Missouri State Interoperability Executive Committee

Applicants:

Enclosed you will find a Memoranda of Understanding (MOU) and a copy of the established operating parameters for the FCC designated multi discipline interoperability channels set aside by the Federal Communications Commission in the UHF and VHF public safety radio bands. The term "multi discipline" infers that these channels, as indicated in the attached operational and technical parameters, are to be used for all public safety users to communicate to users within their discipline (Police to Police. Fire to Fire, etc) as well as cross discipline communications (Police to Fire, Fire to Local Government) between all public safety users. There are no channels set aside for individual disciplines, as different incidents require varying amounts of participation from public safety First Responders. These channels are most effective when used as a shared resource at the scene of an incident by the Incident Commander. Previously allocated FCC interoperability channels assigned for inter-system sharing (Police Mutual Aid, Fire Mutual aid etc.) within certain disciplines should continue to be used by Missouri's First Responders to facilitate communications within their respective discipline.

The Missouri State Interoperability Executive Committee requires these channels be utilized under an Incident Command/Incident Management type management structure where channels are used as resources to accomplish the communications function at each individual incident. Eligible entities within the Public Safety Radio Pool include, but are not limited to, agencies under the following categories per FCC 90.20

Fire
Highway Maintenance
Emergency Medical
Forestry-Conservation
Police
Special Emergency
Local Government

See http://wireless.fcc.gov/publicsafety/pspool.html for further information on public safety radio pool eligibility.

The Federal Communications Commission, per the Third Report and Order, 00-348 dated October 10, 2000, allowed mobile operation to be on these interoperability channels without an individual mobile license provided the user is otherwise licensed under part 90 of the FCC's rules. In its recommended channel parameters, the Missouri State Interoperability Executive Committee has also limited use of these channels to mobile only operation. The Missouri State Interoperability Executive Committee (SIEC) will address this issue after January 1, 2005, when these channels become primary to their adjacent wideband channels, many of which are in use in Missouri.

If there is any uncertainty as to whether or not your agency is licensed under Part 90 of the rules, or you have any questions regarding the proposed use of these designated interoperability channels, please feel free to contact Missouri State Interoperability Executive Committee Chairperson Stephen T. Devine at 573 526 6105 or Missouri State Interoperability Executive Committee Secretary Steve Makky, Sr. at 636 949 3031.

To use these channels in Missouri, complete the attached Memoranda of Understanding and, after saving a copy of the signed agreement, mail the original to:

Missouri State Highway Patrol
1510 East Elm
Jefferson City, Missouri 65101
Attention: Communications
Stephen T. Devine, Patrol Frequency Coordinator

When the Missouri State Interoperability Executive Committee Chairperson has received the agreement, the entity may use the channels as described in this plan, and the SIEC has approved the application. The applicant can then begin to use these channels to improve public safety interoperability in their community.

Sincerely,

Stephen T. Devine, Chairperson
Missouri State Interoperability Executive Committee

Missouri State Interoperability Executive Committee

A committee formed to improve interoperable public safety communications for all of Missouri's First Responder Community.

Stephen T. Devine, Chairperson
Steve Makky Sr. Secretary

SUBJECT: Memorandum of Understanding for agencies to operate FCC designated VHF/UHF multi-discipline interoperability channels in accordance with Missouri State Interoperability Executive Committee guidelines:

This memorandum of understanding (hereafter referred to as MOU) shall be submitted by _____ (hereafter referred to as APPLICANT) representing a public safety agency indicating compliance and agreement with the attached operational and technical guidelines for the use of the FCC designated VHF/UHF multidiscipline interoperability channels. By virtue of signing and submitting this MOU, APPLICANT affirms its willingness to comply with the proper operation of the interoperability channels as dictated by the Missouri State Interoperability Executive Committee (SIEC).

The APPLICANT shall abide by the conditions of this MOU, which are as follows:

- To operate by all applicable Federal, State, County, and City laws/ordinances.
- To utilize "plain language" for all transmissions.

- To monitor the Calling Channel(s) at an incident and coordinate the use of the Tactical Channels.
- To identify inappropriate use and mitigate the same from occurring in the future.
- To mitigate contention for channels by exercising the Priority Levels identified in this MOU.
- To share channels between all qualified public safety entities without respect to discipline and not monopolize the use of any channel.

The preceding conditions are some of the primary requirements for operation of these interoperability channels. They are not a complete list and applicants are referred to the complete SIEC guidelines (attached) for the complete list of operational and technical requirements.

The applicant agency will use these interoperability channels with _____ (**number of mobile/portable units)** and will notify the Missouri State Interoperability Executive Committee if the number of radios programmed increases by more than 10% of the number of units listed above.

Priority Levels:

1. Disaster or extreme emergency operation for mutual aid and inter-agency communications;
2. Emergency or urgent operation involving imminent danger to life or property;
3. Special event control, generally of a preplanned nature (including Task Force operations)
4. Joint training evolutions (these channels do not qualify for use by single agencies for their secondary communications purposes)

To resolve contention within the same priority, assuming all radio equipment is exercising the lowest output and effective radiated power level practicable, the channel should go to the organization with the wider span of control/authority. This shall be determined by the SIEC for the operation or by the levels of authority/government identified in the contention.

For clarification purposes, and as an aid to facilitate inter-agency on scene communications, any fixed base or mobile relay stations utilized for temporary locations (FCC station class FBT or FB2T, respectively), shall, in order to be consistent with SIEC guidelines, utilize power levels sufficient to effect the necessary operation. Federal agencies are permitted access to interoperability channels only as authorized by 47 CFR 2.102 (c) & 2.103 and Part 7.12 of the NTIA Manual. Federal agencies must also adhere to the operating parameters established in the attached SIEC guidelines.

Any violation of this MOU or FCC Rule shall be addressed immediately. The first level of resolution escalation shall be between the parties involved, next the SIEC, and finally the FCC.

Chairperson, Missouri State Interoperability Executive Committee Date

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Applicant/Agency Date

Frequency/ Authorized Use	*Mnemonic*	*RX CTCSS*	*TX CTCSS*	*P25 NAC*
155.7525 base/mobile	**VCALL**	**CSQ**	**CSQ**	**Not auth.**
151.1375 base/mobile	**VTAC 1**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
154.4525 base/mobile	**VTAC 2**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
158.7375 base/mobile	**VTAC 3**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
159.4725 base/mobile	**VTAC 4**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
154.6800 base/mobile	**MTAC**	**156.7 Hz**	**156.7 Hz**	**Not auth.**

Frequency/ Authorized Use	*Mnemonic*	*RX CTCSS*	*TX CTCSS*	*P25 NAC*
453.2125 base/mobile 458.2125 mobile only	**UCALLa UCALL**	**CSQ**	**CSQ**	**Not auth.**
453.4625 base/mobile 458.4625 mobile only	**UTAC 1a UTAC 1**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
453.7125 base/mobile 458.7125 mobile only	**UTAC 2a UTAC 2**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**
453.8625 base/mobile 458.8625 mobile only	**UTAC 3a UTAC 3**	**156.7 and/ or CSQ**	**156.7 Hz**	**$293**

FCC Designated Public Safety Interoperability Channels Below 512 MHz.

CONDITIONS FOR USE

1. The frequencies shown above are available for assignment to Licensees under 47CFR90 to satisfy intermittent public safety incident response requirements. The frequencies are available on a shared basis and will not be authorized for the exclusive use of any one agency. Public Service entities may apply to the Missouri State interoperability Executive Committee on a case-by-case basis for permission to use these channels. Permission to access these VHF/UHF interoperability channels will only be granted to a public service entity when the application is to provide assistance and support to the public safety community in completing their mission.

The Missouri SIEC recognizes the need for non-traditional responders to be integrated into incident management systems in order to operate in an effective manner. As such, local public safety entities may, through interlocal agreements, memoranda of understanding or other formalized contractual means, extend their use of these interoperability frequency resources to organizations with established relationships to facilitate emergency operations. Such organizations shall include Radio Amateur Civil Emergency Services (RACES) programs which are official units of and under the direct oversight of the governmental entity, American Radio Relay League (ARRL) sanctioned Amateur Radio Emergency Services (ARES) programs when acting in cooperation with and express approval of the governmental entity, Radio Emergency Associated Citizen's Teams (REACT) groups when acting in cooperation with and express approval of the governmental entity, locally organized search and rescue groups when acting in cooperation with and the express approval of the governmental entity, disaster relief organizations such as, but not limited, to the American Red Cross, Salvation Army Disaster Relief or other similar organizations who provide disaster relief or assistance.

In all cases involving use by non-traditional responders, the governmental entity served shall be responsible for proper operation and control of communications equipment at all times, and shall take measures to insure operations abide by all applicable FCC Rules and Regulations.

In all cases, non-traditional responders shall comply with all FCC type acceptance requirements. Use of modified frequency agile VHF and/ or UHF amateur radio transceivers within this plan is not authorized.

2. Mobile stations are permitted to utilize these channels for official activities facilitating the operations of their agencies. In all cases, priority shall be afforded to any agency with immediate operational needs to mitigate high impact incidents that threaten life, property or the environment. No one discipline, jurisdiction, agency or essential support function has precedence over another and full cooperation must be afforded during joint operations. Unified command under the Incident

Management System shall be implemented. The agency in control of the incident, as determined in the local Emergency Operations Plan per specific incident type, shall assign channels for the duration of a defined operational period as required for incident support operations. During this period, no non-participating station within range of the incident may cause interference to the operation.

Given adequate geographic separation, coordinated co-channel operations at separate incidents and venues may be conducted if ERP is maintained to the absolute minimum required to maintain reliable communications at each incident. All users must understand the shared nature of these frequencies. While coordination and pre-planning is conducted to reduce the possibility of operational interference, ultimately, professional courtesy and cooperation is necessary at a local level to eliminate any immediate conflicts.

3. Temporary Base stations are authorized, under the State of Missouri Callsign WPWV749. This authorization allows eligible entities to use up to 25 VHF temporary Base Stations and 25 UHF Temporary Repeaters throughout Missouri while operating in a Crisis or Consequence Management environment. Eligible mobile stations, as defined in 47CFR90.20, are licensed through their agency's current Public Safety radio license in a blanket arrangement. In addition to the blanket eligibility, FCC Callsign WPWV749 also permits 1500 mobile/portable radios to operate on the VHF/UHF channels. The use of Fixed Base Stations is not currently authorized.

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4. Initial contact shall be established using analog FM emission (11K2F3E). CTCSS will not be used on the calling channels to ensure access by stations from outside the normal area of operation.

5. Temporary Base stations are permitted, under authorization by Callsign WPWV749. The following restrictions apply:

Temporary Base stations operating on TAC channels and the Missouri Common channel, "MTAC," must employ means to confine their signal to the minimum ERP necessary to support the intended use. Such means may include limited height, power output, antenna gain and antenna directional beam width.

Suggested on scene parameters are:

(a) Temporary Base Station equipment shall be limited to a maximum transmit antenna height of 6.1m, gain of 3.0 dBd and power output not to exceed 50 Watts measured at the antenna.

(b) Temporary base stations (FBT), and Temporary mobile relays (FB2T), that are field deployed within the licensee's operational area - or are operating at an incident under mutual aid conditions - may employ as much elevation and ERP as necessary to effectively support the incident for the duration of the operational period. Such stations must not be left in permanent operation and must be dismantled upon cessation of the incident.

(c) Where permitted by Part 90, paired frequencies may be used for with temporary mobile relay facilities. Such mobile relay facilities shall employ CTCSS or NAC access and a time out timer limiting transmitter duration to no greater than 180 seconds (3 minutes).

6. In areas where RFI is a concern, CTCSS may be used on the TAC channels to mask interference. The standard region wide CTCSS shall be 156.7 Hz. All radio equipment in the region shall be programmed with CTCSS encoded on the transmit carrier whether the system operator intends for the equipment to be used in CTCSS or Carrier Squelch modes.

An example would be: **VTAC1 - Rx 151.1375 CSQ/ Tx 151.1375 – 156.7 Hz.**

7. Equipment, including temporary base stations, temporary control stations, mobiles and portables must be capable of toggled operation between CTCSS and Carrier Squelch mode if CTCSS has been employed as a means of reducing RFI.

Should resources be brought in from outside of Region 24 for crisis or consequence management, it is likely these resources will not have the Region 24 CTCSS tone in their equipment. Deactivation of CTCSS on receivers would be necessary for these resources to participate under a unified command environment. It is anticipated the VHF simplex channels and UHF channel pairs listed above will be utilized in an Incident Management System/Incident Command System environment, with channel use assignment being made at the scene after the incident commander or designee determine the most efficient channel allotment to effect safety of life and property issues.

By entering into an Memorandum of Understanding (MOU), the applicant certifies that their personnel, field, command and telecommunicators, has acknowledged the Incident Command System/Incident Management System concept of command structure, the characteristics associated with it and will implement same at such time use of the interoperability channels is required.

It is conceivable that some equipment in Region 24, operating under blanket licensing by the FCC, will be released into field operation without the Region 24 CTCSS and would require the user who employs CTCSS for RFI masking to employ Carrier Squelch to achieve interoperability.

Momentary monitoring, such as that employed on non-exclusive frequencies (de-centralized trunking) to satisfy FCC requirements of listening for other use before transmitting is considered inadequate for the purposes of satisfying this condition for use.

Should CTCSS be employed on TAC channels as an RFI masking solution, the applicant will provide an attachment addressed to Region 24 certifying all radio operators, including Telecommunicators and field response personnel:

(a) Have been trained in the differences between CTCSS and Carrier Squelch modes of operation,
(b) Have understanding that resources outside of Region 24 may not use the Region 24 CTCSS tone, and,
(c) Can demonstrate competent practical motor skills in reconfiguring their equipment so that it operates in Carrier Squelch receive mode for the operational period of the incident.

Coordination will not be granted until this condition is satisfied.

8. Use of any CTCSS to mask co-channel operation by another authorized user is not permitted.

9. In cases where CTCSS is necessary to mask RFI and the RFI contains a component that breaks through the specified Region 24 CTCSS, an alternate CTCSS tone or CDCSS code may be specified on a case-by-case basis. Additional CTCSS tones and CDCSS codes shall be assigned only after approval of the Missouri SIEC and shall not be changed by the individual agency or the agency's communications vendor.

In all cases, the equipment shall contain the capability to revert to Carrier Squelch operation as specified under Condition 7 of this section.

10. Digital modes are authorized on TAC channels after July 1, 2004 to allow adjacent wideband channel users time to migrate to narrowband operation.

> **Digital format shall be "Project 25" Phase I compliant with a network access code of $293. The implementation of additional Network Access Codes is not permitted.**
>
> **Radios programmed in digital operation should also be capable of operation in analog FM as specified in Conditions 4 and 6 of this section.**

11. In order to alleviate confusion, standard mnemonics shall be used in all equipment to refer to individual channels. These are listed in the table above. Should the equipment not be capable of alphanumeric channel mnemonics, the radio should be placarded to indicate the channel mnemonic and its corresponding position on the radio's selector switch.

12. All stations not operating in mobile relay mode, where permitted, shall employ a time out timer set to limit transmission duration to a period of no greater than 60 seconds (1 minute).

13. All stations operating in mobile relay mode, where permitted, shall be configured to immediately drop transmit carrier upon cessation of input signal. Reasonable hysteresis time in squelching action of weak received signals, or in signals that have achieved a critical bit error rate (BER), is permitted. Prolonged "hang time" in excess of 500 ms is not permitted.

14. Alert paging and SCADA operations are not permitted on Calling or TAC channels. Temporary base station receivers shall not be muted by either selective calling alert mechanisms or DTMF signaling devices.

15. As a condition of coordination, the applicant will understand that in the time period up to January 1, 2005, adjacent channel users operating in 20 kHz channel width (wideband) are co-primary. The potential exists for interference from and with incumbent adjacent channel users. Per FCC limitations, after January 1, 2005, adjacent channel wideband operations will become secondary to proper interoperability traffic on the above listed channels.

16. The State of Missouri will offer frequency 154.680 MHz as a multi-discipline, multi-agency public safety common channel to all public safety agencies and other approved entities who adhere and sign the above Memorandum of Understanding with the Missouri State Interoperability Executive Committee (SIEC). The channel will be referred to as the MTAC channel. The operating parameters for this frequency are listed below:

The statewide channel, 154.680 MHz, will have a designated CTCSS tone of 156.7 Hz. The guidelines established in sections 6,7,8 and 9 above will be used when implementing the MTAC channel. It will be utilized as an on-scene communication "*Common Channel*", to promote interaction and coordination between agencies in areas as Incident Management/Incident Command is being implemented. It will be used as a "Mobile Only/Fixed Base Temporary" frequency, but will have the same FBT restrictions as listed in Section 5 above.

With the exception of Section 4 (bandwidth limitation), the operational guidelines established for the VTAC/UTAC channels will apply to the "MTAC" channel. The Missouri Common Channel will be utilized with a bandwidth of 20K until December 31, 2008. Effective January 1, 2009, the common channel will use an emission designator no greater than 11K.

The Missouri Common Channel will be referred to as "MTAC" while being used in *plain voice* inter-discipline/inter-agency communications.

Frequency 154.680 MHz will be operated under a license held by the State of Missouri under call sign KA5824. There will be no individual agency licensing of this frequency. The Memorandum of Understanding (MOU) that each agency adheres to will be the standing agreement between the Missouri State Interoperability Executive Committee and the user agency. This agreement can be revoked if voted on and approved by a majority of the Missouri State Interoperability Executive Committee at either a special or general meeting.