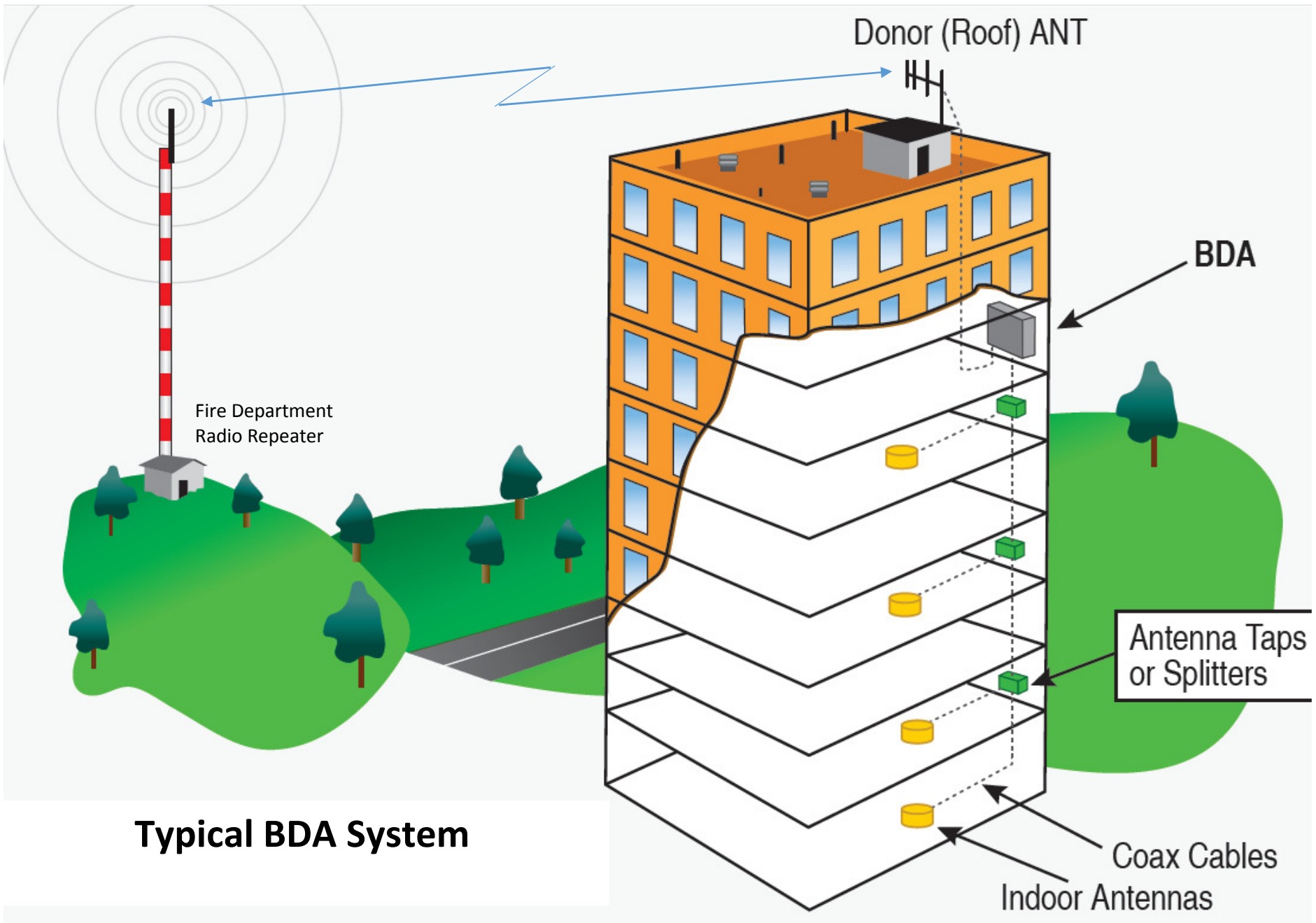


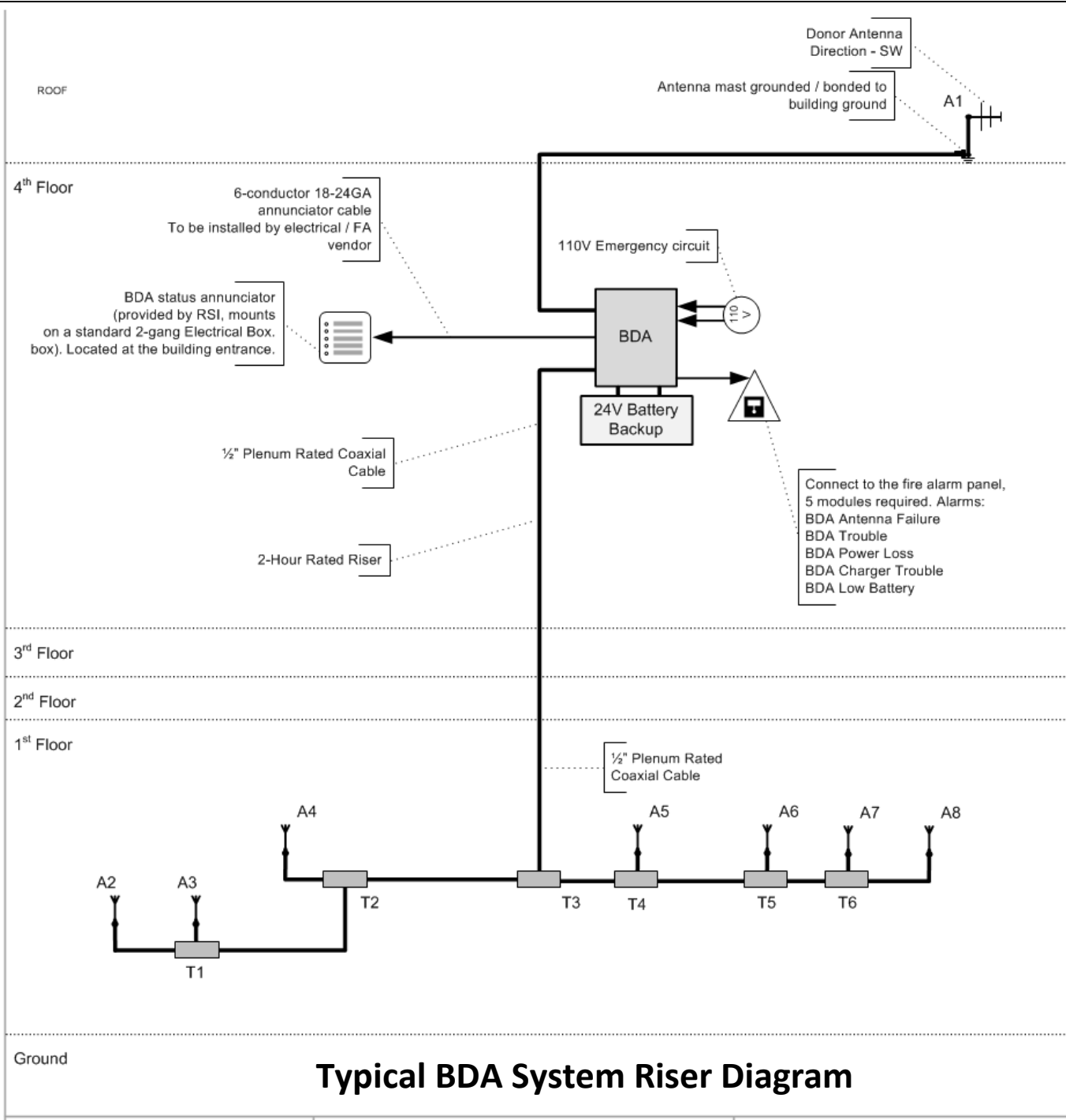
# BDA Systems for Public Safety Applications

*By Admir Surkovic, Radio Solutions, Inc.*

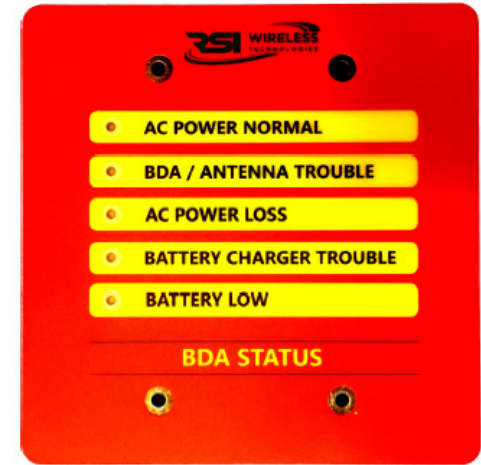




**Typical BDA System**



**Typical BDA System Riser Diagram**



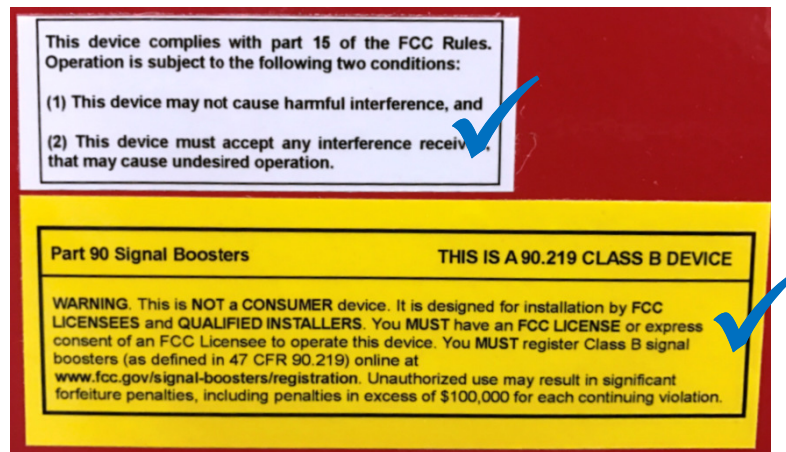
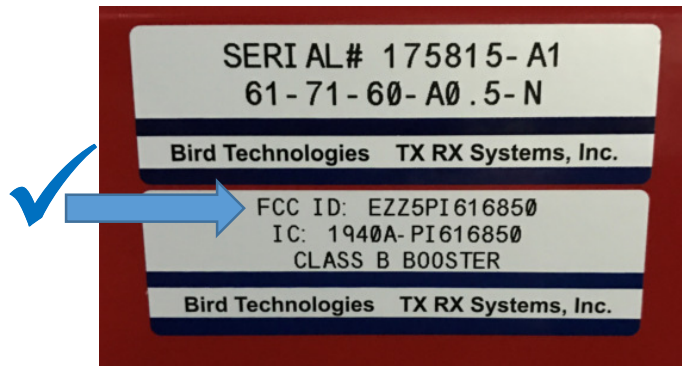
**Components of a Typical BDA System**

**When done properly, BDA systems are a great asset.**

**If done incorrectly, they can be a huge liability!**

- BDA Systems have to be **carefully designed** by an **experienced and knowledgeable** BDA / radio communications vendor who is also familiar with public safety radio systems.
- BDA Systems are **not plug 'n play**, each system is different.
- A BDA system is an **extension of a public safety radio system** and it must be designed as such, with full understanding and consideration for the existing radio systems.
- Improperly designed BDA system can easily fail and produce a **strong interference** that impairs or even **disables the entire public safety radio system**.
- A **new generation** of signal boosters is under development. The new boosters will have features to prevent interference even with improperly designed systems.
- Not all signal boosters are created equal. Entry-level commercial boosters must be **modified** to meet NFPA-72 specifications. Most of the after-thought modifications are poorly done. A true public safety signal booster is **NFPA72 compliant “out of box” and has all the required alarm outputs, power supplies and chargers built-in. Ask for it!**

# FCC EQUIPMENT CERTIFICATION REQUIREMENTS



- Signal Boosters **must be FCC certified** and **must clearly display an FCC ID number** and the required **compliance labels**.
- Use of signal boosters that do not have FCC certification is a **violation of federal law** and users are subject to fine and /or imprisonment.
- **AHJ must ensure** that signal boosters operating on its FCC licensed frequencies **have a proper FCC certification**. Resellers and system integrators must ensure that they are not selling or installing an unlicensed product. Unlicensed signal boosters can create **harmful interference**.

# How to verify if a signal booster or any other radio device is properly certified and legal for sale and use in the US?

**Step 1:** Request the FCC ID from your BDA supplier. Also, FCC requires that the product-specific FCC ID is clearly listed on all marketing documents. If it's not listed than that should rise a red flag.

**Step2:** Go to [www.fcc.gov/oet/ea/fccid](http://www.fcc.gov/oet/ea/fccid)

**Step3:** Lookup the product by its FCC ID. It must show the same product model.

Home / Engineering & Technology / Laboratory Division / Equipment Authorization Approval Guide /

## FCC ID Search

### Equipment Authorization Approval Guide

Knowledge Database (KDB)

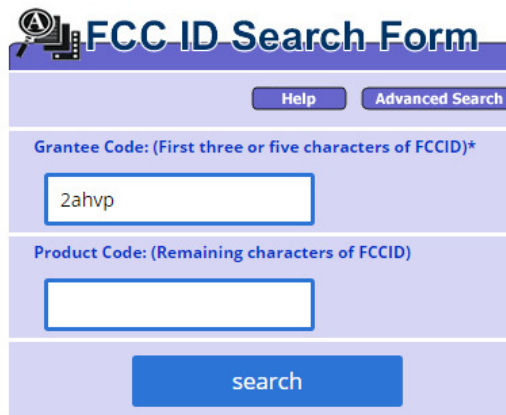
FCC ID Search

Equipment Authorization  
Measurement Procedures

Equipment Authorization  
Procedures

Equipment Authorization  
Presentations

Grantee Code



The screenshot shows the FCC ID Search Form interface. It features a search bar with the text '2ahvp' entered. Below the search bar, there are two input fields: one for the Grantee Code (with the label '(First three or five characters of FCCID)\*') and one for the Product Code (with the label '(Remaining characters of FCCID)'). A 'search' button is located at the bottom of the form. The form also includes 'Help' and 'Advanced Search' buttons at the top right.

## How to purchase and install a BDA system?

- **Make it easy** - Work with a qualified and experienced radio communications / BDA vendor.
- A good BDA vendor can design a fully compliant system that is also **more efficient**, using the least amount of cable and antennas.
- A good BDA vendor will make the whole process go smooth while keeping both the building owner and the AHJ happy!



## Typical Procurement and Installation Process for BDA Systems

1. A **request for proposal** along with building floor plans and specifications are submitted to the qualified BDA vendor. Architectural and Electrical or FA plans are typically required.
2. BDA vendor reviews the documents and verifies the **requirements with the AHJ** which also provides information on frequencies, radio site locations and any other jurisdiction-specific requirements.
3. BDA Vendor completes **preliminary system design** for the cost estimating purposes and submits the proposal to the purchaser.
4. Upon acceptance of the proposal, BDA vendor sends the **technical specifications submittal package** to the purchaser for review by the architect and the electrical engineer.
5. Once the building is substantially complete (all walls, roof, windows are in place) the BDA vendor performs the **initial survey** to determine signal coverage requirements and optimal antenna and cable locations.
6. Based on the initial survey, the BDA vendor **designs the system** and provides system design documents which include a BDA riser diagram and floor plans that show antenna and signal booster locations as well as cable layouts.
7. BDA **permit application** is submitted to AHJ as / if required.
8. **Cable and other equipment is delivered** for the electrical contractor to install.
9. BDA vendor terminates all cables, installs antennas and other RF components.
10. Electrical contractor connects the power, FACP modules and the BDA annunciator.

11. BDA vendor **completes the power-up and testing of the BDA system, performs the full building survey per NFPA72.**
12. BDA vendor completes the as-build documents along with **compliance certification** and other documents that may be required by the AHJ.
13. **Final testing** is scheduled with AHJ. Both the BDA vendor and the electrical contractor are present for the inspection.
14. The AHJ will verify the required radio coverage and functionality of the system.
15. Compliance certification is issued once the system is fully completed and accepted by the AHJ.
16. AHJ who is typically also a FCC frequency licensee registers the BDA with FCC.

Thank You.

Questions?