

## **Allied Radio Matrix for Emergency Response (ARMER) Standards, Protocols, Procedures**

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Procedure Title:	<b>Radio to Radio Cross Band Repeaters</b>	
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### **1. Purpose or Objective:**

Establish procedures for the use of temporary radio system to radio system repeaters for interagency intercommunications in a local area.

### **2. Operational Background:**

#### **▪ Capabilities**

There are several devices available for purchase that can interconnect to mobile and/or portable radios in any location. When these devices receive a transmission on one radio, they key the transmitter on the other radio and feed the audio from the receiving radio to the transmitting radio to be transmitted. The communications can actually go in both directions but only one direction at one time. The two radios may be two VHF radios, a VHF and an 800 MHz radio, or any other two radios.

#### **▪ Constraints**

Care must be taken in cross band repeating because all radio traffic on both communication channels appears on each of those communications channels and communications channel congestion can occur. In addition, care must be taken in cross band repeating to avoid confusion when traffic from another radio system suddenly appears on a communications channel.

Care must also be taken to assure that only one radio to radio cross band repeater is in use in a given area on at least one of the communications channels or a significant amount of collision interference will occur.

In any patching process, care must be taken to avoid passing through the digital modulation process in radios more than one time to avoid severe degradation of audio quality.

### **3. Operational Context:**

Radio to radio cross band repeaters may be used for day-to-day activities, for urgent or emergency situations, for tactical teams and for other purposes.

#### **4. Recommended Protocol/ Standard:**

These radios may not be used to interconnect traffic to a statewide 800 MHz trunked radio system talk group that is not authorized in accordance with the Shared Talk Groups Procedure # 2.7.0.

Any agency using any radio system, conventional or 800 MHz trunked radio system, may employ radio to radio cross band repeaters; however, use of these radio to radio cross band repeaters shall be restricted to local area operations only. The incident commander shall keep in mind that if one of the radios is on the input frequency of a repeated conventional channel, or on a talk group of an 800 MHz trunked radio system, there will be an impact on a wide area that may be significant.

#### **5. Recommended Procedure:**

Radio to radio cross band repeater equipment may be carried in vehicles including fire apparatus. The radios shall only be used under direction of the incident commander and shall only be used for communications in a local area in support of intercommunications for coordinating activities of personnel from different agencies involved in a single event.

The incident commander shall be responsible for ensuring that only authorized conventional or mobile relay (repeater) channels are used in a radio to radio cross band repeating configuration. Care shall be exercised in the selection of any statewide 800 MHz trunked radio system talk group selected for use in radio to radio cross band repeaters. Any Statewide interoperable 800 MHz trunked radio system talk group must be checked out in the Status Board at the nearest Communications Dispatch that has access to Status Board.

The incident commander shall also be responsible to assure that two or more cross band repeaters do not include a single conventional channel or a single 800 MHz trunked talk group so that collision interference will not occur.

The MINSEF, Statewide Fire Mutual Aid, Statewide EMS or MIMS frequencies in a radio that is part of the radio to radio cross band patch shall be selected only if all radio users on both sides of the patch are eligible to use the frequency as described in the appropriate rules promulgated for that frequency.

#### **6. Management:**

The agency that owns and maintains the radio to radio cross band repeater equipment shall be responsible for obtaining the necessary authorizations for specific conventional radio channels and 800 MHz trunked radio talk groups that can be linked together in the radios on each side of the cross band repeater.

The manager of the agency that owns a radio to radio cross band repeater shall prepare detailed procedures for the setup and use of those cross band repeaters that are consistent

with this procedure. The manager of the agency that owns the radio to radio cross band repeater shall be responsible for preparing and conducting training of personnel who may become incident commanders in the procedures and in the conventional radio channels and 800 MHz trunked talk groups that are preauthorized for cross band repeating.

No special licensing of the cross band repeater is required, as the owners of the radios that will be used with the cross band repeaters will have licenses for the conventional radio channels and the 800 MHz trunked radio facilities that will be accessed by those radios.

The manager of the agency that owns a radio to radio cross band repeater shall be responsible for notifying the appropriate T.I.C. Plan (Tactical Interoperability Communications) coordinator about the repeater.