Technical White Paper

CODAN
RADIO COMMUNICATIONS

Vizor Interop – Your Mutual Aid Solution

www.codanradio.com

Vizor Interop Overview

Vizor Interop is a transportable repeater pre-programmed to the United States Federal Communications Commission (FCC) mutual aid channels to allow communications between emergency response agencies on the ground during an emergency. The pre-designated channels are authorized for use to provide immediate communication interoperability between agencies during an emergency or when a disaster strikes. The Vizor Interop can potentially be programmed for any agencies individually licensed frequencies as well as the mutual aid channels.

Vizor Interop is designed as a packaged product that does not require any additional configuration. In the case of an emergency, any agency can take their Vizor Interop to the centre of the emergency, setup the antenna and external power source, and instantly be ready to talk on the designated mutual aid channels.

Enabling communications across law enforcement, fire departments, ambulance services and other first responders is critical in the first 24 hours of a disaster or emergency when lives are on the line and every second counts. Vizor Interop is designed to help these first responders save lives.

Mutual Aid

"The tragic events of September 11, 2001 clarified the critical importance of effective emergency responder communication systems. The lack of emergency response interoperability is a long-standing, complex, and costly problem with many impediments to overcome. Interoperability is the ability of emergency response agencies to talk to one another via radio communication systems—to exchange voice and/or data with one another on demand, in real time, when needed…"

- Mission Statement of SAFECOM, an emergency communications program of the Department of Homeland Security's Office of Emergency Communications.

In emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources. This may be ad hoc, requested only when such an emergency occurs or as a formal standing agreement for cooperative emergency management on a continuing basis, such as ensuring that resources are dispatched from the nearest fire station, regardless of which side of the jurisdictional boundary the incident is on. Mutual aid may also extend beyond local response. Several states have state-wide mutual aid systems. Examples include Washington and Oregon state-wide mobilization programs and MABAS (Mutual Aid Box Alarm System), a regional mutual aid system, headquartered in IL, with 1500 member fire departments in IL, ID, WI, IA, MI, and MO.

Large municipalities typically have enough fire and EMS resources to handle large local incidents. When more resources are needed (large scale, mass casualty, HazMat etc.) resources from surrounding towns may be required to either respond directly or assist in response to the incident or to other incidents in that municipality.

Similarly, small towns that have either no resources or limited resources, surrounding municipalities will be called in along with the local resources upon initial dispatch. Where a town has no resources of its own, it will contract with a surrounding town or towns to provide all coverage.

Mutual Aid Channels

In order to encourage interoperability within the public safety community, the Federal Communications Commission (FCC) in collaboration with APCO International defined a set of non-Federal interoperability channels in designated public safety spectrum bands. These channels were designed to provide the public safety community with a set of channels with predetermined operational parameters that could serve as a basis for initial on-the-scene coordination and resolution of local interoperability issues.

The FCC also established a series of Federal (national) mutual aid channels. The national mutual aid channels were designed to provide multiple agencies with a common set of operating frequencies

and parameters for specific uses in an incident location; for example, common frequencies for fire, police, or emergency medical services.

The following organizations are eligible to utilize these channels:

- Law enforcement (e.g., police, sheriff, constable, state trooper)
- Fire
- EMS
- Rescue squads
- Emergency management
- Public works
- Schools
- Mass transit
- National Guard
- Other first-response agencies

Licensing

The intent of the FCC in creating these channels was to ensure that all public-safety agencies that respond to a major disaster or national emergency would be able to communicate with each other, regardless of jurisdiction or the radio system that each uses. These channels should be added to every mobile and portable radio used by the eligible first-responder organizations identified above, if it hasn't already been done.

In addition, each agency should go through the FCC application process of adding these same channels as base station or repeater channels, if they want their dispatchers to also have access to them, as the blanket license only is applicable to mobile and portable radios. Special reduced fees for interoperability channels are offered and are waived when included on an application with fee-able non interoperability charges.

The use of these frequencies is guided by the regulations of the National Telecommunications and Information Administration (NTIA) for frequencies designated for Federal users and the Federal Communications Commission for frequencies designated for non-Federal use. These rules are intended to provide minimal constraints on the use of the mutual aid frequencies but do provide specific guidelines for the coordination and use of the frequencies. Federal users may use the non-Federal channels only for interoperability with (and at the invitation of) a non-federal entity; non-Federal users may use the Federal channels only for interoperability with (and at the invitation of) a Federal entity.

Vizor Interop Packages and Specifications

Vizor Interop is available in pre-configured frequencies to enable instant communications. Packages include:

Vizor Interop Package	Frequency	Channels*		
Vizor Interop VHF Tactical 1	VHF	VTAC17	VTAC36	VTAC37
Vizor Interop VHF Tactical 2	VHF	VTAC 33	VTAC 34	
Vizor Interop VHF LE 1	VHF	LE1, LE2	LE3	LE4, LE5
Vizor Interop UHF Tactical 1	UHF	UTAC41, UTAC42, UTAC43		
Vizor Interop UHF LE 1	UHF	LE10, LE11, LE12		
Vizor Interop 700/800 Tactical 1	700/800 MHz	7TAC51, 7TAC52, 7TAC53, 7TAC54, 7TAC55, 7TAC56	7TAC71, 7TAC72, 7TAC73, 7TAC74, 7TAC75, 7TAC76	8TAC91, 8TAC92, 8TAC93, 8TAC94

* Each channel or channels in a column require a separate duplexer, mounted on a quick swap panel and included in the package

Vizor Interop is a custom configured Codan Vizor (ET-6) transportable repeater. Technical specifications for the product are as follows:

Mode of operation	Repeater and/or Base Station
P25 compliant operation	Optional
Size	6.7” H x 18.2” W x 13.4” D (17 cm H x 46 cm W x 34 cm D)
Weight (fully equipped)	28 lbs (12.7 kg)
Operating temperature	–30°C to + 60°C
Closed case operation	Yes
Duty cycle	100% (Open Lid) 50% (Closed Lid)
RF output power	30 W Nominal
Power/RF connections	External or optional internal connectors
Power source	External 110/220 V AC External 12 V DC power
Power support	Optional battery case Optional solar kit
Hardware configuration	Field Replaceable Units

Vizor Interop Key Features and Benefits

Utilizing leading technology from Codan, Vizor Interop has unique features and benefits unparalleled in the market, these include:

- **Mutual Aid Frequencies**: Pre-programmed to local and national mutual aid frequencies for instant communications between emergency response agencies
- **Frequency Agility:** Internal "quick change" duplexer mounting capability and easy to use Service Software allows for frequency agile programming and setup
- **Agency Specific Frequencies**: Capability for programming with agency specific frequencies, up to 32 channel capacity
- **Rapidly Deployable**: Instant communications as easy as turning on the repeater, connect the antenna and power source, then talk
- **P25 Interoperability**: Interoperable with P25 subscriber radios and repeaters from all P25 supported vendors
- **Light and rugged**: With an industry leading compact size and weight, it's easy to transport while being tough and rugged
- **Secure Encryption**: Inherently repeats all P25 encryption (AES-256) to ensure your communications are confidential and secure
- **Multi-Mode capability**: Can operate as a P25 or analog, repeater or base station (includes a lightweight OTTO headset)
- **Transparent P25 Repeater**: Transparent repeater with true digital connection between receiver and transmitter

Vizor Interop Summary

Vizor Interop is a unique communications solution for interoperability of communications between emergency response agencies when disaster strikes. Quick to set up and easy to use, it provides on the ground instant communications when seconds count.

References

http://www.safecomprogram.gov/about.html

http://www.safecomprogram.gov/nifog/nigfog_1_4_j_for_personal_printing.pdf

http://en.wikipedia.org/wiki/Mutual_aid_(emergency_services)

https://www.apcointl.org/spectrum-management/resources/interoperability/interoperability-channels.html