

FEATURES AT A GLANCE



- **Facilitates channel sharing dynamically to users instead of dedicated channel assignments**
- **Enables large numbers of users to communicate over limited RF channels**
- **Low power compact solution**

APPLICATION

Analog trunking is widely used in the Land Mobile Radio (LMR) industry to maximize the number of users able to communicate within an assigned block of spectrum. Public Safety, Natural Resources, Utilities and Commercial businesses are common users of Analog Trunked Systems.

THE PROBLEM

The LMR spectrum allocation is limited. In urban areas the large user base makes it impossible for each user or agency to have its own frequency. Therefore sharing RF channels is the only practical solution. Analog trunked LMR radio systems facilitate this sharing by assigning channels dynamically to users when there is a request to talk as opposed to dedicated channel assignments. Using queuing theory, this enables a large number of users to communicate over a limited number of RF channels.

For agencies desiring to have their own radio equipment to manage and control their communications, the equipment must support the trunking standard and a low power compact solution is required to accommodate this equipment on roof tops or hill tops.

TYPICAL CUSTOMERS

Typical customers of trunked LMR systems include:

- **Emergency Response Departments** – Urban fire/police departments can benefit from a trunked system by providing all their fire fighters/officers and vehicles with communications on an as required basis while maximizing the utilization of their spectrum.
- **Utilities** – City utilities and maintenance crews use trunked systems to minimize the number of channels required by the city while providing all vehicles and crews with communications.
- **Commercial businesses** – commercial businesses can use trunked systems offered by a service provider to provide communications to their field staff without the complexity of setting up their own radio network.

A trunked system using 4 channels (frequencies) can support multiple agencies and multiple officers on a dynamic basis in support of routine communications for traffic violations, car accidents and fire rescues. Channels are allocated on a request basis and once the communication is complete they are released back into the pool for the next request.

THE TECHNOLOGIES

Analog trunked LMR radio systems use Logic Trunked Radio (LTR) technology. LTR was introduced in 1979 by E. F. Johnson. LTR systems do not have a control channel; instead the control information is contained in a data burst sent on each frequency every 10 to 20 seconds. When the user initiates a call, the trunking system electronically “monitors” each channel in the system and automatically selects one of the clear (unused) channels. Once a channel is selected, it is exclusive for the duration of the transmission and cannot be interrupted by other users.

THE SOLUTION

Trunking Controllers are allocated on a per channel basis and then linked to the radio on a channel for channel basis. The outputs of the radio are then combined and fed to the antenna.

THE BENEFITS

CODAN™ radios offer a number of benefits for use in analog trunked radio applications.

- The radios are compatible with LTR trunked radio controllers.
- Each Codan 19” subrack can hold up to five receiver or transmitter modules to minimize the amount of space required. This provides a small package for applications with limited space.
- Optional power amplifiers and additional channels can be added for extended coverage.
- Codan radios are renowned for their low current consumption making them ideal for hilltop installations where the availability of power is limited.

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