MINIMUM INTEROPERABILITY INTERCONNECT DEVICE SPECIFICATION

PURPOSE

This document details the minimum specifications for an interconnect device, which has the most immediate application as an audio switch/bridge capable of interfacing multiple land mobile radios (LMR) used by public safety first responders.

1. **OPERATING MODES**
   - The device must be able to retransmit the audio of radios that operate in different parts of the radio spectrum, use different modulation and access techniques, and use analog or digital encoding. The audio shall be distributed or switched throughout a shared audio distribution bus where it can be presented to and shared amongst all or a selected subset of radios interfaced to the device.

2. **CAPACITY**
   - The device must support a minimum of four LMR radios in different operating modes. The ability to support cellular phones and connection to the public switched telephone network (PSTN) is desirable.

3. **POWER AND PHYSICAL**
   - The device must be capable of being powered either from vehicular power, battery power, or portable AC power sources.
   - The device must accommodate being rack mounted or standing alone in a portable enclosure. The device must be able to withstand shock and vibration typically encountered in field operations activity.
   - The device must include documented cable specifications for audio (speaker and microphone) and control (push-to-talk - PTT) in order to interface with the basic audio and transmit controls for standard off the shelf LMR radio manufacturers' subscriber units that are typically employed by public safety.
   - The device must have input mechanisms or modules that can support balanced or unbalanced 2 or 4-wire circuits.
   - The device must have input mechanisms or modules that can transmit (TX) Audio, receive (RX) Audio, PTT, and Carrier Operated Relay/Carrier Operated Squelch (COR/COS) signaling. Ability for supporting tone remote control (TRC) and Voice Operated Transmit (VOX) signaling is desirable. Some form of adjustable automatic gain control should be provided for each device interface.

4. **CONTROL AND ADMINISTRATION**
   - The device must provide local control to establish two or more talk groups of the radios/phone interfaces that are provided.
   - The device must provide adjustable audio/PTT delay to the radio interfaces, in order to allow the supported radios and associated infrastructure to reach full transmit power and to accommodate unknown repeater operating parameters such as hang times and squelch trails.
   - The device must be easily configurable with short set up times.