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## IDAS Digital Radios utilize FDMA technology vs. TDMA technology to create a true 6.25 channel?

### What is it?

Without getting too technical, the basic difference between FDMA and TDMA is the definition of a channel and how it is used. In FDMA a particular bandwidth (E.g. 6.25 kHz) at a particular frequency (E.g. 150.000 MHz) is used to define a channel. Basically, the way channels have been allocated for decades.

In TDMA, the same principle applies regarding bandwidth and frequency, but a larger bandwidth (E.g. 12.5 kHz) signal is divided into time slots that allow the channel to create a 6.25 kHz equivalency, but can only be achieved by using a repeater to make the time slots occur. Without the use of the repeater infrastructure to manage the time slots, the TDMA method falls short, since the TDMA plan cannot be created with subscriber units in the field alone. With FDMA, the 6.25 kHz usage of the bandwidth is consistent throughout all products including subscriber units. FDMA keeps the efficiency of true 6.25 kHz at all times and is native to its basic process.

### Benefits:

#### Spectrum Efficiency:

An FDMA system is a 'true' 6.25 kHz channel system. From the perspective that 12.5 kHz is considered the current narrowband standard channel spacing, then IDAS achieves maximum spectral efficiency throughout the product line, with or without a repeater since all products operate at 6.25 kHz. For TDMA, increased spectral efficiency at 12.5 kHz is ONLY achieved when a repeater is synchronizing the time slots, and that two users are in the same geographical area, accessing the same repeater at the same time. NXDN, a FDMA technology is the only technology to be licensed on the newly created 6.25 kHz channels assigned by the FCC. TDMA technology radios cannot be licensed for 6.25 channels, thus limiting the areas where TDMA can be deployed and not taking advantage of the new frequencies created by the FCC.



### **Audio Quality:**

With the use of the AMBE+2 vocoder in FDMA, IDAS achieves exceptional audio quality while always operating in a true 6.25 kHz channel. Although it takes some time to get used to the digital voice, the benefits are worth it. The vocoder eliminates background noise and the static we're used to as the analog signal gets weak.

### **Coverage:**

In theory in identical conditions, the narrower channel width of the FDMA system would allow the signal to achieve better coverage than the 12.5 kHz TDMA (or FDMA) system when transmitted at the same output power. This is because the noise floor of any receiver is proportional to the filter bandwidth, therefore the smaller the bandwidth the smaller the signals that can be received. Many factors affect coverage, so specific testing would need to take place in order to make complete conclusions.

### **Unique IDAS Digital Features:**

- Ability to do talk-around in true 6.25kHz channels.
- The addition of true 6/25 Digital Voting into an IDAS system.
- The ability to Stun, Revive, Kill, Data Messaging, GPS and more...
- The ease of licensing true 6.25kHz channels in hard to license areas of the country.
- Included analog LTR in subscriber units when competition must add a board to comply.

### **Who can use this?**

Utilizing IDAS FDMA technology, literally allows anyone who is upgrading their existing systems the ability to use this. Many of the key customers who have already purchased IDAS are:

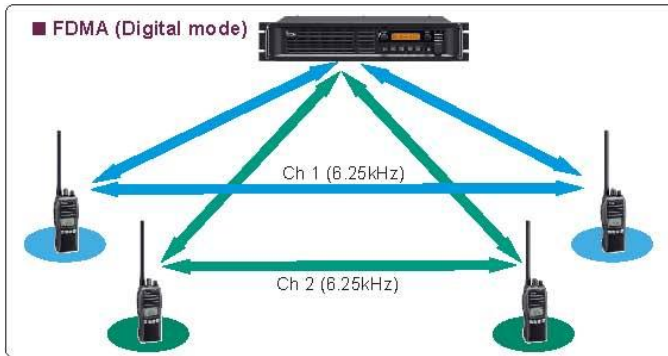
- Rural Electric Co-ops
- City Police and Fire Agencies
- Manufacturing
- Indian Gaming Casinos
- State Government Agencies
- Hospital/Health Care Facilities

IDAS is particularly valuable in areas where the existing licenses are unavailable.

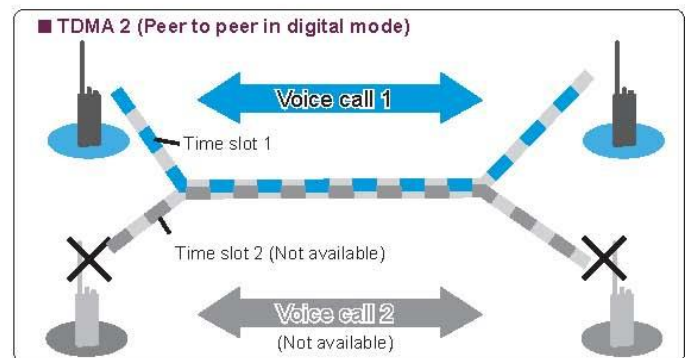
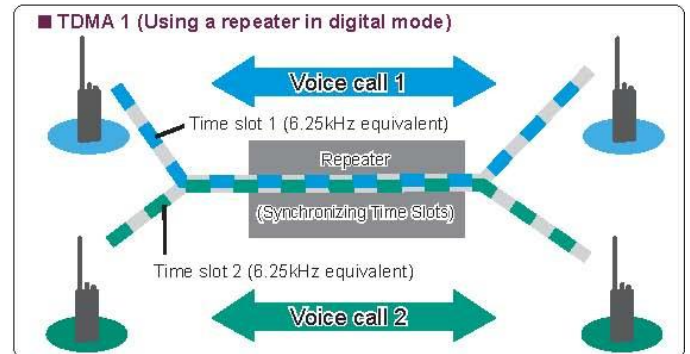


# DID YOU KNOW?

## How does this work?



• The FDMA is always double capacity, whether in peer to peer or via a repeater.



## Required Equipment:

The equipment available to construct an IDAS Digital System is:

- FR5000/6000 Repeater with space for 2 TX/RX modules per cabinet.
- F5061/6061D Mobile Radios complete with IDAS and LTR Analog formats.
- F3161/4161D Portable Radios complete with IDAS and LTR Analog formats.
- CY 5000/6000 Complete Repeater Station with power supply and duplexer.
- FR5000/6000 100 Watt Stations.
- UC FR5000 Trunking/Network Controller Board.
- CF FR5000 IP Card for Internet Connectivity.