

Raytheon Corporation
 Raytheon Company Garland
 Author: Carl W. Bukowsky

Table 1 Exhibit 2 Particulars of Operation

Frequency Band (A)	Power			Emissions (E)	Modulation Signal (F)	Necessary Bandwidth (kHz) (G)
	(B)	(C)	(D)			
Tx: 25.010 - 50 MHz Rx: 25.010 - 50 MHz	5 W max	4.5 W	Peak	F3E	Voice 300 - 3kHz	16K0 std channels Tx: 25.010 - 50 MHz Rx: 25.010 - 50 MHz
Tx: 138 - 174 MHz Rx: 138 - 174 MHz	5 W max	4.5 W	Peak	F3E	Voice 300 - 3kHz	16K0 std channels Tx: 138 - 174 MHz Rx: 138 - 174 MHz
Tx: 410 - 470 MHz Rx: 410 - 470 MHz	5 W max	4.5 W	Peak	F3E F3E	Voice 300 - 3kHz Voice 300 - 3kHz	11K0 std channels 16K0 std channels Tx: 410 - 470 MHz Rx: 410 - 470 MHz
Tx: 806 - 869 MHz Rx: 806 - 869 MHz	2 W max	2.7 W	Peak	F3E	Voice 300 - 3kHz	16K0 std channels Tx: 806 - 869 MHz Rx: 806 - 869 MHz
Tx: 410 - 470 MHz Rx: 410 - 470 MHz	5 W max	4.5 W	Peak	F2D	Data 9K6 Baud	15K0 std channels Tx: 410 - 470 MHz Rx: 410 - 470 MHz
Tx: 806 - 869 MHz Rx: 806 - 869 MHz	2 W max	2.7 W	Peak	F2D	Data 9K6 Baud	16K0 std channels Tx: 806 - 869 MHz Rx: 806 - 869 MHz

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Statement for Authorization

Program of Experimentation Proposed:

The program proposed involves the development of a transportable command and communications vehicle to provide the local public safety community with radio service interoperability up to the Federal levels during emergencies.

This program requires that this vehicle be demonstrated to local and federal government agencies while using their existing, dissimilar licensed land mobile radio systems. The experimentation requires investigation of compatible operation of the dissimilar radio communications systems (primarily operating as stationary remote land mobile radio users). The external and internal (in-vehicle) operating environments will be evaluated and characterized to determine mutual compatibility and non-interfering operation of the vehicle equipment and external systems.

The vehicle proposed provides the interoperability of systems at a common system interface, the voice baseband, by utilizing a proprietary system of software and hardware items configured around a crossband audio switch to interconnect these dissimilar communications systems. The vehicle also contains other system equipment for command and control operations (scanning radio receiver, personal computers, networking equipment, and other computer peripherals).

The radio communications interoperability is not by any technical innovations within the radio spectrum, protocols, or electronic designs. The required interoperability is achieved by automation of the interconnection and controls for the interfaced communications systems to work together to ensure that public safety information can be exchanged, whether by voice communications or data communications. The targeted radio communication operations involves multiple radio networks (talk groups) with different dynamic configurations, from basic mode of singular user groups on up to four different user groups (combinations of different VHF and UHF radio networks).

Specific Objectives:

Our objective is to demonstrate that public safety information exchange, whether by voice communications or data communications is available to assist local and federal public safety agencies in performing its critical missions. Primary concerns are for mutual compatibility and non-interfering operation of the vehicle equipment and external systems.¹

- Interoperable voice communications between combinations of two or more radio communication systems utilized by local and Federal public safety agencies:
 - VHF (25.010 - 50.000 MHz ²)
 - VHF (138.000 - 174.000 MHz)
 - UHF (410.000 - 470.000 MHz)
 - UHF (806.000 - 866.000 MHz) conventional
 - UHF (806.000 - 869.000 MHz) trunked
- Interoperable data communications between combinations of two radio communication systems utilized by local and Federal public safety agencies:
 - UHF (410.000 - 470.000 MHz ²)
 - UHF (806.000 - 866.000 MHz) conventional
 - UHF (806.000 - 869.000 MHz) trunked

Notes:

- 1 This application for Radio Station Authorization has requests for four different Private Land Mobile Radio services under one application : low VHF, Hi VHF, UHF, and Hi UHF. Fees for four station licenses for theses services have been submitted.
- 2 Authorization for operation within the frequency bands noted above are being requested on the conditions that harmful interference will not be caused to users operating in accordance with the Table of Frequency Allocations as listed under the US Code of Federal Regulations (Ref. 47CFR2.106, including all applicable footnoted restrictions and authorizations).

Expected Contribution to Radio Service:

- Improve interoperable voice and data communications capabilities for local and Federal public safety agencies during periods of local emergencies and disasters.
- Demonstrate improved radio communications between multiple agencies within the bandwidth constraints of their existing licensed radio spectrum.
- The expected resulting system capabilities should enable the on-the-scene Incident Commander to have coordinated radio communications throughout the ranks of his unified command.
- As a scalable, interim, situational capability, these interoperable radio communication capabilities can be increased, decreased, maintained, or totally dissolved, as required for the situation conditions.

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Table 1 Transmitting Equipment [ref. Form 442, Item 13]

Manufacturer	Model Number	Number of Units
THALES Communications, Inc.	MBITR AN/PRC-148 (V) 1(C)	4
THALES Communications, Inc. (Formerly RACAL Communications, Inc.)	RACAL 25	4
Motorola, Inc.	MTX 850 • LS	4
Motorola, Inc.	SPECTRA	2
BK RADIO (A Division of RELM Wireless Corp.)	EPU 414	2
BK RADIO (A Division of RELM Wireless Corp.)	EPV 499	2