

Mutual Aid Box Alarm System – Illinois Communications – VHF Interoperability

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Subject: VHF Interoperability
Functional Area: Communications
Category: Policy
Approved By: MABAS Executive Board



PURPOSE

To encourage all MABAS members to maintain base station, mobile and portable radio communications capability on VHF interagency radio frequencies for use during times of emergencies, disasters, planned events and training exercises.

RESPONSIBILITY

This policy applies to all MABAS member agencies.

ACCOUNTABILITY

Radio interoperability is the responsibility of every fire department in Illinois and therefore, compliance with this policy ultimately rests with each Fire Chief. Enforcement of this specific policy as it relates to MABAS rests initially with the Co-Chairs of the MABAS Communications Committee, then the MABAS CEO, followed by the MABAS President, 1st Vice President and 2nd Vice President.

REPORTING REQUIREMENT

There is no routine reporting requirement for this policy.

BACKGROUND

Fire departments rely heavily on two-way radios to communicate between companies, departments, and other disciplines at emergency and disaster scenes. Fire Departments utilize radio frequencies in the VHF-Low, VHF-High, UHF and 800 MHz frequency bands for day-to-day operations. Newer technologies include the use of analog and P25 digital transmissions and trunking technologies using incompatible protocols.

While these systems may meet the routine needs of individual departments, experience has shown that lack of interoperability between companies operating at an emergency scene can lead to serious and potentially life-threatening consequences.

The FCC's national radio frequency band plan specifies four VHF-High Band radio frequencies for fire service interoperability and fireground operations. There are also five analog public safety mutual aid frequencies in the 800 MHz band plan. The state of Illinois has identified the frequency of 155.055 MHz (IREACH) as a statewide, interdisciplinary, coordination channel for use by police, fire, EMS, public works, highway and other governmental agencies.

Departments that utilize frequencies other than VHF-High Band for primary operations have developed various systems to communicate with MABAS departments at mutual aid calls. These systems include cross-band mobile repeaters and console patches to VHF base stations. These systems have many limitations, have tendencies to cause harmful interference, limit operating areas, may violate FCC rules, and could jeopardize the safety of personnel at emergency scenes.

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NFPA standard 1221 (2016), **Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems**, Sections 9.3.1.3, 9.3.1.4 and 9.3.1.6 recommend that, “A communications radio channel, separate from the radio dispatch channel, shall be provided for on-scene tactical communications”, “At a minimum, the tactical communications channel identified in 9.3.1.3 shall be capable of operating in analog simplex mode” and “Communications system design shall be such that a portable radio is capable of operating properly within the dispatch area without the use of mobile radio frequency (RF) amplifiers”.

NFPA 1221 (2016) specifically addresses the use of trunking radio technology for tactical operations. Section 9.3.1.5 states, “Trunked system talk groups shall be permitted to be used to provide on-scene tactical communications is desired by the AHJ, and the provisions of 9.3.1.3 and 9.3.1.4 shall still apply.”

MABAS and the Illinois Emergency Management Agency (IEMA) have entered into an agreement to provide disaster response statewide. The potential exists for fire and EMS units to be operating for extended periods of time several hundred miles from their local jurisdiction or other distant jurisdictions may be operating in a stricken community during a disaster. Common mutual aid operations and fireground frequencies that will function statewide are essential.

POLICY

The MABAS Communications Committee hereby establishes the following policy:

1. The following analog simplex radio frequencies are hereby identified for fire service and public safety interoperability.

Receive Frequency (MHz)	Transmit Frequency (MHz)	CTCSS/DCS	Channel Name	Purpose
154.26500	154.26500	210.7	IFERN	Mutual Aid Base/Mobile Dispatch
154.30250	154.30250	67.0	IFERN2	Alternate Mutual Aid Base/Mobile
153.83000	153.83000	69.3	RED Fireground	Incident Tactical Operations
154.28000	154.28000	74.4	WHITE Fireground	Incident Tactical Operations
154.29500	154.29500	85.4	BLUE Fireground	Incident Tactical Operations
153.83750	153.83750	91.5	GOLD Fireground	Incident Tactical Operations
154.27250	154.27250	94.8	BLACK Fireground	Incident Tactical Operations
154.28750	154.28750	136.5	GRAY Fireground	Incident Tactical Operations
155.05500	155.05500	D156	IREACH	Interdisciplinary Coordination

Note1: Transmit CTCSS is required on all MABAS frequencies. Receive CTCSS is encouraged on all MABAS frequencies.

Note 2: Incident Tactical Operations (Fireground) frequencies are intended for mobile and portable radios only, limited to 10 watts maximum transmitter power. These frequencies are not allowed to transmit from fixed locations (base stations) or in-building repeater systems, including mobile radios using building or tower mounted antennas.

2. Fire Departments are encouraged to preprogram the following VHF channels into mobile and portable radios for use during major disasters and preplanned events:

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Receive Frequency (MHz)	Transmit Frequency (MHz)	CTCSS/DCS RX/TX	Channel Name	Purpose
155.75250	155.75250	CSQ/156.7	VCALL10	Inter-Agency Calling
151.13750	151.13750	CSQ/156.7	VTAC11	Inter-Agency Calling
154.45250	154.45250	CSQ/156.7	VTAC12	Inter-Agency Calling
154.73750	154.73750	CSQ/156.7	VTAC13	Inter-Agency Calling
159.47250	159.47250	CSQ/156.7	VTAC14	Inter-Agency Calling
159.47250	151.13750	CSQ/136.5	VTAC33	Tactical Repeater
158.73750	154.45250	CSQ/136.5	VTAC34	Tactical Repeater
159.47250	158.73750	CSQ/136.5	VTAC35	Tactical Repeater
151.13750	159.47250	CSQ/136.5	VTAC36	Tactical Repeater
154.45250	158.73750	CSQ/136.5	VTAC37	Tactical Repeater
158.73750	159.47250	CSQ/136.5	VTAC38	Tactical Repeater
154.28000	154.28000	CSQ/156.7	VFIRE21	Fire Mutual Aid
154.26500	154.26500	CSQ/156.7	VFIRE22	Fire Mutual Aid
154.29500	154.29500	CSQ/156.7	VFIRE23	Fire Mutual Aid
154.27250	154.27250	CSQ/156.7	VFIRE24	Fire Mutual Aid
154.28750	154.28750	CSQ/156.7	VFIRE25	Fire Mutual Aid
154.30250	154.30250	CSQ/156.7	VFIRE26	Fire Mutual Aid
155.34000	155.34000	CSQ/156.7	VMED28	EMS Mutual Aid
155.47500	155.47500	CSQ/156.7	VMED29	EMS Mutual Aid
155.92500	155.92500	CSQ/CSQ	IEMA VHF1	IEMA/Local Incident Coordination
155.02500	155.02500	123.0/123.0	ESMARN	EMA Incident Coordination

3. All fire service apparatus that has the potential to respond mutual aid, or that may respond as part of an IEMA/MABAS disaster response, should have at least one mobile and one portable radio capable of functioning on the frequencies identified in Sections 1 & 2.
4. All fire department command vehicles should have radio capability on the VHF-High Band frequencies identified in Sections 1 & 2.
5. All fire department dispatch centers statewide should have base station transmit and receive capabilities on the IFERN frequency of 154.2650 MHz and the IFERN2 frequency of 154.3025 MHz. MABAS members should have capability to receive and decode the MABAS alert tones.
6. Fire departments and dispatch centers that lack current FCC authorizations for IFERN and IFERN2 for base station radios should immediately apply for proper frequency coordination and authorizations through an approved frequency coordinator and FCC respectively.
7. The use of trunking technology, in-band or cross-band repeaters, or console based cross- band patches is strongly discouraged for tactical fireground operations.

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CONCLUSION

Interoperability between various fire departments and other public safety and governmental agencies at major emergencies or disasters is essential for organized and safe coordination of personnel and resources.

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