We intend to investigate methodologies of data transmission of 16 symbol DTMF tones through voice channels. Software will play a pivotal role in the implementation of these methodologies with the receive radio/station decoding these tones and displaying the transmitted data via a computer interface. Different aspects of the work to be performed in this effort will occur in two different locations. That work done under the auspices of this license application will be in Chewelah, WA and will mostly consist of overall system performance analysis and reliability trials of the fully integrated hardware/software system. The actual software development will be done in Walnut Creek, CA under a separate but identical OET license by Epimedia Corp. who will have an identical hardware setup.

This technical effort uses Commercial-Off-The-Shelf (COTS) handheld and mobile/base VHF radio hardware from ICOM America. The equipment is or in no way will be modified from its COTS configuration. This work is being performed with the knowledge, support and coordination of ICOM America who is supplying all associated radios and ancillary equipment to the completion of the task.

Our objective is to test and refine various algorithms for DTMF data transmission through the audio channel. We plan to adjust algorithm parameters with the following goals in mind:

- Minimize the duration of audible tones
- Optimize data throughput
- Ensure compatibility with existing DTMF signaling protocols
- Maximize data integrity

The methodologies we intend to explore will be used in emergency services applications such as police, fire, search and rescue as well as occupation environments where personnel safety must be monitored, tracked, reported and audited. Our preliminary simulations suggest that our algorithms for data transmission over the audio channel should meet our goals. At this time we wish to test our algorithms in real-world settings using off-the-shelf radio systems.