

Navigating the World of BDAs and DAS Systems

In the evolving landscape of communication technologies, discussions surrounding BDAs (Bi-Directional Amplifiers) and DAS systems (Distributed Antenna Systems) have gained prominence. Let's unravel the complexities of these systems and understand their significance in ensuring robust radio signals.

BDAs and DAS: A Brief Overview

BDAs, or Bi-Directional Amplifiers, play a pivotal role in amplifying radio signals, while DAS systems distribute these amplified signals through cabling and antenna networks. These technologies are instrumental in facilitating radio communication in areas where traditional signals may be weak or non-existent.

In-Building Coverage Realities

Before delving into concerns about radio coverage within your agency's facility, it's crucial to acknowledge that traditionally, UCA (formerly UCAN) has not guaranteed in-building coverage. The effectiveness of legacy 800MHz signals indoors varies due to factors such as distance to the nearest RF site, obstructions, and building construction materials.

Addressing Indoor Coverage Challenges

Poor indoor coverage can be attributed to various factors, including building distance to RF sites, obstructions, and construction density. Steel, concrete, and modern windows are known to attenuate RF signals. For locations with inadequate indoor radio coverage, the recommendation is to install a BDA/DAS as mandated by the Authority Having Jurisdiction (AHJ) and local ordinances and fire codes.

Transitioning to P25: Upgrading Systems

Current owners of BDA/DAS systems designed for legacy 800MHz should be aware that these systems require

upgrading to 700MHz to support the new P25 system. Many users have already undertaken this upgrade to align with evolving communication standards.

Choosing Between Class A and Class B Amplifiers

When your AHJ advises the installation of a system in your facility, you'll encounter two main types of amplifiers: Class A and Class B. UCA allows the use of both Class A and B BDAs on the UCA public safety network.

- **Class A Amplifiers:** Although more expensive due to tighter tolerances, Class A amplifiers can experience Time Delay Interference (TDI). TDI can be mitigated through proper engineering and installation practices.
- **Class B Amplifiers:** Generally less expensive than Class A, they don't suffer from TDI but can cause interference by retransmitting unwanted signals within their bandwidth window.

Registration and Compliance

Class B amplifiers are required by law to be registered with the FCC. Users can register at <https://signalboosters.fcc.gov/signal-boosters/>. Any BDA/DAS used for retransmitting the UCA system must be registered with UCA to receive a Letter of Consent (LOC) from UCA at: <https://www.uca911.org/Application-for-Letter-of-Consent-to-operate-a-Bidirectional-Amplifier>.

Interference Management

UCA, as the licensee, will investigate interference caused to both legacy 800MHz and future 700MHz P25 systems. If a BDA/DAS is found to be causing interference, corrective action is required by the system owner.

In summary, for indoor coverage or AHJ-mandated installations, qualified system engineers and installers are available along the Wasatch Front. UCA, while not directly involved in BDA/DAS installations, provides support and oversight. Various vendors specialize in BDA/DAS systems and possess the expertise required for these installations.

For further information and guidance, don't hesitate to reach out to Dan Dialogue at ddialogue@uca911.org