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Guide for the Selection of Communication Equipment for Emergency First Responders

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Guide for the Selection of Communication Equipment for Emergency First Responders

NIJ Guide 104–00, Volume I

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FOREWORD

The Office of Law Enforcement Standards (OLES) of the National Institute of Standards and Technology (NIST) furnishes technical support to the National Institute of Justice (NIJ) program to support law enforcement and criminal justice in the United States. OLES's function is to develop standards and conduct research that will assist law enforcement and criminal justice agencies in the selection and procurement of quality equipment.

OLES is: (1) subjecting existing equipment to laboratory testing and evaluation, and (2) conducting research leading to the development of several series of documents, including national standards, user guides, and technical reports.

This document covers research conducted by OLES under the sponsorship of NIJ. Additional reports as well as other documents are being issued under the OLES program in the areas of protective clothing and equipment, communication systems, emergency equipment, investigative aids, security systems, vehicles, weapons, and analytical techniques and standard reference materials used by the forensic community.

Technical comments and suggestions concerning this guide are invited from all interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102.

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COMMONLY USED SYMBOLS AND ABBREVIATIONS

A	ampere	h	hour	oz	ounce
ac	alternating current	hf	high frequency	o.d.	outside diameter
AM	amplitude modulation	Hz	hertz	Ω	ohm
cd	candela	i.d.	inside diameter	p.	page
cm	centimeter	in	inch	Pa	pascal
CP	chemically pure	IR	infrared	pe	probable error
c/s	cycle per second	J	joule	pp.	pages
d	day	L	lambert	ppm	parts per million
dB	decibel	L	liter	qt	quart
dc	direct current	lb	pound	rad	radian
°C	degree Celsius	lbf	pound-force	rh	relative humidity
°F	degree Fahrenheit	lbf·in	pound-force inch	s	second
dia	diameter	lm	lumen	SD	standard deviation
emf	electromotive force	ln	logarithm (base e)	sec.	Section
eq	equation	log	logarithm (base 10)	SWR	standing wave ratio
F	farad	M	molar	uhf	ultrahigh frequency
fc	footcandle	m	meter	UV	ultraviolet
fig.	Figure	μ	micron	V	volt
FM	frequency modulation	min	minute	vhf	very high frequency
ft	foot	mm	millimeter	W	watt
ft/s	foot per second	mph	miles per hour	N	newton
g	acceleration	m/s	meter per second	λ	wavelength
g	gram	mo	month	wk	week
gal	gallon	N·m	newton meter	wt	weight
gr	grain	nm	nanometer	yr	year
H	henry	No.	number		

area=unit^2 (e.g., ft^2, in^2, etc.); volume=unit^3 (e.g., ft^3, m^3, etc.)

ACRONYMS SPECIFIC TO THIS DOCUMENT

APCO	Association of Public Safety Communications Officials	MHz	Megahertz
CB	Citizens Band	PCS	Personal Communication System
CTCSS	Continuous Tone Coded Squelch System	PMR	Private Mobile Radio
DCS	Digital Code Squelch	PTT	Push-to-Talk
EDACS	Enhanced Digital Access Communications Systems	RF	Radio Frequency
GHz	Gigahertz	SMR	Shared Mobile Radio
I.S.	Intrinsically Safe	TETRA	Terrestrial Trunked Radio
LMR	Land Mobile Radios	VOX	Voice Operated Switch
LTR	Logic Trunked Radio		

DEFINITIONS RELEVENT TO THIS DOCUMENT

CDMA	Code Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
TMDA	Time Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
ISM Bands	Nonlicensed/nonexclusive frequency bands for Industrial, Scientific, and Medical applications. Frequency bands (902 MHz to 928 MHz, 2.40 GHz to 2.483 GHz) set aside for low-power devices (also referred to as “Part 15” devices).
DSSS	Direct Sequence and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
FHSS	Frequency Hopping and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
PASS	Personal alarm system, or warning device, worn by individuals.
Duplex	Real or perceived simultaneous transmit and receive.
Half-duplex	Continuous receive of all transmitted information and a transmit frequency/time slot/code shared with others.

PREFIXES (See ASTM E380)

d	deci (10^{-1})	da	deka (10)
c	centi (10^{-2})	h	hecto (10^{2})
m	milli (10^{-3})	k	kilo (10^{3})
µ	micro (10^{-6})	M	mega (10^{6})
n	nano (10^{-9})	G	giga (10^{9})
p	pico (10^{-12})	T	tera (10^{12})

COMMON CONVERSIONS

0.30480 m = 1 ft
25.4 mm = 1 in
0.4535924 kg = 1 lb
0.06479891g = 1gr
0.9463529 L = 1 qt
3600000 J = 1 kW·hr
psi = mm of Hg x (1.9339×10^{-2})
mm of Hg = psi x 51.71
4.448222 N = 1 lbf
1.355818 J = 1 ft·lbf
0.1129848 N m = 1 lbf·in
14.59390 N/m = 1 lbf/ft
6894.757 Pa = 1 lbf/in^2
1.609344 km/h = 1 mph

Temperature: $T_{°C} = (T_{°F} - 32) \times 5/9$

Temperature: $T_{°F} = (T_{°C} \times 9/5) + 32$

ABOUT THIS GUIDE

The National Institute of Justice is the focal point for providing support to State and local law enforcement agencies in the development of counterterrorism technology and standards, including technological needs for chemical and biological defense. In recognizing the needs of State and local emergency first responders, the Office of Law Enforcement Standards (OLES) at the National Institute of Standards and Technology (NIST), supported by the National Institute of Justice (NIJ), the Technical Support Working Group (TSWG), the U.S. Army Soldier and Biological Chemical Command, and the Interagency Board for Equipment Standardization and Interoperability (IAB), is developing chemical and biological defense equipment guides. These guides will focus on chemical and biological equipment in areas of detection, personal protection, decontamination, and communication. This guide focuses specifically on communication equipment and was developed to assist the emergency first responder community in the evaluation and purchase of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment.

The long range plans include these goals: (1) subject existing communication equipment to laboratory testing and evaluation against a specified protocol, and (2) conduct research leading to the development of a series of documents, including national standards, user guides, and technical reports. It is anticipated that the testing, evaluation, and research processes will take several years to complete; therefore, the National Institute of Justice has developed this initial guide for the emergency first responder community to facilitate their evaluation and purchase of communication equipment.

In conjunction with this program, additional guides, as well as other documents, are being issued in the areas of chemical agent and toxic industrial material detection equipment, biological agent detection equipment, decontamination equipment, and personal protective equipment.

The information contained in this guide has been obtained primarily through literature searches and market surveys. The vendors were contacted during the preparation of this guide to ensure data accuracy. In addition, the information contains test data obtained from other sources (e.g., Department of Defense) if available. It should be noted that the purpose of this guide is not to make recommendations about which equipment should be purchased, but to provide to the reader with information available from vendors so commercially available equipment can be compared and contrasted. *Reference herein to any specific commercial products, processes, or services by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The information and statements contained in this guide shall not be used for the purposes of advertising, nor to imply the endorsement or recommendation of the United States Government.*

With respect to information provided in this guide, neither the United States Government nor any of its employees make any warranty, expressed or implied, including but not limited to the warranties of merchantability and fitness for a particular purpose. Further, neither the United States Government nor any of its employees assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed.

Technical comments, suggestions, and product updates are encouraged from interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102. It is anticipated that this guide will be updated periodically.

Questions relating to the specific devices included in this document should be addressed directly to the proponent agencies or the equipment manufacturers. Contact information for each equipment item included in this guide can be found in Volume II.

1. INTRODUCTION

This guide includes information that is intended to assist the emergency first responder community in the evaluation and purchase of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment. It includes a market survey of communication technologies and commercially available equipment known to the authors as of February 2001. Brief technical discussions are presented that consider the principles of operation of several pieces of equipment. These may be ignored by readers who find them too technical, while those wanting additional information can obtain it from the list of references that is included in appendix B.

The primary purpose of this guide is to provide emergency first responders with information that should aid them in the evaluation and purchase of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment. The guide is more practical than technical and provides information on a variety of factors that can be considered when purchasing communication equipment, including secure communications compatibility, line of sight (how far transmission can travel), and digital communications compatibility, to name a few.

Due to the large number of communication equipment items identified in this guide, the guide is separated into two volumes. Volume I represents the actual guide, and Volume II serves as a supplement to Volume I since it contains the communication equipment data sheets only.

Readers who find this material too technical can omit this information while still making use of the rest of the guide, and readers who desire more technical detail can obtain it from the references listed in appendix B and the data sheets provided in Volume II. Volume I is divided into several sections. Section 2 provides an overview of communication systems. Specifically, it discusses system technologies, equipment types, accessories, and enhancements. Section 3 discusses various characteristics and performance parameters that are used to evaluate communication equipment in this guide. These characteristics and performance parameters are referred to as selection factors in the remainder of this guide. Fourteen selection factors have been identified. These factors were compiled by a panel of scientists and engineers who have multiple years of experience with communication equipment, domestic preparedness, and identification of emergency first responder needs. The factors have also been shared with the emergency responder community to get their thoughts and comments. Section 4 presents several tables that allow the reader to use the 14 selection factors to compare and contrast the different communication equipment.

Three appendices are also included within this guide. Appendix A lists questions that could assist emergency first responders when selecting communication equipment. Appendix B lists the documents that were referenced in this guide. Appendix C contains information about communication equipment safety.

2. OVERVIEW OF COMMUNICATION SYSTEMS

A communication system is made up of devices that employ one of two communication methods (wireless or wired), different types of equipment (portable radios, mobile radios, base/fixed station radios, and repeaters), and various accessories (examples include speaker microphones, battery eliminators, and carrying cases) and/or enhancements (encryption, digital communications, security measures, and interoperability/networking) to meet the user needs. This section provides the reader with information on the system technologies and the system enhancements. The technologies are discussed in section 2.1, types of equipment are presented in section 2.2, accessories are discussed in section 2.3, and enhancements are discussed in section 2.4.

2.1 Technologies

For practical purposes, a communication system can be considered to be "wired" or "wireless" (e.g., conventional telephone, radio communications, etc.). A wired system is technically known as a hard-line system and can be thought of as a localized, private telephone system that uses wires to operate over a limited area. A wireless system uses radio frequencies to "connect" users and is capable of operating over a much larger geographical area than a hard-line (wired) system. Since the communication equipment available to emergency first responders today does not use optical transmission methods, only radio frequency (RF) equipment will be considered here.

The major advantages of RF communication systems over hard-line communication systems are their ability to provide communications over large distances, through some obstacles (depending on the frequency), and to an almost unlimited number of users. The range of the signal is defined to be the distance between the transmitter and the receiver at which the amplitude of the signal received by the receiver is less than the amplitude of the background noise. For example, a person can experience this noise using low-cost "walkie-talkies." When the separation between the two walkie-talkies is great enough, the voice signal is lost and all that is heard is the background noise (sometimes called static). The range of the signal in a communication system may also be affected by interference from atmospheric disturbances, such as electrical storms, and high-power RF sources (such as radar equipment and broadcast equipment). Also, RF signals do not pass through water. Radio transmission quality also begins to deteriorate as the edge of the coverage area is approached.

Shared communication systems such as radios, the Internet, and telephone conference calls are subject to saturation by users (the maximum capacity whereby adding users will deteriorate and degrade the amount and quality of information able to be transferred over the system), a problem that compounds exponentially as the number of users increases. Communication system efficiency requires that the users follow published communication system guidelines regarding proper system discipline in order to ensure maximum efficiency of communication traffic.

2.1.1 Radio Frequency

Wireless systems (radios) transmit data and voice information using a specific radio frequency (RF) to other radios tuned to the same frequency. Common radio messages are transmitted over

the RF band between 0.05 MHz and 900 MHz. Most public safety communications radios (portable, mobile, base station, and repeaters) transmit frequencies between 30 MHz and 900 MHz which are dedicated to public service use. Cell phones and systems, such as global positioning receivers, call boxes, electronic signs, irrigation systems, and mobile command units, that transmit information from remote locations, transmit in the microwave band between 1 GHz and 20 GHz. An example of RF technology that transmits only data is the SD–125 RF Link Module, manufactured by Maxon, shown in figure 2–1.

Figure 2–1. SD-125 RF link module, Maxon

2.1.1.1 Conventional Radio System

In conventional RF systems, each user group is assigned a discrete radio channel (or frequency) that is independent of other user group channels (or frequencies). The users within the group transmit and receive only on that channel, on a first come first serve basis. Transmissions may occur with or without the assistance of a repeater (see sec. 2.2.4). Communications without a repeater are considered to be simplex communications (transmit and receive on the same frequency) and are typically used when only a small coverage area is required.

Conventional radio systems provide communication between users within a given geographic coverage area. A major advantage of a conventional radio system is that users equipped with radios from different manufacturers can communicate with one another provided they are programmed to the same frequency, which includes the appropriate CTCSS or DCS programming. (CTCSS and DCS are techniques commonly employed to aid in the rejection of interference from other radio systems). Disadvantages to conventional radio systems include user accessibility delays when a channel is being utilized by other users, and security concerns because of the ease of “eavesdropping” on potentially sensitive communications by the public or

media equipped with scanner radios. Modulation and encryption system compatibility must also be addressed in planning for interoperable communications. Figures 2–2 and 2–3 illustrate a mobile and a portable conventional radio, respectively. The mobile radio is a Kenwood Compact Synthesized FM Mobile Radio, TK-862H, and the portable radio is a Relm GPH21.

Figure 2–2. TK-862H, compact synthesized FM mobile radio, Kenwood

Figure 2–3. GPH21, portable radio, Relm

2.1.1.2 Trunked Radio Systems

Trunked radio systems typically allocate 20 or more talk groups (logical channels) to a particular radio frequency channel. A radio system's computer assigns a user and the user group to a frequency when the push-to-talk (PTT) button is pressed. A user is an officer or member assigned to the precinct or fire company, and a user group is a police precinct or fire company. This results in a single conversation occurring over several channels, eliminating the need for the users to manually change frequencies, thus maximizing the system efficiency. In addition, the channel capacity increases because other users can use the time between transmissions for their communications without the need to wait for a "clear channel." Because the computer selects the channel and monitors the repeater before transmitting, the trunked radio system is more technically complex than the conventional system. Since it appears to be simpler and faster to use, it may be considered more efficient. Another apparent advantage to a trunked system is the increased difficulty in eavesdropping on conversations that may switch channels with every transmission. However, scanners that can follow talk groups on a trunked radio system are widely available to the general public, whereby digital spread spectrum radios may provide user security from such methods of eavesdropping.

The disadvantages of the trunked system are those common to all RF radio systems (i.e., atmospheric interference, unreliability in certain environments, such as underground and confined spaces, and unable to be used in explosive environments, etc.). Additional disadvantages of the trunked system include the increased complexity of the infrastructure with

regards to an increased number of antenna and repeater sites (especially in the case of 800 MHz systems), dependence on the computer system and software that controls the trunked system, and reliance on the equipment of one manufacturer for guaranteed operation. Examples of trunked radios are shown in figures 2–4 and 2–5. Figure 2–4 is a Yaesu/Vertex-Standard GX 4800UT UHF mobile radio, and figure 2–5 is a portable system, the Yaesu/Vertex-Standard HX482UT conventional and trunked system.

Figure 2–4. GX 4800UT UHF trunked system mobile radio, Yaesu/Vertex-Standard

Figure 2–5. HX482UT, conventional and trunked system, Yaesu/Vertex-Standard

2.1.2 Hard-Line Technology

Hard-line communication systems operate by transmitting voice and data through a cable that connects to a telephone-like apparatus. The major advantage of a hard-line system is the ability to communicate from underground, confined spaces, shielded enclosures, collapsed structure void spaces, and similar locations (such as explosive environments) where RF systems are unreliable or unable to be used. An additional advantage of hard-line communication systems is that they are totally secure. Outside eavesdropping is not possible because the transmissions are contained within the wired system. The disadvantages of a hard-line system are the distance and mobility constraints imposed by the cable, the time required to set the system up at an incident site, and the limited number of users that can be supported by a system at a given location.

2.2 Types of Equipment

The RF communication equipment considered in this guide includes portable radios, mobile radios, base/fixed station radios, repeaters, and base station/repeaters. Each type of equipment will be discussed in the following sections.

2.2.1 Portable Radios

Portable radios are small, lightweight, handheld, wireless communication units that contain both a transmitter and a receiver, a self-contained microphone and speaker, an attached power supply (typically a rechargeable battery), and antenna. Portable transceivers (such as a walkie-talkie) have relatively low-powered transmitters (1 W to 5 W), need to have their batteries periodically recharged or replaced, and may be combined in a wireless radio communication system with other portable, mobile, and base station radios. There are also very low-powered transceivers, available with power outputs of 0.1 W, which are generally linked to portable repeaters for extended range and interoperability with higher-powered radio systems.

2.2.2 Mobile Radios

Mobile radios are larger than portable radios and are designed to be mounted in a fixed location inside a vehicle (police cruiser, fire truck, etc.). Like the portable radios, mobile radios contain both a transmitter and a receiver and may contain an internal speaker. However, mobile radios connect to the vehicle's power supply, which enables them to have a higher transmitter output power (typically 5 W to 50 W) and an external antenna. The microphone is usually handheld, and the speaker may be externally located to the radio. Because of the higher transmitter power and external antenna, the effective communication range is greater than that of a portable radio, especially if a repeater is not used. The receivers in mobile radios are generally more sensitive than the receivers found in portable radios, as physical space for components in mobile radios is not as critical as in portable radios. Personnel who do not need to communicate with others when away from the vehicle typically use mobile radios. As with portable radios, mobile radios may be combined into a radio communication system with other portable, mobile, and base station radios.

2.2.3 Base/Fixed Station Radios

A base (or fixed) station radio also contains a transmitter and a receiver. The radio is powered by an external electrical system (typically 110 V ac) and is connected to an antenna located tens to hundreds of feet away, typically on top of a building or on a tower. Because the base station radio uses an external electrical system (i.e., commercial power mains), compared with portable and mobile radios, they have the most powerful transmitters (5 W to hundreds of watts) and the most sensitive receivers. Microphones can either be handheld or desktop models, and the speaker can either be external or internal to the radio.

2.2.4 Repeaters

A repeater is a specialized radio that contains both a receiver and a transmitter. Repeaters are used to increase the effective communications coverage area for portable, mobile, or base station radios that otherwise might not be able to communicate with one another. The repeater's receiver is tuned to the frequency used by a portable, mobile, or base station transmitter for incoming signals, and the repeater's transmitter is tuned to the frequency used by a portable, mobile, or base station receiver. The incoming signal is rebroadcast back to the radio network on

a different frequency, usually with higher power and from a better location (tall buildings, mountaintops, and/or towers). Figure 2–6 shows a Vertex VXR-5000 repeater.

Figure 2–6. VXR-5000 repeater, Vertex

2.2.5 Base Station/Repeaters

Several manufacturers offer base station/repeater radios. These radios cannot operate as both a base station and a repeater simultaneously, but when installed for use, they are configured to operate as either a base station or as a repeater.

2.3 Accessories

Most accessories are for portable radios and are designed to allow for maximum user flexibility. There are optional trunking accessory boards available for many conventional radio systems, and optional encryption modules available for some radios to allow for secure communications.

2.3.1 Accessories for Portable Radios

Additional accessories for portable radios include optional batteries for extended operating time, speaker-microphones, carrying cases, battery eliminators, and vehicular adapters. Multiple carrying case options are available: those that allow for optional batteries; those that have specialized operations mounting requirements, such as the strap-on chest case for instances when a radio cannot be worn on or near the waist; or those that are water resistant for operations that may occur in extremely wet environments.

Several optional speaker-microphones attach to portable radios through the remote speaker/microphone jack. These include boom microphones (attenuates background noise and works best when the user's voice is not obstructed), ear microphones (worn in the ear and transmits ear canal vibrations into microphone signals), bone microphones (worn on the top of

the head or behind the ear and transmits vibration signals), and throat microphones (worn on the throat and transmits vibration signals). Voice operated switch (VOX) activated accessories have the same function as the PTT button but allow hands-free use of the radio. Alternately, full duplex operation of radios (able to transmit and receive on different frequencies simultaneously) provides hands-free and simultaneous, bi-directional communications.

Battery eliminators are specialized accessories that are attached to the radio in place of the battery. They allow portable radios to operate from a power source such as the electrical system of the vehicle rather than the radio's own battery, thus extending the useable life of the radio's battery before it needs to be recharged. Battery eliminators are most often used with portable radios that have no external power (e.g., 12 V dc) jack. Battery eliminators can be obtained from radio manufacturers or specialized third party aftermarket vendors.

Vehicular adapters are also specialized adapters for portable radios that allow portable radios to operate as a mobile radio. When the portable radio is placed into a vehicular adapter, the radio operates off the electrical system of the vehicle, is connected to an antenna mounted on the vehicle, and in some instances, is connected to an amplifier in order to increase the output power of the transmitter (for example, 5 W to 50 W for increased range). While the portable radio is in the vehicular adapter, the radio's battery is recharged.

2.3.2 Accessories for Mobile Radios and Base Station/Repeater Radios

There are fewer accessories available for mobile and base station radios. They are generally chosen when the radio is initially purchased because they are often dependent upon installation requirements and restrictions.

Accessories for mobile and base station radios typically include these devices: transmitter power amplifiers, specialized modules that allow the radio to be connected to computers or other data terminals, remote mounting systems to minimize theft, external speakers that can be mounted for operator convenience, and specialized microphones that may allow for the user to change channels or transmitter output power.

2.4 Enhancements

Enhancements are those items or applications available to the customer for modification of the communication system for a specific purpose. Enhancements discussed in this section include the following items: encryption, digital communications, security measures, and interoperability/networking.

2.4.1 Encryption

Both conventional and trunked RF radios may allow for the encryption of sensitive communications for security purposes if the system is equipped with the appropriate encryption electronics. Some radios may require the installation of an optional encryption module for secure communications. Voice and data transmissions may be encrypted by simple inversion, rolling code, or by digital encryption. Protection from scanner monitoring and even more

sophisticated monitoring devices can also be accomplished with spread spectrum radios operating in the ISM bands; however, because of the low power utilized in the ISM bands, reliable communications may not be possible.

2.4.2 Digital Communications

Digital communications is a technique whereby voice (sound waves) and data information present in the radio signals is converted into binary code represented using electronic or electromagnetic signals. The binary code is then converted by mathematical algorithms that need to be decoded by mathematical algorithms in the receiving radio in order for the user to understand the information. It offers users enhanced signaling and control options, more consistent audio quality, greater radio spectrum efficiency, and a broader range of encryption capabilities. Communications between users is less likely to be interrupted in terms of signals being dropped. At the edges of a coverage area, digital technology improves the signal integrity to maximize communications.

To help understand digital communications technology, it is important to understand analog communications technology. Analog communications is the transmission of information using a continuously variable electromagnetic signal. The information usually transmitted by analog systems is from sound, such as that contained in conversation and music. Prior to transmission of the sound information, it must be converted into an electrical form (as is done with a microphone). For several technical reasons, the electrical information is typically transformed into higher frequencies by modulating a continuous wave radio signal. Examples of this type of transformation and modulation are the FM and AM signals on your radio. Analog communications is the basis for most current cell phones and communication systems. Perhaps the best and simplest example of analog radio communications is the Citizens Band (CB) radio service.

2.4.3 Security Measures

Communications security is becoming increasingly important. Presently, the general public can purchase any one of several different radio receivers that will allow them to monitor virtually any and all public safety communications. As a result, secure communications may be difficult to achieve unless measures are incorporated into the planning of a communication system.

Security measures that can be incorporated into a communication system include, but are not limited to, digital encryption of radio signals, voice inversion, digitizing of voice and data as in a digital system, and use of digital cellular or PCS telephone circuits. Security may also be improved by the use of spread spectrum techniques. No single security measure is appropriate for every situation, nor is it necessarily true that all security technologies will work with, or are appropriate for, all communication systems. Encryption systems may require extensive planning and coordination to ensure compatibility and interoperability. It is best to consult with the radio manufacturer's sales and technical personnel for the most reliable and accurate information regarding current encryption technologies and their uses.

2.4.4 Interoperability and Networking

Interoperability is the process of connecting different groups using different radio systems and communication technologies (telephones, radios, cellular communications, and satellite communications) so that they can communicate directly with one another without having to go through multiple dispatchers or relay personnel. In the context of communications, interoperability describes the situation where different communication systems that are otherwise incompatible with one another work together without relying on the addition of considerably more manpower. An example of interoperability would be where a police radio system can "directly" exchange information (voice or data) with the National Guard radio system or the FEMA radio system; or a municipality's public works department using a Motorola Type I Trunked System can "directly" exchange information (voice or data) with the adjacent jurisdiction's fire department which uses a Com-Net Ericsson EDACS Trunked System. Some trunked radio systems may allow for interoperability between different talk groups and may allow the connection of third party dispatch systems. Integration with other communication systems may also be permitted. These systems may include private automatic branch exchange (PABX) systems, data networks, cordless extensions, and paging systems. Examples of data networks that a radio system may be interoperable with are automatic vehicle location and Geographic Positioning Satellite systems. Another example is a telephone interconnect system where telephone calls are patched through the radio system.

Simply stated, a communications interconnect system allows telephones, cell phones, radios on different frequencies, proprietary formats, trunked talk groups, and conventional radio networks to communicate with each other using interface modules. The interconnect system can allow for several two-way and conference calls to occur simultaneously. There is no need for a dispatcher to connect one system to another system as the cross-connection operations are unmanned. This can result in a much greater interoperability between equipment and organizations. Figure 2–7 is the JPS TRP-1000 Transportable Radio Interconnect System, and Figure 2–8 shows the Communications Applied Technology (C-AT) ICRI battery powered, man-carry radio interconnect "switch."

2.4.5 Incident Management and Assessment Tools

In developing the Chemical-Biological defense equipment guides, a number of incident management and assessment tools were identified that are available to the emergency first responder community. Several of these tools, as well as their internet addresses, are listed in the following paragraphs.

Figure 2–7. TRP-1000 transportable radio interconnect system, JPS

Figure 2- 8. ICIR man-carry radio interconnect switch, C-AT

Consequence Assessment Tool (CATS) is a disaster analysis system for Natural and Technological Hazards that was developed for the Defense Threat Reduction Agency (DTRA) and the Federal Emergency Management Agency (FEMA). It is supplied with over 150 databases and map layers to help the emergency response organizations before (for training and planning), during (to assess quickly and accurately), and after (to obtain information and support) a disaster. It can be customized per user requirements. The internet address for CATS is http://cats.saic.com/main.html.

Chemical Biological Response Aide (COBRA) is an internet site that offers a family of products and services for the emergency first responder. The COBRA Guide 2000 is an interactive, electronic version of the Department of Transportation's (DOT) 2000 Emergency Response Guide book. The web site is www.defensegp.com/cobraproducts.cfm.

E Team is an internet-based workflow management application designed for emergency responders. This software is Incident Command System (ICS) compliant, allowing communication and data sharing between all command posts and operations centers. It is designed for incident reporting, resource request tracking, and infrastructure status reporting. The web site for E Team is http://www.eteam.com.

Each of the listed web sites has additional links to supplemental information for the emergency first responder.

3. COMMUNICATION EQUIPMENT SELECTION FACTORS

This section provides a discussion of 14 selection factors that are recommended for consideration by the emergency first responder community when selecting and purchasing communications equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment. These factors were compiled by a panel of scientists and engineers who have multiple years of experience in communication equipment, domestic preparedness, emergency and public service communications, and identification of emergency first responder needs. The factors have also been shared with the emergency first responder community in order to get their thoughts and comments.

It is anticipated that, as additional input is received from the emergency first responder community, additional factors may be added or existing factors may be modified. These factors were developed so that communications equipment could be compared and contrasted in order to assist with the selection and purchase of the most appropriate equipment. *It is important to note that the evaluation conducted using the 14 selection factors was based solely upon vendor-supplied data and no independent evaluation of equipment was conducted in the development of this guide.* The vendor-supplied data can be found in its entirety in Volume II.

Prior to discussing each of the selection factors, it is important to note that although weight was considered an important selection factor for several of the other guides, weight was not included as a selection factor for communication equipment. By definition, a portable radio is light (< 2 lb), a mobile radio is attached to a vehicle (therefore weight is not critical), and repeaters are generally operated at a fixed location.

The results of the evaluation of the communication equipment against the 14 selection factors are provided in section 4. The remainder of this section defines each of the selection factors.

3.1 Maximum Transmitter Output Power

The transmitter output power refers to the maximum output power of the transmitter. For portable radios, too high an output power leads to a shortened battery use cycle (the time between battery recharging or replacing), or too low output can put the life of the responder operating the radio in jeopardy as the signal may not be able to be picked up by a repeater or another receiver.

The above limitations do not apply to mobile radios or repeaters since they have a higher output and an external power source.

3.2 Secure Communications Compatibility

Secure communications is the ability to encrypt and decrypt communications signals. Once properly encrypted, the communication equipment can transmit any signal.

3.3 Programmability

This selection factor defines how restrictive the radio programming is for the communications equipment. Programming communications equipment focuses primarily on the ability to add or delete channels. Depending on the equipment, the ability to program or reprogram a radio may be limited to authorized personnel and/or vendors. The equipment may be able to be programmed by the end user as well.

3.4 User Capability

User capability refers to the ability of the communication system to simultaneously support different types of users (e.g., fire, EMS, Command, and law enforcement). An "unlimited capability" refers to the ability of the equipment and/or system to support all users without any restrictions whatsoever. A "fixed capability" refers to a system that allows communications only within each group, with Command Officers, and with other groups via a "shared mutual aid" channel. "Restrictive capability" refers to a system that allows users to communicate only with others within their own user group and to Command Officers. A Command Officer can communicate with other Command Officers as well as all the user groups in the chain of command.

3.5 Line of Sight

Line of sight refers to the distance that transmissions can occur in a clear area (no obstructions such as skyscrapers, forests, etc.) without a repeater.

3.6 Power Requirements

Power requirements indicate whether specific equipment can operate on a battery and/or ac electrical power. Since power requirements are inherently different for portable and mobile/repeater equipment items, separate selection factors for these equipment items are presented.

3.7 Battery Life

Battery life is the ability of the portable radio equipped with an approved battery to operate at maximum transmitter power for an 8 h duty shift when used in a 5/5/90 operating mode (5 % of the time transmitting, 5 % of the time receiving with the squelch being broken, 90 % of the time receiving with the squelch not being broken—"standby"). To squelch is the ability to silence the radio in the absence of a desired incoming radio signal. This selection factor is only relevant for portable radios.

3.8 Battery Locking Ability

Battery locking ability considers how securely the battery is attached to the radio. This selection factor is only relevant for portable radios.

3.9 Vehicular Adapter (Portable Radios)

Vehicular adapter refers to whether the portable radio has an optional vehicular adapter accessory. The vehicular adapter accessory allows the portable radio to act like a mobile radio.

3.10 Digital Communications Compatibility

Digital communications compatibility refers to whether the radio is capable of digital communication with or without an adapter (a manufacturer or third party supplied module installed in the radio that permits operation on a digital communication system).

3.11 Durability

The durability of a piece of equipment describes the ruggedness of the equipment (i.e., can the equipment be dropped from several feet or submersed in water and still operate).

3.12 Unit Cost

Unit cost is the cost of the radio equipment, including the cost of all support equipment and consumables. This factor, in conjunction with other selection factors, can help the user decide if a radio will be deemed suitable for disposal after use, suitable for special uses only, or suitable for all uses.

3.13 Operator Skill Requirements

Operator skill level refers to the skill level and training required for the operation of the equipment.

3.14 Training Requirements

Training requirements are the amount of instruction time required for the operator to become proficient in the operation of the instrument. For example, higher-end equipment such as a repeater requires more in-depth training than a portable radio; therefore, this selection factor has different criteria for portable and mobile/repeater equipment items.

Details on the manner in which the selection factors were used to assess the equipment are presented in table 3–1.

Table 3-1. Selection factor key for communication equipment

February 2001

	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements (Portable)	Power Requirements (Mobile and Repeater)	Battery Life (Portable)	Battery Locking Ability (Portable)	Vehicular Adapter (Portable)	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements (Portable)	Training Requirements (Mobile and Repeater)
●	Power output of 3 W to 6 W	Capable of secure transmissions without an accessory	Can be programmed/ reprogrammed by authorized personnel	Unlimited capability	Transmission can travel 10 miles or more	Operates off battery pack, external dc, or ac adapter	Uses 12 V dc to 15 V dc	Equal to or greater than 8 h	Battery securely locked into place on the radio and cannot be dislodged by bumping or dropping	Has vehicle adapter (with built-in amplifier) that connects to vehicle's electrical system and external antenna	Capable of digital transmissions without an adaptor	Designed for rugged use and is submersible in water	Less than or equal to $500 per unit	No special skills or training required	No special training required	No special training required
◔						Operates off battery pack or external dc adapter										
◑	Power output of more than 1.5 W but less than 3 W	Capable of secure transmissions with an accessory	Can be programmed/ reprogrammed by vendor only	Fixed capability	Transmission can travel 5 miles to 10 miles	Operates off battery pack or ac adapter	Uses 120/220 V ac	Greater than 4 h but less than 8 h			Capable of digital transmissions with an adaptor	Designed for rugged use but is not submersible in water	Greater than $500 but less than $1000 per unit	No special skills but some training required	Less than 60 min training required	Less than 8 h training required
○	Power output of less than 1.5 W	Not capable of secure transmissions	Can be programmed/ reprogrammed by the end user	Restrictive capability	Transmission can travel less than 5 miles	Operates off battery pack only	Uses voltage other than standard 12 V dc to 15 V dc or 110/220 V ac	Less than 4 h	Battery not locked into place	Does not have optional vehicle adapter	Not capable of digital transmissions	Designed for standard use only	Greater than $1000 per unit	Technical background required to operate equipment	More than 60 min training required	More than 8 h training required

The gray cells designate that the symbol is not applicable for the selection factor.
A duplicate of this table is provided for quick reference (as Table 4-12).

4. COMMUNICATION EQUIPMENT EVALUATION

An extensive market survey was conducted to identify commercially available communication equipment. The market survey, which included the identification of new equipment and interaction with numerous equipment vendors, identified 181 different communication equipment items. Section 4, of this volume, documents the results of evaluating each equipment item versus the 14 selection factors identified in sec. 3. Section 4.1 defines the equipment usage categories and sec. 4.2 discusses the evaluation results. Volume II of this guide provides details of the market survey, as well as data on each piece of equipment.

4.1 Equipment Categories

To display the evaluation results in a meaningful format, the communication equipment was grouped into four categories primarily based on physical size and power requirements of the equipment. The following types of communication equipment in this guide are portable, mobile, base, and repeater.

- Portable equipment is small and self-contained transceivers (transmitter and receiver) that are easily carried by personnel.

- Mobile equipment is a transceiver that operates from the electrical supply of a vehicle and is typically connected to an external antenna.

- A base is a transceiver that typically operates from the electrical system of a building and is connected to an external antenna.

- A repeater is a radio that receives and retransmits signals from portable, mobile, and base radios to extend the range of all of the radios.

4.2 Evaluation Results

The evaluation results for the communication equipment are presented in tabular format for the 181 items of communication equipment that were identified at the time this guide was written. A table is presented for each equipment category (see sec. 4.1); the portable and mobile radios are further divided by their trunking capability. The rating of each item is indicated by a symbol: the open symbol indicates that the item does not meet the conditions of a specific selection factor, the partially filled circles indicate that the equipment partially meets the conditions of a selection factor, and the full circle indicates that the piece of equipment totally meets the conditions of a selection factor. The acronym “TBD” (to be determined) is displayed in the appropriate cell if data were not available to characterize a specific selection factor. The acronym “NA” is displayed in the appropriate cell if the data were not applicable for a piece of equipment. Table 4–1 provides the table number and associated table pages for each of the nine usage categories and the selection factor table.

Table 4–1. Evaluation results reference table

Table Name	Table Number	Page(s)
Portable (Conventional and Trunked)	4–3	20–25
Portable (Conventional)	4–4	26–30
Portable (Trunked)	4–5	31
Mobile (Conventional and Trunked)	4–6	32–35
Mobile (Conventional)	4–7	36–37
Mobile (Trunked)	4–8	38
Repeater	4–9	39–40
Base	4–10	41
Base Station and/or Repeater	4–11	42
Selection Factor Key for Communication Equipment	4–12	43

4.2.1 Portable

The results of categorizing the communication equipment are detailed in table 4–2. Radio equipment was further divided by the communication technology (see sec. 2.1) of each communication item.

There were 100 portable detectors identified in the development of this guide. These 100 portable radios were further divided into three subcategories identifying their trunking capability. There were 55 portable radios using the conventional technology (see sec. 2.1.1.1) that were also capable of trunking (with or without an accessory). There were 44 portable radios using the conventional technology only. There was one portable radio identified as using only the trunking technology (see sec. 2.1.1.2). Tables 4–3, 4–4, and 4–5 detail the evaluation results for all three of these subcategories, respectively.

4.2.2 Mobile

There were 54 mobile radios identified in the development of this guide. These 54 mobile radios were further divided into three subcategories identifying their trunking capability. There were 33 mobile radios using the conventional technology that were also capable of trunking (with or without an accessory). There were 19 mobile radios using the conventional technology only. There were two mobile radios identified as using only the trunking technology. Tables 4–6, 4–7, and 4–8 detail the evaluation results for all three of these subcategories, respectively.

4.2.3 Base Station/Repeaters

There were 27 base or repeater systems identified in the development of this guide. These 27 base or repeater systems were further divided into three subcategories (repeater, base station, or base station/repeater). There were 17 repeater systems, four base systems, and six base station/repeater systems.

4.2.3.1 Repeater

There were 17 repeater systems identified in the development of this guide. These 17 repeater systems were further divided into three subcategories identifying their trunking capability. There were four repeater systems using conventional technology that were also capable of trunking (with or without an accessory). There were 12 repeater systems using conventional technology. There was one repeater system identified as using only trunking technology. Table 4–9 details the evaluation results for the repeater communications equipment.

4.2.3.2 Base Station

There were four base stations identified in the development of this guide. All four of these systems used conventional technology. Table 4–10 details the evaluation results for the base stations.

4.2.3.3 Base Station/Repeater

There were six base/repeater systems identified in the development of this guide. These six repeater systems were further divided into three subcategories identifying their trunking capability. There were five systems using conventional technology that were also capable of trunking (with or without an accessory). There was one system using only conventional technology, and no systems using only trunking technology. Table 4–11 details the evaluation results for the repeater/base station equipment.

Table 4–2. Communication equipment technology format

Radio Type	Communication Format			
	Both	**Conventional**	**Trunked**	**Total**
Portable	55	44	1	100
Mobile	33	19	2	54
Repeater	4*	12*	1*	17
Base	0*	4*	0*	4
Base Station and/or Repeater	5*	1*	0*	6
Total	**97**	**80**	**4**	**181**

*Separate base, repeaters, and base/repeater tables were not created for conventional and trunked technologies.

Table 4-3. Portable communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
5	EDACS™ LPE-200™ Portable 800 MHz, 900 MHz	●	◑	●	●	●	○	●	●	●	◑	●	○	◑	◑
9	ProVoice™ Jaguar™ 700P, 800 MHz	●	●	●	●	●	○	●	●	●	●	●	○	◑	◑
10	ComNet Ericsson Jaguar Transceiver, Portable; Jaguar 700P, 800 MHz	●	●	●	●	●	○	●	●	TBD	◑	◑	○	◑	◑
11	ComNet Ericsson M-RK™ Analog Portable, M-RK I	●	◑	●	●	●	○	●	●	●	◑	◑	◑	◑	◑
12	ComNet Ericsson M-RK™ Analog Portable, M-RK II	●	◑	●	●	●	○	●	●	●	●	◑	○	◑	◑
13	ComNet Ericsson M-RK™ Analog Portable, M-RK II Scan	●	●	●	●	●	○	●	●	●	◑	◑	○	◑	◑
23	ProVoice™ LPE-200™ Portable 800 MHz	●	●	●	●	●	○	●	●	●	●	●	○	◑	◑
32	EFJohnson Transceiver, Portable; 77xx-800 MHz	◑	○	●	●	TBD	●	●	●	○	○	○	◑	◑	◑
33	EFJohnson Transceiver, Portable; 98xx-800 MHz	●	○	●	●	●	●	NA	NA	NA	○	◑	◑	◑	◑
34	EFJohnson Transceiver, Portable; 501x VHF	●	●	●	●	TBD	●	●	●	○	●	◑	○	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-3. Portable communication equipment (conventional and trunked)
February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
35	EFJohnson Transceiver, Portable; 504x UHF	●	●	●	●	TBD	●	●	●	○	●	◑	○	◑	◑
36	EFJohnson Transceiver, Portable; 508x-800 MHz	◑	●	●	●	TBD	●	●	●	○	●	◑	○	◑	◑
39	Icom VHF Transceiver, Portable; IC-F3	●	●	●	●	●	○	●	●	○	○	◑	●	●	●
40	Icom VHF Transceiver, Portable; IC-F3S	●	○	●	●	●	○	●	●	○	○	◑	●	●	●
41	Icom VHF Transceiver, Portable; IC-F3GT/ IC-F3GTS	●	◑	●	●	●	○	●	●	○	○	◑	●	●	●
42	Icom UHF Transceiver, Portable; IC-F4	●	◑	●	●	○	○	●	●	○	○	◑	●	●	●
43	Icom UHF Transceiver, Portable; IC-F4S	●	○	●	●	○	○	●	●	○	○	◑	●	●	●
44	Icom UHF Transceiver, Portable; IC-F4GT/ IC-F4GTS	●	◑	●	●	●	○	●	●	○	○	◑	●	●	●
49	Icom VHF Transceiver, Portable; IC-F30GS/ IC-F30GT	●	●	●	●	●	○	●	●	○	○	◑	◑	◑	◑
50	Icom VHF Transceiver, Portable; IC-F30LT Land Use; IC-F30LT Marine Version	●	◑	●	●	●	○	●	●	○	○	●	◑	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-3. Portable communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
51	Icom UHF Transceiver, Portable; IC-F40GS/ IC-F40GT	●	●	●	●	●	○	●	●	○	○	◑	◑	●	●
52	Icom UHF Transceiver, Portable; IC-F40LT Land Use; IC-F40M/IC-F40LT Marine Version	●	◑	●	●	●	○	●	●	○	○	●	●	●	●
55	Kenwood Synthesized FM Portable Radio; TK-260/G	●	○	●	●	○	○	●	●	●	◑	◑	●	◑	◑
56	Kenwood Synthesized FM Portable Radio; TK-270/G	●	○	●	●	○	○	●	●	●	◑	◑	●	◑	◑
57	Kenwood Synthesized FM Portable Radio; TK-360/G	●	○	●	●	○	○	●	●	●	○	◑	●	◑	◑
58	Kenwood Synthesized FM Portable Radio; TK-370/G	●	○	●	●	○	○	●	●	●	○	◑	◑	◑	◑
80	Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	●	◑	●	●	○	○	●	●	●	◑	◑	◑	◑	◑
81	Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	●	◑	●	◑	○	○	●	●	●	◑	◑	◑	◑	◑
82	Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC	◑	◑	●	●	○	○	●	●	●	◑	◑	◑	◑	◑
84	Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	●	◑	●	●	◑	●	NA	NA	NA	◑	◑	◑	◑	◑

'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-3. Portable communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
90	Motorola Astro Transceiver, Portable; Saber 1	●	◑	●	◑	TBD	◕	TBD	TBD	●	●	○	○	◑	◑
91	Motorola Astro Transceiver, Portable; Saber 2	●	◑	●	◑	TBD	◕	TBD	TBD	●	◑	○	○	◑	◑
92	Motorola Astro Transceiver, Portable; Saber 3	●	◑	●	◑	TBD	◕	TBD	TBD	●	◑	○	○	◑	◑
93	Motorola Astro Transceiver, Portable; XTS 3000 Model 1	●	◑	●	◑	TBD	○	TBD	TBD	●	◑	◑	○	◑	◑
94	Motorola Astro Transceiver, Portable; XTS 3000 Model 2	●	◑	●	◑	TBD	○	TBD	TBD	●	◑	◑	○	◑	◑
95	Motorola Astro Transceiver, Portable; XTS 3000 Model 3	●	◑	●	◑	TBD	○	TBD	TBD	●	◑	◑	○	◑	◑
96	Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	●	◑	●	◑	TBD	◑	TBD	TBD	●	◑	●	○	◑	◑
108	Motorola Transceiver, Portable; MT 2000 VHF	●	○	●	◑	TBD	◑	●	TBD	●	TBD	◑	○	◑	◑
109	Motorola Transceiver, Portable; MTS 2000 Model I	●	◑	●	◑	TBD	◑	●	TBD	○	TBD	◑	○	◑	◑
110	Motorola Transceiver, Portable; MTS 2000 Model II	●	◑	●	◑	TBD	◑	●	TBD	○	TBD	◑	○	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-3. Portable communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
111	Motorola Transceiver, Portable; MTS 2000 Model III	●	◑	●	◑	TBD	◑	●	TBD	○	TBD	◑	○	◑	◑
112	Motorola Trunked Portable Radio; MTX 8000 Model B3	●	◑	●	◑	TBD	◑	TBD	TBD	●	TBD	○	◑	◑	◑
113	Motorola Trunked Portable Radio; MTX 8000 Model B5	●	◑	●	◑	TBD	◑	TBD	TBD	●	TBD	○	○	◑	◑
114	Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	●	◑	●	◑	TBD	◑	TBD	TBD	●	TBD	○	○	◑	◑
145	Maxon UHF Transceiver, Portable; SP-150U	●	○	●	●	◑	○	●	●	○	○	◑	◑	◑	◑
162	Vertex HX Series; HX482UT UHF Portable	●	○	●	●	TBD	○	◑	TBD	○	TBD	○	◑	◑	◑
163	Vertex HX Series; HX580 Dual Protocol Hand Held	◑	○	●	●	TBD	◕	TBD	TBD	○	TBD	○	◑	◑	◑
164	Vertex VX Series; VX-210V (VHF Model)	●	◑	●	●	○	○	●	TBD	TBD	TBD	◑	●	●	●
165	Vertex VX Series; VX-210U (UHF Model)	●	◑	●	●	○	○	◑	TBD	TBD	TBD	◑	●	●	●
166	Vertex VX Series; VX-400V (VHF Model)	●	◑	●	●	○	○	●	TBD	TBD	TBD	◑	◑	●	●

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-3. Portable communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
167	Vertex VX Series; VX-400U (UHF Model)	●	◑	●	●	○	○	◑	**TBD**	**TBD**	**TBD**	◑	◑	●	●
168	Vertex VX Series; VX-500	●	◑	●	●	◑	○	◑	**TBD**	**TBD**	**TBD**	◑	**TBD**	●	●
169	Vertex VX Series; VX-510LX (Low Band VHF)	●	◑	●	●	◑	○	●	**TBD**	**TBD**	**TBD**	◑	◑	●	●
170	Vertex VX Series; VX-510V (VHF Model)	●	◑	●	●	○	○	●	**TBD**	**TBD**	**TBD**	◑	◑	●	●
171	Vertex VX Series; VX-510U (UHF Model)	●	◑	●	●	○	○	●	**TBD**	**TBD**	**TBD**	◑	◑	●	●

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-4. Portable communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
1	Communications-Applied Technology; AWIS Portable Radio	○	●	●	○	○	○	●	●	○	●	◑	○	●	●
3	Communications-Applied Technology; QB Series: QB-3S, QB-3S/IS/ QB-3R Portable Radios	○	○	○	NA	○	○	●	●	○	○	◑	○	●	●
6	EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK I	●	●	●	●	●	○	●	●	●	●	●	○	◑	◑
7	EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK II	●	●	●	●	●	○	●	●	●	●	●	○	◑	◑
8	EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK II SCAN	●	●	●	●	●	○	●	●	●	●	●	○	◑	◑
19	ComNet Ericsson Panther Transceiver, Portable; Panther 400P	●	○	●	●	●	○	●	●	●	○	◑	●	◑	◑
20	ComNet Ericsson Panther Transceiver, Portable; Panther 500P	●	○	●	●	●	○	●	●	●	○	○	◑	●	●
21	ComNet Ericsson Panther Transceiver, Portable; Panther 600P	●	○	●	●	TBD	○	●	●	●	◑	◑	●	◑	◑
22	ComNet Ericsson Panther Transceiver, Portable; Panther 625P	●	○	●	●	TBD	○	●	●	●	◑	◑	◑	◑	◑
74	Kenwood Transceiver, Portable; TK-2100	◑	○	●	●	○	○	●	●	○	○	◑	●	●	●

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-4. Portable communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
75	Kenwood Transceiver, Portable; TK-3100	◑	○	●	●	○	○	●	●	○	○	◑	●	●	●
76	Kenwood Transceiver, Portable; TK-3101	◑	○	●	●	○	○	●	●	○	○	◑	●	●	●
77	Kenwood VHF FM Transceivers; TK-290	●	◑	●	●	○	○	●	●	●	◑	◑	◑	◑	◑
78	Kenwood UHF FM Transceivers; TK-390	●	◑	●	●	○	○	●	●	●	◑	◑	◑	◑	◑
105	Motorola Transceiver, Portable; VISAR	●	○	●	●	TBD	◕	◑	TBD	○	TBD	◑	○	◑	◑
106	Motorola Transceiver, Portable; HT 1000	●	○	●	●	TBD	◑	●	TBD	TBD	TBD	◑	○	◑	◑
107	Motorola Transceiver, Portable; JT 1000	●	○	●	●	TBD	◑	TBD	TBD	●	TBD	○	○	◑	◑
118	Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	●	●	●	●	●	◕	●	●	●	●	●	○	◑	◑
119	Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	●	●	●	●	●	◕	◑	●	●	●	●	○	◑	◑
120	Racal Transceiver, Portable; 20 Meter MSHR	●	●	●	●	●	◕	◑	●	●	●	●	○	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-4. Portable communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
121	Racal Transceiver, Portable; Racal 25	●	●	●	●	●	◕	●	●	TBD	●	●	○	◑	◑
125	BK Synthesized FM E Series DES EPH 599, EPU 499 and EPV 499 Models	●	●	●	●	TBD	○	TBD	TBD	○	TBD	◑	○	◑	◑
126	BK Synthesized FM Portable Radio; E Series, EPH 51 and 52 Models	●	○	●	●	TBD	○	TBD	TBD	○	TBD	◑	○	◑	◑
127	BK Synthesized FM Portable Radio; E Series, EPI 510 Models	●	○	●	●	TBD	○	TBD	TBD	○	TBD	◑	○	◑	◑
128	BK Synthesized FM Portable Radio; E Series, EPU & EPV 414 and 499 Models	●	○	●	●	TBD	○	TBD	TBD	○	TBD	◑	○	◑	◑
130	BK Radio FM Transceiver, Portable; G Series, GPH Models	●	○	●	●	TBD	○	●	TBD	TBD	TBD	○	○	◑	◑
133	Relm Portable Radios; MPU08 (UHF)	●	○	●	●	TBD	○	TBD	TBD	○	TBD	○	●	●	●
134	Relm Portable Radios; MPU32 (UHF)	●	○	●	●	TBD	○	TBD	TBD	○	TBD	○	●	◑	◑
135	Relm Portable Radios; MPV32 (VHF)	●	○	●	●	TBD	○	TBD	TBD	○	TBD	○	●	◑	◑
141	Maxon VHF/UHF Transceiver, Portable; SP-120	◑	◑	●	●	○	○	●	●	○	○	◑	●	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-4. Portable communication equipment (conventional)
February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
142	Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	●	◑	●	●	◑	○	●	●	○	○	◑	●	◑	◑
143	Maxon VHF/UHF Transceiver, Portable; SP-200	●	◑	●	●	◑	○	●	●	○	○	◑	◑	◑	◑
144	Maxon VHF/UHF Transceiver, Portable; SP-300	●	◑	●	●	◑	○	●	●	○	○	◑	●	◑	◑
146	Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	●	◑	●	●	○	○	●	TBD	○	TBD	◑	○	●	●
152	Vertex VX Series; VX-10V (VHF Model)	●	◑	●	●	○	○	●	TBD	○	TBD	TBD	◑	●	●
153	Vertex VX Series; VX-10U (UHF Model)	●	◑	●	●	○	○	◑	TBD	○	TBD	TBD	◑	●	●
154	Vertex VX Series; VX-300	●	○	●	●	◑	◕	●	TBD	○	◑	◑	●	●	●
155	Vertex HX Series; HX120 UHF Portable	◑	○	●	●	TBD	○	●	TBD	TBD	TBD	TBD	●	●	●
156	Vertex HX Series; HX120 VHF Portable	◑	○	●	●	TBD	○	●	TBD	TBD	TBD	TBD	●	●	●
157	Vertex HX Series; HX140 VHF Portable	●	◑	●	●	TBD	○	TBD	TBD	TBD	TBD	◑	●	●	●

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-4. Portable communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
158	Vertex HX Series; HX381 VHF Portable	●	◑	●	●	TBD	◕	TBD	TBD	TBD	TBD	◑	◑	●	●
159	Vertex HX Series; HX381 UHF Portable	●	◑	●	●	TBD	◕	TBD	TBD	TBD	TBD	◑	◑	●	●
160	Vertex HX Series; HX240 VHF Portable	●	○	●	●	TBD	◕	●	TBD	○	TBD	◑	●	◑	◑
161	Vertex HX Series; HX240 UHF Portable	●	○	●	●	TBD	◕	●	TBD	○	TBD	◑	●	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-5. Portable communication equipment (trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
83	Kenwood 800/900 MHz FM Transceiver; TK-481	◑	◑	●	●	○	○	●	●	●	◑	◑	◑	◑	◑

‘TBD (to be determined) - there is currently no data available to support that selection factor.
‘NA’ - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-6. Mobile communication equipment (conventional and trunked)
February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
15	ComNet Ericsson Orion Mobile Radio	●	●	●	●	●	●	NA	NA	NA	◑	◑	○	◑	◑
25	ProVoice™ Orion™ Mobile 800 MHz	●	●	●	◑	●	●	NA	NA	NA	●	●	○	◑	◑
37	EFJohnson Transceiver; 531x VHF	●	●	●	◑	●	●	NA	NA	NA	TBD	TBD	TBD	◑	◑
38	EFJohnson Transceiver; 538x-800 MHz	●	●	●	◑	●	●	NA	NA	NA	TBD	TBD	TBD	◑	◑
45	Icom VHF Mobile Transceiver; IC-F1020	●	○	●	●	●	●	NA	NA	NA	○	◑	◑	●	●
46	Icom UHF Mobile Transceiver; IC-F2020	●	○	●	●	●	●	NA	NA	NA	○	◑	◑	●	●
47	Icom VHF Mobile Transceiver; IC-F320/ IC-F420	●	○	●	●	●	●	NA	NA	NA	○	◑	●	●	●
48	Icom UHF Mobile Transceiver; IC-F320S/ IC-F420S	●	◑	●	●	●	●	NA	NA	NA	○	◑	●	●	●
59	Kenwood Compact Synthesized FM Mobile Radio; TK-760G	●	◑	●	●	●	●	NA	NA	NA	◑	◑	●	◑	◑
60	Kenwood Compact Synthesized FM Mobile Radio; TK-860G	●	◑	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-6. Mobile communication equipment (conventional and trunked)
February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
61	Kenwood Compact Synthesized FM Mobile Radio; TK-762G	●	◑	●	●	●	●	NA	NA	NA	◑	◑	●	◑	◑
62	Kenwood Compact Synthesized FM Mobile Radio; TK-862G	●	◑	●	●	●	●	NA	NA	NA	◑	◑	●	◑	◑
72	Kenwood VHF/UHF Mobile Radio; TK-780	●	◑	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
73	Kenwood VHF/UHF Mobile Radio; TK-880	●	◑	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
85	Kenwood Trunked Compact Mobile Radio; TK-980	●	◑	●	●	◑	●	NA	NA	NA	◑	◑	◑	◑	◑
86	Kenwood Trunked Compact Mobile Radio; TK-81	●	◑	●	●	◑	●	NA	NA	NA	◑	◑	◑	◑	◑
97	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	●	◑	●	◑	●	●	NA	NA	NA	○	○	○	◑	◑
98	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	●	◑	●	◑	●	●	NA	NA	NA	TBD	○	◑	◑	◑
99	Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	●	◑	●	◑	●	●	NA	NA	NA	TBD	○	○	◑	◑
100	Motorola Transceiver; Astro Digital Spectra W3	●	◑	●	◑	●	●	NA	NA	NA	◑	○	○	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-6. Mobile communication equipment (conventional and trunked)
February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
101	Motorola Transceiver; Astro Spectra W4	●	◑	●	◑	●	●	NA	NA	NA	TBD	○	○	◑	◑
102	Motorola Transceiver; Astro Spectra W5	●	◑	●	◑	●	●	NA	NA	NA	◑	○	○	◑	◑
103	Motorola Transceiver; Astro Spectra W7	●	◑	●	◑	●	●	NA	NA	NA	◑	○	○	◑	◑
104	Motorola Transceiver; Astro Spectra W9	●	◑	●	◑	●	●	NA	NA	NA	◑	○	○	◑	◑
147	Vertex FTL Series; FTL-1011 (VHF LowBand)	●	◑	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
148	Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	●	◑	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
149	Vertex FTL Series; FTL-2011 (VHF Highband)	●	◑	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
150	Vertex FTL Series; FTL-7011 (UHF)	●	◑	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
172	Vertex VX Series; VX-2000V Mobile Radio (VHF)	●	◑	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
173	Vertex VX Series; VX-2000U Mobile Radio (UHF)	●	◑	●	◑	●	●	NA	NA	NA	○	◑	TBD	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-6. Mobile communication equipment (conventional and trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
174	Vertex VX Series; VX-3000L (VHF Lowband)	●	○	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
175	Vertex VX Series; VX-3000V (VHF)	●	○	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑
176	Vertex VX Series; VX-3000U (UHF)	●	○	●	◑	●	●	NA	NA	NA	◑	◑	TBD	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-7. Mobile communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
17	ComNet Ericsson Panther Transceiver, Mobile Panther 400M	●	◑	●	●	●	●	NA	NA	NA	○	◑	●	◑	◑
18	ComNet Ericsson Panther Transceiver, Mobile Panther 600M	●	◑	●	●	●	●	NA	NA	NA	○	◑	◑	◑	◑
63	Kenwood Compact Synthesized FM Mobile Radio; TK-760H	●	●	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
64	Kenwood Compact Synthesized FM Mobile Radio; TK-860H	●	●	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
65	Kenwood Compact Synthesized FM Mobile Radio; TK-762H	●	●	●	●	●	●	NA	NA	NA	◑	◑	●	◑	◑
66	Kenwood Compact Synthesized FM Mobile Radio; TK-862H	●	●	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
67	Kenwood Public Safety Mobile FM Radios; TK-690H	●	◑	●	●	●	●	NA	NA	NA	◑	◑	○	◑	◑
68	Kenwood Public Safety Mobile FM Radios; TK-790	●	◑	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑
69	Kenwood Public Safety Mobile FM Radios; TK-790H	●	◑	●	●	●	●	NA	NA	NA	◑	◑	○	◑	◑
70	Kenwood Public Safety Mobile FM Radios; TK-890	●	◑	●	●	●	●	NA	NA	NA	◑	◑	◑	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-7. Mobile communication equipment (conventional)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
71	Kenwood Public Safety Mobile FM Radios; TK-890H	●	◑	●	●	●	●	NA	NA	NA	◑	◑	○	◑	◑
123	BK Radio FM Transceiver; EMH 599 2X	●	○	●	●	●	●	NA	NA	NA	TBD	◑	○	◑	◑
124	BK Synthesized FM Mobile Radio; EMV	●	TBD	●	●	●	●	NA	NA	NA	TBD	◑	○	◑	◑
131	BK Radio Airborne Transceiver; KFM 985	●	○	●	●	●	●	NA	NA	NA	TBD	◑	TBD	◑	◑
132	Relm Mobile Radio; 256NB	●	○	●	●	●	●	NA	NA	NA	TBD	TBD	TBD	◑	◑
136	Relm Mobile Radios; SMV2516	●	○	●	●	●	●	NA	NA	NA	TBD	◑	◑	◑	◑
137	Relm Mobile Radios; SMV4016	●	○	●	●	●	●	NA	NA	NA	TBD	◑	◑	◑	◑
139	Maxon Scanning Transceiver; SM-2000 Series	●	◑	●	●	●	●	NA	NA	NA	○	◑	●	◑	◑
140	Maxon Scanning Transceiver; SM-4000 Series	●	○	●	●	●	●	NA	NA	NA	○	◑	◑	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-8. Mobile communication equipment (trunked)

February 2001

ID #	Equipment Name	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Battery Life	Battery Locking Ability	Vehicular Adapter	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
79	Kenwood Trunked Mobile Radio; TK-980 NSPAC	●	◑	●	●	◑	●	**NA**	**NA**	**NA**	◑	◑	◑	◑	◑
151	Vertex GX4800UT Mobile Transceiver	●	○	●	◑	●	●	**NA**	**NA**	**NA**	**TBD**	◑	**TBD**	◑	◑

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-9. Repeaters communication equipment

February 2001

ID #	Equipment Name		Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
2	Communications-Applied Technology; DWIS Portable Repeater System	Conventional or Trunking, Digital DSSS TOMA	○	●	●	○	○	◑	●	◑	○	●	●
4	Communications-Applied Technology; QB Series Repeater: Portable Repeater Systems	Conventional	○	○	○	NA	○	◑	○	◑	○	●	◑
14	ComNet Ericsson Repeater; MASTR III	Conventional or Trunking	NA	●	●	●	NA	●	●	●	○	◑	◑
16	ComNet Ericsson Repeater; Orion Transportable Repeater	Conventional or Trunking	NA	◑	●	●	NA	●	●	●	○	◑	◑
27	EFJohnson Auris Repeater; RS-5601 VHF; Single Channel	Conventional Digital	NA	●	●	●	NA	●	●	○	○	◑	◑
28	EFJohnson Auris Digital Repeater; RS-5611 VHF; Dual Channel	Conventional Digital	NA	●	●	●	NA	●	●	○	○	◑	◑
31	EFJohnson Auris Repeater; RS-5604 (Single Channel)/5614 (Dual Channel) UHF	Conventional	NA	●	●	●	NA	●	●	○	○	◑	◑
53	Modular Interconnect System, ACU-1000	Conventional Modular Interconnect Communications Interoperability System	NA	●	●	◑	NA	●	◑	◑	TBD	TBD	TBD
54	Transportable Radio Interconnect System, TRP-1000	Trunking/ Conventional Transportable Interconnect/ Communications Interoperability System	NA	●	●	◑	NA	●	◑	◑	TBD	TBD	TBD

‘TBD (to be determined) - there is currently no data available to support that selection factor.
‘NA’ - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-9. Repeaters communication equipment
February 2001

ID #	Equipment Name		Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
88	Kenwood VHF/UHF Repeater; TKR-720	Conventional Desktop Repeater	**NA**	◑	●	●	**NA**	◑	○	○	○	◑	◑
89	Kenwood UHF Repeater; TKR-820	Conventional Desktop Repeater	**NA**	◑	●	●	**NA**	◑	○	○	○	◑	◑
117	Motorola Portable Repeater; Portable Repeater 2	Conventional	**NA**	●	●	●	**NA**	●	**TBD**	○	○	◑	◑
129	BK Repeater; ERU Series	Conventional	**NA**	○	●	●	**NA**	●	○	◑	**TBD**	○	○
138	Maxon VHF/UHF RF Link Module; SD-125	Link Conventional RF Link (Repeater) Module	**NA**	◑	●	**NA**	**NA**	●	◑	○	●	●	◑
177	Vertex Repeaters; VXR-1000 (VHF)	Conventional Mobile Repeaters	**NA**	●	●	●	**NA**	●	**TBD**	◑	◑	○	○
178	Vertex Repeaters; VXR-1000 (UHF)	Conventional Mobile Repeater	**NA**	●	●	●	**NA**	●	**TBD**	◑	◑	○	○
179	Vertex Repeaters; VXR-5000 (VHF)	Trunking Mobile Repeater	**NA**	○	●	●	**NA**	◑	**TBD**	◑	**TBD**	○	○

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-10. Base station communication equipment

February 2001

ID #	Equipment Name		Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
26	EFJohnson Auris Digital Base Station; RS-5601 VHF; Single Channel	Conventional Digital Base Station	NA	○	●	●	NA	●	●	○	○	◑	◑
29	EFJohnson Auris Digital Base Station; RS-5611 VHF; Dual Channel	Conventional Digital Base Station	NA	○	●	●	NA	●	●	○	○	◑	◑
87	Kenwood VHF Base Tranceiver; TKB-720	Conventional Base Radio	NA	◑	●	●	◑	◑	○	○	○	◑	◑
122	BK Base Station; EBU Series	Conventional Base Station	NA	○	●	●	NA	●	TBD	◑	TBD	○	○

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-11. Base station and/or repeater communication equipment
February 2001

ID #	Equipment Name		Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements
24	ProVoice™ MASTR™ III Base Station 800 MHz	Mobile Base Station or Repeater (Trunking is the primary operating mode)	**NA**	●	●	●	**NA**	●	●	●	○	◑	◑
30	EFJohnson Auris Digital Repeater/Basestation; RS-5604 (Single Channel)/5614 (Dual Channel) UHF	Digital Base Station (Conventional)	**NA**	●	●	●	**NA**	●	●	○	○	◑	◑
115	Motorola Station/Repeater; QUANTAR	Functions as a Base Station or Repeater (Conventional or Trunking)	**NA**	●	●	●	**NA**	●	◑	○	○	◑	◑
116	Motorola Station/Repeater; QUANTRO	Base Station/Repeater (Conventional/Trunking)	**NA**	●	●	●	**NA**	●	◑	○	○	◑	◑
180	Vertex Repeaters or Base Station; VXR-5000 (UHF)	Mobile Base Station or Repeater (Conventional; Trunking Capable with Optional Accessory Board)	**NA**	●	●	●	**NA**	●	**TBD**	**NA**	**TBD**	○	○
181	Vertex Repeater or Base Station; VXR-7000 (VHF)	Mobile Base Station or Repeater (Conventional; Optional VX-Trunk Operation)	**NA**	●	●	●	**NA**	●	**TBD**	**NA**	**TBD**	○	○

'TBD (to be determined) - there is currently no data available to support that selection factor.
'NA' - data field is not applicable for this piece of equipment.
See Table 4-12 for selection factor definitions.

Table 4-12. Selection factor key for communication equipment

February 2001

	Maximum Transmitter Power Output	Secure Communications Compatibility	Programmability	User Capability	Line of Sight	Power Requirements (Portable)	Power Requirements (Mobile and Repeater)	Battery Life (Portable)	Battery Locking Ability (Portable)	Vehicular Adapter (Portable)	Digital Communications Compatibility	Durability	Unit Cost	Operator Skill Level	Training Requirements (Portable)	Training Requirements (Mobile and Repeater)
●	Power output of 3 W to 6 W	Capable of secure transmissions without an accessory	Can be programmed/ reprogrammed by authorized personnel	Unlimited capability	Transmission can travel 10 miles or more	Operates off battery pack, external dc, or ac adapter	Uses 12 V dc to 15 V dc	Equal to or greater than 8 h	Battery securely locked into place on the radio and cannot be dislodged by bumping or dropping	Has vehicle adapter (with built-in amplifier) that connects to vehicle's electrical system and external antenna	Capable of digital transmissions without an adaptor	Designed for rugged use and is submersible in water	Less than or equal to $500 per unit	No special skills or training required	No special training required	No special training required
◕						Operates off battery pack or external dc adapter										
◑	Power output of more than 1.5 W but less than 3 W	Capable of secure transmissions with an accessory	Can be programmed/ reprogrammed by vendor only	Fixed capability	Transmission can travel 5 miles to 10 miles	Operates off battery pack or ac adapter	Uses 120/220 V ac	Greater than 4 h but less than 8 h			Capable of digital transmissions with an adaptor	Designed for rugged use but is not submersible in water	Greater than $500 but less than $1000 per unit	No special skills but some training required	Less than 60 min training required	Less than 8 h training required
○	Power output of less than 1.5 W	Not capable of secure transmissions	Can be programmed/ reprogrammed by the end user	Restrictive capability	Transmission can travel less than 5 miles	Operates off battery pack only	Uses voltage other than standard 12 V dc to 15 V dc or 110/220 V ac	Less than 4 h	Battery not locked into place	Does not have optional vehicle adapter	Not capable of digital transmissions	Designed for standard use only	Greater than $1000 per unit	Technical background required to operate equipment	More than 60 min training required	More than 8 h training required

The gray cells designate that the symbol is not applicable for the selection factor.

APPENDIX A—RECOMMENDED QUESTIONS ON COMMUNICATION EQUIPMENT

APPENDIX A—RECOMMENDED QUESTIONS ON COMMUNICATION EQUIPMENT[5]

Buying detection, protection, decontamination, and communication equipment to respond to the threatened terrorist use of chemical or biological warfare agents may be new for public safety agencies. To help procurement officials obtain the best value for their domestic preparedness dollar, a series of questions was excerpted from a report titled: "Domestic Preparedness Program in Defense of Weapons of Mass Destruction Report on Communication Equipment" (see detailed reference in appendix B). These questions should assist officials in selecting products from the large number in the present day marketplace. Requesting vendors to provide written responses to specific questions may also be helpful in the decision process.

Note: The included question lists are meant as starting points only. The consumer should add any questions pertinent to a particular application.

Portable Radio Accessories

1. Can I use the accessory with or without a facemask?
2. Can I use the accessory with an encapsulated suit?
3. What radios are compatible with the unit?
4. How does the equipment function in high noise (a lot of electrical or environmental interference) surroundings?
5. Does the equipment require batteries? How many? What type? Battery life?
6. Is the equipment waterproof?
7. Is the equipment spark proof, intrinsically safe, or explosion proof?
8. Is the product voice activated? Push-to-talk (PTT)? Both? How big is the PTT switch?
9. Can the PTT be activated through a suit? How tactile is the switch?
10. What receiver options are available?
11. Can the unit be decontaminated?
12. Does other protective equipment affect the clarity of communication?
13. Will communication capability be affected by the removal or addition of any personal protective equipment (PPE)?
14. Is the product ruggedly constructed? What is the warranty period?
15. Who uses the product now? Where? For what application?
16. How much does a complete unit with radio interface cable cost?
17. What is the cost of ownership over time? (i.e., batteries, additional components, etc.)

Portable Radio Capabilities

1. Is voice communication continuous?
2. What is the level of intrinsic safety?
3. What materials are used in the construction of the equipment?
4. Is the equipment waterproof? Immersion proof?
5. What is the power source? Batteries (type)? Other?

[5]The information in Appendix A was provided by the National Domestic Preparedness Office (NDPO) in coordination with the National Institute of Justice and Technical Support Working Group.

6. What is the battery life? Is there a low battery warning?
7. Can it be used while wearing breathing apparatus?
8. What kind of accessories are available for the equipment?
9. Are system components and accessories interchangeable?
10. How quickly can the equipment be deployed?
11. Is the equipment shielded against RF or electromagnetic interference?
12. How easy is it to use? How much training is required?
13. How many people can be on the communication system at once?
14. What type of warranty does it come with?
15. Is the equipment built to a quality standard? What standard?

APPENDIX B—REFERENCES

APPENDIX B—REFERENCES

1. Andy Ibbetson, *Domestic Preparedness Program in Defense of Weapons of Mass Destruction Report on Communication Equipment*, CON-SPACE Communication Inc., October 26, 1999.

APPENDIX C—EQUIPMENT SAFETY

APPENDIX C—EQUIPMENT SAFETY[6]

Types of Electrical Equipment

Some examples of commonly used electrical equipment by rescuers in hazardous locations are two-way radios, hard-line and sound powered communication systems, gas detectors PASS devices, pagers, and ventilation equipment. However, electrical equipment, as defined by Factory Mutual Research in their Approval Standard 3600, is "All items applied as a whole or in part for the utilization of electrical energy. These include, among others, items for the generation, transmission, storage, measurement, regulation, conversion, and consumption of electrical energy and items for telecommunications."

Equipment Safety

When selecting electrically powered communication equipment for use in a hazardous or potentially hazardous environment, it is important to choose equipment that has been designed and approved to be spark proof, explosion proof, or intrinsically safe. The classifications for hazardous locations are in the National Electrical Code (NFPA 70).

The following is an abbreviated list of the different classifications and what they mean. If there is any doubt about the approval rating on a particular piece of equipment, check the label. In North America, all intrinsically safe or explosion proof equipment has to carry a label that lists the hazardous location or hazardous locations for which it has been tested and approved. If the hazardous location information is not on the label, it is not approved for that location and, if there is no label, the equipment is not approved. If the physical size of the equipment prohibits a listing of approved locations, as a minimum requirement, the equipment will have the mark of the Nationally Recognized Test Laboratory (NTRL) that did the testing. If there is any question about the approval status for a piece of electrical equipment, request a copy of the certification record or approval agreement from the equipment manufacturer or distributor and keep it on file for future reference.

[6] Appendix C has been copied in its entirety from "Report on Communication Equipment, (Domestic Preparedness Program in Defense of Weapons of Mass Destruction)." This is a circulated document prepared by Andy Ibbetson, CON-SPACE Communication Inc., October 26, 1999.

National Electrical Code (NEC) Classifications for Hazardous Locations

Class I	Locations where there is a danger of explosion due to flammable gases or vapors present in quantities sufficient to produce explosive or ignitable mixtures.
Class II	Locations where there is a danger of explosion due to the presence of combustible or electrically conductive dust.
Class III	Locations where there is a danger of explosion or flash fire due to the presence of easily ignitable fibers or flyings.
Classes are separated into Divisions 1 and 2	
Division 1	Locations where the gases, vapors, conductive dust, combustible dust, flyings and/or fibers are present in the air in potentially flammable concentrations continuously, frequently, or intermittently under normal operating conditions.
Division 2	Locations where the gases, vapors, conductive dust, combustible dust, flyings and/or fibers might become hazardous in the event of mechanical breakdown, accident, failure, or the abnormal operation of equipment.
Classes are further divided into Groups	
Class I	
Group A	Acetylene.
Group B	Butadiene, Hydrogen, Ethylene Oxide, Propylene Oxide, and Acrolien.
Group C	Acetaldehyde, Ethylene, and Ether Vapors.
Group D	Acetone, Ammonia, Benzene, Butane, Cyclopropane, Gasoline, Hexane, Methane, Methanol, Natural Gas, Naptha, and Propane.
Class II	
Group E	Combustible metal dust including aluminium, magnesium and their commercial alloys.
Group F	Combustible carbonaceous dusts including Carbon Black, coal, and charcoal.
Group G	Combustible dusts not listed in groups E or F including flour, grain, wood, and plastic.
Class III	No Groups.

Zones

The 1996 version of the National Electrical Code (NEC) included Article 505 – Class I, Zone 0, 1, and 2 Locations. Article 505 specifies an alternative hazardous location identification scheme for Class I environments. The Zone system does not replace the aforementioned classification system, but since Zones are common classifications elsewhere in the world, its inclusion in the NEC should be considered a step toward standardization of I.S. approval standards with other countries.

Special Note: NEC Article 500–3 states that if Article 505 is used, area classification, wiring, and equipment selection must be done under the supervision of a qualified Registered Professional Engineer.

Class 1 – Zones*

Zone 0	Location in which ignitable concentrations of flammable gases and vapors are present either continuously or for long periods of time.
Zone 1	Location in which ignitable concentrations of flammable gases or vapors that are likely to exist under normal operating conditions or may exist frequently because of repair maintenance, leakage, or breakdown. Or the location is adjacent to a Class I, Zone 0 from which ignitable concentrations could be communicated, unless prevented by adequate positive pressure ventilation and safeguards are in place to prevent ventilation failure.
Zone 2	Location in which ignitable concentrations of flammable gases or vapors that are not likely to occur in normal operation and if they do occur will exist only for a short period of time. An area where liquids gases or vapors are normally confined in closed containers or systems that could escape due to an accidental rupture, breakdown, or abnormal operation of equipment. Or where the ignitable concentrations are normally prevented by positive mechanical ventilation but could become hazardous due to the failure or abnormal operation of the ventilation equipment. Or the location is adjacent to a Class I, Zone 1 from which ignitable concentrations could be communicated, unless prevented by adequate positive pressure ventilation and safeguards are in place to prevent ventilation failure.

Group Equivalents

Zone System	=	Current System
Class I, Group IIc	=	Class I, Groups A & B
Class I, Group IIb	=	Class I, Group C
Class I, Group IIa	=	Class I, Group D

*The above is an abbreviated version of the Zone/Group system and is for information purposes only. Refer to the NEC Article 505 for complete descriptions of Class I, Zones and Groups.

Examples of Classifications and Corresponding Rescue Sites

Note: Refer to the National Electrical Code Articles 500, 501, 502, 503, 505 for a complete description of Hazardous Area Classifications and Group descriptions including an alternative hazardous location identification scheme (Zone Classification System).

Class I, Divisions 1 & 2

Petroleum refineries, dry cleaning plants, petrochemical plants, hospitals, utilities, aircraft hangers, paint manufacturers, dip tanks containing flammable or combustible liquids, and spray finishing areas.

Class II, Divisions 1 & 2

Grain elevators, flour and feed mills, confectionery plants, fireworks manufacturing and storage, grain ships, areas for packaging and handling of pulverized sugar and cocoa, manufacturing and storage of magnesium or aluminium, spice grinding mills, and some coal handling plants.

Class III, Divisions 1 & 2

Wood working plants, textile mills, cotton gins, cottonseed mills, flax producing plants, knitting mills, and weaving mills.

NOTE: The above is an example only. Individual group classifications also apply to the above and were omitted for brevity. To determine Classifications for specific locations, consult with your safety officer.

ABOUT THE LAW ENFORCEMENT AND CORRECTIONS STANDARDS AND TESTING PROGRAM

The Law Enforcement and Corrections Standards and Testing Program is sponsored by the Office of Science and Technology of the National Institute of Justice (NIJ), U.S. Department of Justice. The program responds to the mandate of the Justice System Improvement Act of 1979, directed NIJ to encourage research and development to improve the criminal justice system and to disseminate the results to Federal, State, and local agencies.

The Law Enforcement and Corrections Standards and Testing Program is an applied research effort that determines the technological needs of justice system agencies, sets minimum performance standards for specific devices, tests commercially available equipment against those standards, and disseminates the standards and the test results to criminal justice agencies nationally and internationally.

The program operates through:

The *Law Enforcement and Corrections Technology Advisory Council* (LECTAC), consisting of nationally recognized criminal justice practitioners from Federal, State, and local agencies, which assesses technological needs and sets priorities for research programs and items to be evaluated and tested.

The *Office of Law Enforcement Standards* (OLES) at the National Institute of Standards and Technology, which develops voluntary national performance standards for compliance testing to ensure that individual items of equipment are suitable for use by criminal justice agencies. The standards are based upon laboratory testing and evaluation of representative samples of each item of equipment to determine the key attributes, develop test methods, and establish minimum performance requirements for each essential attribute. In addition to the highly technical standards, OLES also produces technical reports and user guidelines that explain in nontechnical terms the capabilities of available equipment.

The *National Law Enforcement and Corrections Technology Center* (NLECTC), operated by a grantee, which supervises a national compliance testing program conducted by independent laboratories. The standards developed by OLES serve as performance benchmarks against which commercial equipment is measured. The facilities, personnel, and testing capabilities of the independent laboratories are evaluated by OLES prior to testing each item of equipment, and OLES helps the NLECTC staff review and analyze data. Test results are published in Equipment Performance Reports designed to help justice system procurement officials make informed purchasing decisions.

Publications are available at no charge through the National Law Enforcement and Corrections Technology Center. Some documents are also available online through the Internet/World Wide Web. To request a document or additional information, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
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Law Enforcement and Corrections Standards and Testing Program

Guide for the Selection of Communication Equipment for Emergency First Responders

NIJ Guide 104–00

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U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

Guide for the Selection of Communication Equipment for Emergency First Responders

NIJ Guide 104–00, Volume II

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FOREWORD

The Office of Law Enforcement Standards (OLES) of the National Institute of Standards and Technology (NIST) furnishes technical support to the National Institute of Justice (NIJ) program to support law enforcement and criminal justice in the United States. OLES's function is to develop standards and conduct research that will assist law enforcement and criminal justice agencies in the selection and procurement of quality equipment.

OLES is: (1) subjecting existing equipment to laboratory testing and evaluation, and (2) conducting research leading to the development of several series of documents, including national standards, user guides, and technical reports.

This document covers research conducted by OLES under the sponsorship of NIJ. Additional reports as well as other documents are being issued under the OLES program in the areas of protective clothing and equipment, communications systems, emergency equipment, investigative aids, security systems, vehicles, weapons, and analytical techniques and standard reference materials used by the forensic community.

Technical comments and suggestions concerning this guide are invited from all interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102.

Sarah V. Hart, Director
National Institute of Justice

CONTENTS

COMMONLY USED SYMBOLS AND ABBREVIATIONS

A	ampere	h	hour	oz	ounce
ac	alternating current	hf	high frequency	o.d.	outside diameter
AM	amplitude modulation	Hz	hertz	Ω	ohm
cd	candela	i.d.	inside diameter	p.	page
cm	centimeter	in	inch	Pa	pascal
CP	chemically pure	IR	infrared	pe	probable error
c/s	cycle per second	J	joule	pp.	pages
d	day	L	lambert	ppm	parts per million
dB	decibel	L	liter	qt	quart
dc	direct current	lb	pound	rad	radian
°C	degree Celsius	lbf	pound-force	rh	relative humidity
°F	degree Fahrenheit	lbf·in	pound-force inch	s	second
dia	diameter	lm	lumen	SD	standard deviation
emf	electromotive force	ln	logarithm (base e)	sec.	Section
eq	equation	log	logarithm (base 10)	SWR	standing wave ratio
F	farad	M	molar	uhf	ultrahigh frequency
fc	footcandle	m	meter	UV	ultraviolet
fig.	Figure	μ	micron	V	volt
FM	frequency modulation	min	minute	vhf	very high frequency
ft	foot	mm	millimeter	W	watt
ft/s	foot per second	mph	miles per hour	N	newton
g	acceleration	m/s	meter per second	λ	wavelength
g	gram	mo	month	wk	week
gal	gallon	N·m	newton meter	wt	weight
gr	grain	nm	nanometer	yr	year
H	henry	No.	number		

area=unit^2 (e.g., ft^2, in^2, etc.); volume=unit^3 (e.g., ft^3, m^3, etc.)

ACRONYMS SPECIFIC TO THIS DOCUMENT

APCO	Association of Public Safety Communications Officials	NiMH	Nickel Metal Hydride
CB	Citizens Band	PCS	Personal Communication System
EDACS	Enhanced Digital Access Communications Systems	PMR	Private Mobile Radio
GHz	Gigahertz	PTT	Push-to-Talk
I.S.	Intrinsically Safe	RF	Radio Frequency
LMR	Land Mobile Radios	SMR	Shared Mobile Radio
LTR	Logic Trunked Radio	TETRA	Terrestrial Trunked Radio
MHz	Megahertz	VOX	Voice Operated Switch
NiCad	Nickel Cadmium		

DEFINITIONS SPECIFIC TO THIS DOCUMENT

CDMA	Code Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
TMDA	Time Division Multiple Access is a method of subdividing a band to permit access to the same frequency for multiple users.
ISM Bands	Nonlicensed/nonexclusive frequency bands for Industrial, Scientific, and Medical applications. Frequency bands (902 MHz to 928 MHz, 2.40 GHz to 2.483 GHz) set aside for low-power devices (also referred to as “Part 15” devices).
DSSS	Direct Sequence and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
FHSS	Frequency Hopping and Spread Spectrum (an RF transmission scheme to permit multiple, coordinated users to operate in the same band).
Duplex	Real or perceived simultaneous transmit and receive.
Half-duplex	Continuous receive of all transmitted information and a transmit frequency/time slot/code shared with others.

PREFIXES
(See ASTM E380)

d	deci (10^{-1})	da	deka (10)
c	centi (10^{-2})	h	hecto (10^{2})
m	milli (10^{-3})	k	kilo (10^{3})
µ	micro (10^{-6})	M	mega (10^{6})
n	nano (10^{-9})	G	giga (10^{9})
p	pico (10^{-12})	T	tera (10^{12})

COMMON CONVERSIONS

0.30480 m = 1 ft	4.448222 N = 1 lbf
25.4 mm = 1 in	1.355818 J = 1 ft·lbf
0.4535924 kg = 1 lb	0.1129848 N m = 1 lbf·in
0.06479891g = 1gr	14.59390 N/m = 1 lbf/ft
0.9463529 L = 1 qt	6894.757 Pa = 1 lbf/in^2
3600000 J = 1 kW·hr	1.609344 km/h = 1 mph

psi = mm of Hg x (1.9339×10^{-2})
mm of Hg = psi x 51.71

Temperature: $T\,{}^{\circ}_{C} = (T\,{}^{\circ}_{F} - 32) \times 5/9$

Temperature: $T\,{}^{\circ}_{F} = (T\,{}^{\circ}_{C} \times 9/5) + 32$

ABOUT THIS GUIDE

The National Institute of Justice is the focal point for providing support to State and local law enforcement agencies in the development of counterterrorism technology and standards, including technological needs for chemical and biological defense. In recognizing the needs of State and local emergency first responders, the Office of Law Enforcement Standards (OLES) at the National Institute of Standards and Technology (NIST), supported by the National Institute of Justice (NIJ), the Technical Support Working Group (TSWG), the U.S. Army Soldier and Biological Chemical Command, and the Interagency Board for Equipment Standardization and Interoperability (IAB), is developing chemical and biological defense equipment guides. These guides will focus on chemical and biological equipment in areas of detection, personal protection, decontamination, and communication. This guide focuses specifically on communication equipment and was developed to assist the emergency first responder community in the evaluation and purchase of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment.

The long range plans include these goals: (1) subject existing communication equipment to laboratory testing and evaluation against a specified protocol, and (2) conduct research leading to the development of a series of documents, including national standards, user guides, and technical reports. It is anticipated that the testing, evaluation, and research processes will take several years to complete; therefore, the National Institute of Justice has developed this initial guide for the emergency first responder community to facilitate their evaluation and purchase of communication equipment.

In conjunction with this program, additional guides, as well as other documents, are being issued in the areas of chemical agent and toxic industrial material detection equipment, biological agent detection equipment, decontamination equipment, and personal protective equipment.

This specific work is Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*. It contains the information data sheets that were used to support the communication equipment evaluation detailed in Volume I. The compilation of data in Volume II is the result of the merger of several data acquisition methods used independently by NIST and TSWG.

The information contained in this guide has been obtained primarily through literature searches and market surveys. The vendors were contacted during the preparation of this guide to ensure data accuracy. In addition, the information contains test data obtained from other sources (e.g., Department of Defense) if available. It should be noted that the purpose of this guide is not to make recommendations about which equipment should be purchased, but to provide to the reader with information available from vendors so commercially available equipment can be compared and contrasted. *Reference herein to any specific commercial products, processes, or services by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The information and statements contained in this guide shall not be used for the purposes of advertising, nor to imply the endorsement or recommendation of the United States Government.*

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Technical comments, suggestions, and product updates are encouraged from interested parties. They may be addressed to the Office of Law Enforcement Standards, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8102, Gaithersburg, MD 20899–8102. It is anticipated that this guide will be updated periodically.

Questions relating to the specific devices included in this document should be addressed directly to the proponent agencies or the equipment manufacturers. Contact information for each equipment item included in this guide can be found in this volume (vol. II).

1. INTRODUCTION

This guide includes information that is intended to assist the emergency first responder community in the selection of communication equipment for different applications. This specific work, Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*, includes manufacturer-supplied details on the 181 communication equipment items that are referenced in Volume I.

The *Guide for the Selection of Communication Equipment for Emergency First Responders* includes information intended to be useful to the emergency first responder community in the selection of communication equipment that can be used in conjunction with chemical and biological protective clothing and respiratory equipment. Due to the large number of communication equipment items (radios) identified for the guide, the guide is separated into two volumes. Volume I serves as the selection tool while Volume II serves as a repository for the communication equipment data sheets.

This specific work represents Volume II of the *Guide for the Selection of Communication Equipment for Emergency First Responders*. Volume II includes three sections and five appendices. Section 1 is the introduction. Section 2 discusses the market survey (preliminary work) that was conducted to identify the 181 commercially available communication equipment items. Section 3 provides a description of the 43 data fields that were identified for providing information relating to the equipment. Appendix A lists the reference used in developing this document. Appendix B sequentially indexes the communication equipment by detector identification number and includes the manufacturers. Appendix C alphabetically indexes the communication equipment by the equipment names. Appendix D alphabetically indexes the communication equipment by the manufacturer names. Appendix E contains the data sheets for each item of communication equipment.

2. IDENTIFICATION OF COMMUNICATION EQUIPMENT

An extensive market survey was conducted to identify commercially available communication equipment. This market survey included the identification of new equipment and interaction with numerous equipment vendors. Section 2.1 provides the identification of new equipment, and section 2.2 provides a summary of information obtained through interfacing with the vendors.

2.1 Identification of New Equipment

A variety of sources were utilized to identify commercially available communication equipment, including a Commerce Business Daily (CBD) Announcement, literature searches, database searches, Internet searches, technical conferences, technical contacts, and amateur radio hobbyists. These techniques resulted in the identification of 181 communication equipment items.

2.2 Vendor Contact

Vendors were contacted to obtain additional product information, as well as to finalize their specific equipment data for inclusion in the guide. An initial contact occurred in June 2000, asking for detailed information from manufacturers and vendors. Each vendor received a facsimile or an electronic mail message that contained the data sheets for their specific equipment item(s) and the definitions that were used to create the data sheets. The vendors were given three weeks to review the information.

A second contact was made during October 2000. Each vendor again received a facsimile or an electronic mail message that contained the data sheets for their specific equipment item(s), the selection factors that were developed to assist with the selection and purchase of the most appropriate equipment, and the results of the evaluation of the communication equipment against the selection factors. The vendors were asked to review the data sheets and tables for completeness and accuracy of the incorporated data.

3. DATA FIELDS

Appendix E serves as a compendium of commercially available communication equipment. Each of the identified 181 communication equipment items is detailed within appendix E. Forty-three data fields, as defined in this section, were used for providing information relating to the communication equipment. It is important to note that these data fields were developed using input from the emergency responder community.

The data fields are organized into six categories:

- General.
- Operational parameters.
- Physical parameters.
- Available accessories.
- Logistical parameters.
- Special requirements.

The remainder of this section defines each of the 43 data fields by category.

3.1 General Category

The General Category includes the following 12 data fields:

1. Equipment name.
2. ID #.
3. Model number(s).
4. Technology.
5. Secure communication capability.
6. Availability.
7. Frequency range.
8. Number of personnel supported by system.
9. Geographic coverage.
10. Current user(s).
11. Manufacturer.
12. Source.

Each of these data fields is defined in more detail in the remainder of this section.

3.1.1 Name

The Name data field is used to identify the name of the equipment.

3.1.2 ID

The ID # data field is for identification purposes only.

3.1.3 Model Number(s)

The Model Number(s) data field includes the model identification number for the piece of equipment.

3.1.4 Technology

The Technology data field identifies whether the unit is part of a conventional, trunked, or hard-wired radio system.

3.1.5 Secure Communication Capability

The Secure Communication Capability data field identifies whether an encryption module is available to prevent sensitive radio traffic from being monitored by the media or general public.

3.1.6 Availability

Availability refers to how readily available a piece of equipment is (e.g., how long it takes to receive equipment upon purchasing) or the availability status of the equipment (e.g., commercial availability).

3.1.7 Frequency Range

The Frequency Range data field identifies the public service band used (not applicable to hard wire systems).

3.1.8 Number of Personnel Supported by System

The Number of Personnel Supported by System data field indicates the number of people that can use the system.

3.1.9 Geographic Coverage

The Geographic Coverage data field identifies how large an area can be covered by the system (square miles for radio, linear feet for hard line). Line of sight (the distance that transmission can occur in a clear area with no repeater) is an important consideration for this data field.

3.1.10 Current User(s)

The Current User data field is used to identify organizations that are currently using the equipment/radio system, and the number of organizations using equipment/radio system in North America.

3.1.11 Manufacturer

The Manufacturer data field contains the name of the company that developed the piece of equipment and includes the address, telephone number, and point of contact (POC).

3.1.12 Source

The Source data field indicates where the equipment information was obtained. Potential sources include past market surveys and Internet Web sites.

3.2 Operational Parameters Category

The Operational Parameters Category includes the following four data fields:

1. Number of channels.
2. Transmitter power output levels.
3. Battery options.
4. Battery recharging options.

Each of these data fields is defined in more detail in the remainder of this section.

3.2.1 Number of Channels

The Number of Channels data field indicates the maximum number of channels on which a unit can be programmed to operate.

3.2.2 Transmitter Output Power Levels

The Transmitter Output Power Levels data field specifies the number and magnitude of discreet transmitter power output levels.

This selection factor rates the transmitter power output. For portable radios, too high an output power leads to a shortened battery use cycle before the battery needs to be changed or recharged. Too low an output can put the life of the responder in jeopardy, as the signal may not be able to be picked up by the repeater or other receiver. This does not apply to mobile radios or repeaters, however, because they have a higher output and an external power source.

3.2.3 Battery Options

The Battery Options data field identifies the types of batteries that are available for the unit. Some examples are NiCad, NiMH, and alkaline batteries.

3.2.4 Battery Recharging Options

The Battery Recharging Options data field identifies whether such options as individual chargers, bank charging stations, rapid charging stations, or vehicular charging are available for the unit.

3.3 Physical Parameters Category

The Physical Parameters Category includes the following four data fields:

1. Size.
2. Weight.
3. Power requirements.
4. External power.

Each of these data fields is defined in more detail in the remainder of this section.

3.3.1 Size

The Size data field provides the external dimensions of the equipment.

3.3.2 Weight

The Weight data field indicates the total weight of the equipment (radio and battery).

3.3.3 Power Requirements

The Power Requirements data field refers to the battery voltage and current drain of the equipment.

3.3.4 External Power

The External Power data field indicates whether there is a jack for external power or if a battery eliminator is used.

3.4 Available Accessories

The Available Accessories category includes the following four data fields:

1. Speaker-microphone.
2. Carrying case.
3. Battery eliminators.
4. Vehicle adapters.

Each of these data fields is defined in more detail in the remainder of this section.

3.4.1 Speaker-Microphone

The Speaker-Microphone data field indicates types of speaker-microphones available, such as conventional, separate ear canal speaker-throat microphone combination, ear canal speaker-microphone, separate ear canal speaker-lapel microphone, voice-activated talk switch, remote switch, etc. This field also specifies whether the speaker-microphones have a screw-in connection or plug-in connection.

3.4.2 Carrying Case

The Carrying Case data field identifies the types of carries that are available, such as belt loop and suspender pouch carriers.

3.4.3 Battery Eliminator

The Battery Eliminator data field indicates whether the manufacturer has battery eliminators available or if they must be obtained from a third party manufacturer.

3.4.4 Vehicular Adapter

The Vehicular Adapter data field indicates whether vehicular adapters are available that allow units to be used with an external antenna, an external power, etc., while charging the unit's battery.

3.5 Logistical Parameters Category

The Logistical Parameters Category includes the following 10 data fields:

1. Programming.
2. Repairs.
3. Decontamination.
4. Durability/ruggedness.
5. Environmental conditions.
6. Unit cost.
7. Battery cycle life.
8. Rapid charge battery cycle life.
9. Maintenance cost.
10. Interface capability.

Each of these data fields is defined in more detail in the remainder of this section.

3.5.1 Programming

The Programming data field indicates if the individual radios are programmed at a service facility and whether they can be field and user-programmed.

3.5.2 Repairs

The Repairs data field indicates if the radios can be repaired at the local dealer and/or service facility or if they must be returned to a national service depot.

3.5.3 Decontamination

The Decontamination data field identifies the process, such as thermal, chemical, or physical, by which the communication equipment can be decontaminated.

3.5.4 Durability/Ruggedness

The Durability/Ruggedness data field describes how rugged the equipment is (i.e., how well the equipment can take brutally rough handling and still operate) and indicates if ruggedness data can be shown.

3.5.5 Environmental Conditions

The Environmental Conditions data field specifies the temperature and humidity range that the equipment is designed to operate in without compromising the efficiency or effectiveness of the radio. This field also indicates if ruggedized versions of the equipment are available for inclement weather or extreme conditions.

3.5.6 Unit Cost

The Unit Cost data field is the cost of the equipment, including all consumables and support equipment.

This selection factor rates the unit cost of the radio equipment. This factor, in conjunction with other selection factors, can help decide if a radio will be deemed suitable for disposal after use, suitable for special uses only, or suitable for all uses.

3.5.7 Battery Cycle Life

The Battery Cycle Life data field refers to how many normal charge/discharge cycles the batteries are rated for.

3.5.8 Rapid Charge Battery Cycle Life

The Rapid Charge Battery Cycle Life refers to how many rapid charge/discharge cycles the batteries are rated for.

3.5.9 Maintenance Cost

The Maintenance Cost is the cost to maintain and operate the equipment. This cost will be based on equipment usage rates.

3.5.10 Interface Capability

The Interface Capability data field indicates whether the communication equipment has the ability to interface with personal protection, communication, or decontamination equipment. This includes network capability, hard wire capability, RF communication, etc.

3.6 Special Requirements Category

The Special Requirements Category includes the following nine data fields:

1. Operator skills required.
2. Operator training required.
3. Training available.
4. Manuals available.
5. Applicable regulations.
6. Support equipment.
7. Warranty.
8. Mil Spec/Mil-Std ratings.
9. Intrinsically safe.

Each of these data fields is defined in more detail in the remainder of this section.

3.6.1 Operator Skills Required

The Operator Skills Required data field describes the educational level training necessary to execute the required basic maintenance activities, such as changing batteries and radio programming.

3.6.2 Operator Training Requirements

The Operator Training Requirements data field refers to the amount of time required for the operator to become proficient in using the radio equipment.

3.6.3 Training Available

The Training Available data field indicates if there is training available from the manufacturer.

3.6.4 Manuals Available

The Manuals Available data field describes the type of manuals available from the manufacturer; for example, a user manual or a service manual.

3.6.5 Applicable Regulations

The Applicable Regulations data field refers to government and/or safety regulations that may apply to the RF exposure of first responders.

3.6.6 Support Equipment

The Support Equipment data field lists additional equipment required to operate the chosen units/system. This may include computers, programming interfaces, and programming cables.

3.6.7 Warranty

The Warranty data field refers to how long a piece of equipment would be guaranteed by the manufacturer.

3.6.8 Mil Spec/Mil-Std Ratings

The Mil Spec/Mil-Std data field indicates if the equipment meets Mil Spec C, D, and E requirements, if it meets the requirements for driving in the rain, and if it meets any additional Mil Spec Ratings.

3.6.9 Intrinsically Safe

The Intrinsically Safe data field indicates if the equipment has been certified intrinsically safe by Factory Mutual, or if a version of the equipment is available with this rating.

APPENDIX A—REFERENCES

APPENDIX A—REFERENCES

1. Andy Ibbetson, *Domestic Preparedness Program in Defense of Weapons of Mass Destruction Report on Communication Equipment*, CON-SPACE Communication Inc., October 26, 1999.

APPENDIX B—INDEX BY COMMUNICATION EQUIPMENT IDENTIFICATION NUMBER

Index by Communication Equipment Identification Number

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18	ComNet Ericsson Panther Transceiver, Mobile Panther 600M	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	35
19	ComNet Ericsson Panther Transceiver, Portable; Panther 400P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	37
20	ComNet Ericsson Panther Transceiver, Portable; Panther 500P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	39
21	ComNet Ericsson Panther Transceiver, Portable; Panther 600P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	41
22	ComNet Ericsson Panther Transceiver, Portable; Panther 625P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	43
23	ComNet Ericsson ProVoice™ LPE 200™ Portable 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	45
24	ComNet Ericsson ProVoice™ MASTR™ III Base Station 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	47
25	ComNet Ericsson ProVoice™ Orion™ Mobile 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	49
26	EFJohnson Auris Analog Base Station; RS-5601-VHF Single Channel	EFJohnson/Transcrypt, Waseca, Minnesota	51
27	EFJohnson Auris Digital Repeater; RS-5601-VHF Single Channel	EFJohnson/Transcrypt, Waseca, Minnesota	53
28	EFJohnson Auris Digital Repeater; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	55
29	EFJohnson Auris Digital Base Station; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	57
30	EFJohnson Auris Digital Repeater/Basestation; RS-5604 (Single Channel)/5614 (Dual Channel) - UHF	EFJohnson/Transcrypt, Waseca, Minnesota	59
31	EFJohnson Auris Repeater; RS-5604 (Single Channel)/5614 (Dual Channel) - UHF	EFJohnson/Transcrypt, Waseca, Minnesota	61
32	EFJohnson Transceiver, Portable; 77xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	63
33	EFJohnson Transceiver, Portable; 98xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	65
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36	EFJohnson Transceiver, Portable; 508x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	71
37	EFJohnson Transceiver; 531x-VHF	EFJohnson/Transcrypt, Waseca, Minnesota	73
38	EFJohnson Transceiver; 538x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	75
39	Icom VHF Transceiver, Portable; IC-F3	ICOM America Inc., Bellevue, Washington	77
40	Icom VHF Transceiver, Portable; IC-F3S	ICOM America Inc., Bellevue, Washington	79
41	Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS	ICOM America Inc., Bellevue, Washington	81
42	Icom UHF Transceiver, Portable; IC-F4	ICOM America Inc., Bellevue, Washington	83
43	Icom UHF Transceiver, Portable; IC-F4S	ICOM America Inc., Bellevue, Washington	85
44	Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS	ICOM America Inc., Bellevue, Washington	87
45	Icom VHF Mobile Transceiver; IC-F1020	ICOM America Inc., Bellevue, Washington	89
46	Icom UHF Mobile Transceiver; IC-F2020	ICOM America Inc., Bellevue, Washington	91
47	Icom VHF Mobile Transceiver; IC-F320/IC-F420	ICOM America Inc., Bellevue, Washington	93
48	Icom UHF Mobile Transceiver; IC-F320S/IC-F420S	ICOM America Inc., Bellevue, Washington	95
49	Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT	ICOM America Inc., Bellevue, Washington	97
50	Icom VHF Transceiver, Portable; IC-F30LT Land Use IC-F30LT Marine Version	ICOM America Inc., Bellevue, Washington	99
51	Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT	ICOM America Inc., Bellevue, Washington	101

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52	Icom UHF Transceiver, Portable; IC-F40LT Land Use IC-F40M/IC-F40LT Marine Version	ICOM America Inc., Bellevue, Washington	103
53	Modular Interconnect System, ACU-1000	JPS Communications, Inc., Raleigh, North Carolina	105
54	Transportable Radio Interconnect System, TRP-1000	JPS Communications, Inc., Raleigh, North Carolina	107
55	Kenwood Synthesized FM Portable Radio; TK-260/G	Kenwood Communications Corp., Long Beach, California	109
56	Kenwood Synthesized FM Portable Radio; TK-270/G	Kenwood Communications Corp., Long Beach, California	111
57	Kenwood Synthesized FM Portable Radio; TK-360/G	Kenwood Communications Corp., Long Beach, California	113
58	Kenwood Synthesized FM Portable Radio; TK-370/G	Kenwood Communications Corp., Long Beach, California	115
59	Kenwood Compact Synthesized FM Mobile Radio; TK-760G	Kenwood Communications Corp., Long Beach, California	117
60	Kenwood Compact Synthesized FM Mobile Radio; TK-860G	Kenwood Communications Corp., Long Beach, California	119
61	Kenwood Compact Synthesized FM Mobile Radio; TK-762G	Kenwood Communications Corp., Long Beach, California	121
62	Kenwood Compact Synthesized FM Mobile Radio; TK-862G	Kenwood Communications Corp., Long Beach, California	123
63	Kenwood Compact Synthesized FM Mobile Radio; TK-760H	Kenwood Communications Corp., Long Beach, California	125
64	Kenwood Compact Synthesized FM Mobile Radio; TK-860H	Kenwood Communications Corp., Long Beach, California	127
65	Kenwood Compact Synthesized FM Mobile Radio; TK-762H	Kenwood Communications Corp., Long Beach, California	129
66	Kenwood Compact Synthesized FM Mobile Radio; TK-862H	Kenwood Communications Corp., Long Beach, California	131
67	Kenwood Public Safety Mobile FM Radios; TK-690H	Kenwood Communications Corp., Long Beach, California	133
68	Kenwood Public Safety Mobile FM Radios; TK-790	Kenwood Communications Corp., Long Beach, California	135

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69	Kenwood Public Safety Mobile FM Radios; TK-790H	Kenwood Communications Corp., Long Beach, California	137
70	Kenwood Public Safety Mobile FM Radios; TK-890	Kenwood Communications Corp., Long Beach, California	139
71	Kenwood Public Safety Mobile FM Radios; TK-890H	Kenwood Communications Corp., Long Beach, California	141
72	Kenwood VHF/UHF Mobile Radio; TK-780	Kenwood Communications Corp., Long Beach, California	143
73	Kenwood VHF/UHF Mobile Radio; TK-880	Kenwood Communications Corp., Long Beach, California	145
74	Kenwood Transceiver, Portable; TK-2100	Kenwood Communications Corp., Long Beach, California	147
75	Kenwood Transceiver, Portable; TK-3100	Kenwood Communications Corp., Long Beach, California	149
76	Kenwood Transceiver, Portable; TK-3101	Kenwood Communications Corp., Long Beach, California	151
77	Kenwood VHF Fm Transceivers; TK-290	Kenwood Communications Corp., Long Beach, California	153
78	Kenwood UHF Fm Transceivers; TK-390	Kenwood Communications Corp., Long Beach, California	155
79	Kenwood Trunked Mobile Radio; TK-980 NSPAC	Kenwood Communications Corp., Long Beach, California	157
80	Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	Kenwood Communications Corp., Long Beach, California	159
81	Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	Kenwood Communications Corp., Long Beach, California	161
82	Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC	Kenwood Communications Corp., Long Beach, California	163
83	Kenwood 800/900 MHz FM Transceiver; TK-481	Kenwood Communications Corp., Long Beach, California	165
84	Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	Kenwood Communications Corp., Long Beach, California	167
85	Kenwood Trunked Compact Mobile Radio; TK-980	Kenwood Communications Corp., Long Beach, California	169
86	Kenwood Trunked Compact Mobile Radio; TK-981	Kenwood Communications Corp., Long Beach, California	171

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87	Kenwood VHF Base Transceiver; TKB-720	Kenwood Communications Corp., Long Beach, California	173
88	Kenwood VHF/UHF Repeater; TKR-720	Kenwood Communications Corp., Long Beach, California	175
89	Kenwood UHF Repeater; TKR-820	Kenwood Communications Corp., Long Beach, California	177
90	Motorola Astro Transceiver, Portable; Saber 1	Motorola USA, Schaumburg, Illinois	179
91	Motorola Astro Transceiver, Portable; Saber 2	Motorola USA, Schaumburg, Illinois	181
92	Motorola Astro Transceiver, Portable; Saber 3	Motorola USA, Schaumburg, Illinois	183
93	Motorola Astro Transceiver, Portable; XTS 3000 Model 1	Motorola USA, Schaumburg, Illinois	185
94	Motorola Astro Transceiver, Portable; XTS 3000 Model 2	Motorola USA, Schaumburg, Illinois	187
95	Motorola Astro Transceiver, Portable; XTS 3000 Model 3	Motorola USA, Schaumburg, Illinois	189
96	Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	Motorola USA, Schaumburg, Illinois	191
97	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	193
98	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	195
99	Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	Motorola USA, Schaumburg, Illinois	197
100	Motorola Transceiver; Astro Digital Spectra W3	Motorola USA, Schaumburg, Illinois	199
101	Motorola Transceiver; Astro Spectra W4	Motorola USA, Schaumburg, Illinois	201
102	Motorola Transceiver; Astro Spectra W5	Motorola USA, Schaumburg, Illinois	203
103	Motorola Transceiver; Astro Spectra W7	Motorola USA, Schaumburg, Illinois	205
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106	Motorola Transceiver, Portable; HT 1000	Motorola USA, Schaumburg, Illinois	211
107	Motorola Transceiver, Portable; JT 1000	Motorola USA, Schaumburg, Illinois	213
108	Motorola Transceiver, Portable; MT 2000 VHF	Motorola USA, Schaumburg, Illinois	215
109	Motorola Transceiver, Portable; MTS 2000 Model 1	Motorola USA, Schaumburg, Illinois	217
110	Motorola Transceiver, Portable; MTS 2000 Model 2	Motorola USA, Schaumburg, Illinois	219
111	Motorola Transceiver, Portable; MTS 2000 Model 3	Motorola USA, Schaumburg, Illinois	221
112	Motorola Trunked Portable Radio; MTX 8000 Model B3	Motorola USA, Schaumburg, Illinois	223
113	Motorola Trunked Portable Radio; MTX 8000 Model B5	Motorola USA, Schaumburg, Illinois	225
114	Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	Motorola USA, Schaumburg, Illinois	227
115	Motorola Station/Repeater; QUANTAR	Motorola USA, Schaumburg, Illinois	229
116	Motorola Station/Repeater; QUANTRO	Motorola USA, Schaumburg, Illinois	231
117	Motorola Portable Repeater; Portable Repeater 2	Motorola USA, Schaumburg, Illinois	233
118	Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	Racal Communications Inc., Rockville, Maryland	235
119	Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	Racal Communications Inc., Rockville, Maryland	237
120	Racal Transceiver, Portable; 20 Meter MSHR	Racal Communications Inc., Rockville, Maryland	239
121	Racal Transceiver, Portable; Racal 25	Racal Communications Inc., Rockville, Maryland	241
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124	BK Synthesized FM Mobile Radio; EMV	Relm Communication, West Melbourne, Florida	247
125	BK Synthesized FM E Series DES EPH 599, EPU 499 and EPV 499 Models	Relm Communication, West Melbourne, Florida	249
126	BK Synthesized FM Portable Radio; E Series, EPH 51 and 52 Models	Relm Communication, West Melbourne, Florida	251
127	BK Synthesized FM Portable Radio; E Series, EPI 510 Models	Relm Communication, West Melbourne, Florida	253
128	BK Synthesized FM Portable Radio; E Series, EPU and EPV 414 and 499 Models	Relm Communication, West Melbourne, Florida	255
129	BK Repeater; ERU Series	Relm Communication, West Melbourne, Florida	257
130	BK Radio FM Transceiver, Portable; G Series, GPH Models	Relm Communication, West Melbourne, Florida	259
131	BK Radio Airborne Transceiver; KFM 985	Relm Communication, West Melbourne, Florida	261
132	Relm Mobile Radio; 256NB	Relm Communication, West Melbourne, Florida	263
133	Relm Portable Radios; MPU08 (UHF)	Relm Communication, West Melbourne, Florida	265
134	Relm Portable Radios; MPU32 (UHF)	Relm Communication, West Melbourne, Florida	267
135	Relm Portable Radios; MPV32 (VHF)	Relm Communication, West Melbourne, Florida	269
136	Relm Mobile Radios; SMV2516	Relm Communication, West Melbourne, Florida	271
137	Relm Mobile Radios; SMV4016	Relm Communication, West Melbourne, Florida	273
138	Maxon VHF/UHF RF Link Module; SD-25	Topaz 3, LLC, Kansas City, Missouri	275
139	Maxon Scanning Transceiver; SM-2000 Series	Topaz 3, LLC, Kansas City, Missouri	277

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142	Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	Topaz 3, LLC, Kansas City, Missouri	283
143	Maxon VHF/UHF Transceiver, Portable; SP-200	Topaz 3, LLC, Kansas City, Missouri	285
144	Maxon VHF/UHF Transceiver, Portable; SP-300	Topaz 3, LLC, Kansas City, Missouri	287
145	Maxon UHF Transceiver, Portable; SP-150U	Topaz 3, LLC, Kansas City, Missouri	289
146	Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	Yaesu/Vertex-Standard, Cerritos, California	291
147	Vertex FTL Series; FTL-1011 (VHF LowBand)	Yaesu/Vertex-Standard, Cerritos, California	293
148	Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	Yaesu/Vertex-Standard, Cerritos, California	295
149	Vertex FTL Series; FTL-2011 (VHF Highband)	Yaesu/Vertex-Standard, Cerritos, California	297
150	Vertex FTL Series; FTL-7011 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	299
151	Vertex GX4800UT Mobile Transceiver	Yaesu/Vertex-Standard, Cerritos, California	301
152	Vertex VX Series; VX-10V (VHF Model)	Yaesu/Vertex-Standard,	303
153	Vertex VX Series; VX-10U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	305
154	Vertex VX Series; VX-300	Yaesu/Vertex-Standard, Cerritos, California	307
155	Vertex HX Series; HX120 UHF Portable	Yaesu/Vertex-Standard,	309
156	Vertex HX Series; HX120 VHF Portable	Yaesu/Vertex-Standard,	311
157	Vertex HX Series; HX140 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	313

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159	Vertex HX Series; HX381 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	317
160	Vertex HX Series; HX240 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	319
161	Vertex HX Series; HX240 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	321
162	Vertex HX Series; HX482UT UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	323
163	Vertex HX Series; HX580 Dual Protocol Hand Held	Yaesu/Vertex-Standard, Cerritos, California	325
164	Vertex VX Series; VX-210V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	327
165	Vertex VX Series; VX-210U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	329
166	Vertex VX Series; VX-400V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	331
167	Vertex VX Series; VX-400U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	333
168	Vertex VX Series; VX-500	Yaesu/Vertex-Standard, Cerritos, California	335
169	Vertex VX Series; VX-510LX (Low Band VHF)	Yaesu/Vertex-Standard, Cerritos, California	337
170	Vertex VX Series; VX-510V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	339
171	Vertex VX Series; VX-510U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	341
172	Vertex VX Series; VX-2000V Mobile Radio (VHF)	Yaesu/Vertex-Standard, Cerritos, California	343
173	Vertex VX Series; VX-2000U Mobile Radio (UHF)	Yaesu/Vertex-Standard, Cerritos, California	345
174	Vertex VX Series; VX-3000L (VHF Lowband)	Yaesu/Vertex-Standard, Cerritos, California	347
175	Vertex VX Series; VX-3000V (VHF)	Yaesu/Vertex-Standard, Cerritos, California	349

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176	Vertex VX Series; VX-3000U (UHF)	Yaesu/Vertex-Standard, Cerritos, California	351
177	Vertex Repeaters; VXR-1000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	353
178	Vertex Repeaters; VXR-1000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	355
179	Vertex Repeaters; VXR-5000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	357
180	Vertex Repeaters or Base Station; VXR-5000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	359
181	Vertex Repeater or Base Station; VXR-7000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	361

APPENDIX C—INDEX BY COMMUNICATION EQUIPMENT NAME

Index by Communication Equipment Name

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ComNet Ericsson ProVoice™ Orion™ Mobile 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	25	49
ComNet Ericsson EDACS™ LPE-200™ Portable 800 MHz, 900 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	5	9
ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK I	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	6	11
ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK II	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	7	13
ComNet Ericsson EDACS™ M-RK™ Aegis™ SCAN Portable VHF, UHF, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	8	15
ComNet Ericsson Jaguar Transceiver, Portable; Jaguar 700P, 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	10	19
ComNet Ericsson M-RK™ Analog Portable, M-RK I	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	11	21
ComNet Ericsson M-RK™ Analog Portable, M-RK II Scan	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	13	25
ComNet Ericsson Orion Mobile Radio	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	15	29
ComNet Ericsson Panther Transceiver, Mobile Panther 400M	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	17	33
ComNet Ericsson Panther Transceiver, Mobile Panther 600M	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	18	35
ComNet Ericsson Panther Transceiver, Portable; Panther 400P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	19	37
ComNet Ericsson Panther Transceiver, Portable; Panther 500P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	20	39
ComNet Ericsson Panther Transceiver, Portable; Panther 600P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	21	41
ComNet Ericsson Panther Transceiver, Portable; Panther 625P	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	22	43
ComNet Ericsson ProVoice™ MASTR™ III Base Station 800 MHz	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	24	47
ComNet Ericsson Repeater; MASTR III	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	14	27
ComNet Ericsson Repeater; Orion Transportable Repeater	Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	16	31

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
EFJohnson Auris Analog Base Station; RS-5601-VHF Single Channel	EFJohnson/Transcrypt, Waseca, Minnesota	26	51
EFJohnson Auris Digital Base Station; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	29	57
EFJohnson Auris Digital Repeater/Basestation; RS-5604 (Single Channel)/5614 (Dual Channel)–UHF	EFJohnson/Transcrypt, Waseca, Minnesota	30	59
EFJohnson Auris Digital Repeater; RS-5601-VHF Single Channel	EFJohnson/Transcrypt, Waseca, Minnesota	27	53
EFJohnson Auris Digital Repeater; RS-5611-VHF Dual Channel	EFJohnson/Transcrypt, Waseca, Minnesota	28	55
EFJohnson Auris Repeater; RS–5604 (Single Channel)/5614 (Dual Channel) - UHF	EFJohnson/Transcrypt, Waseca, Minnesota	31	61
EFJohnson Transceiver, Portable; 77xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	32	63
EFJohnson Transceiver, Portable; 98xx-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	33	65
EFJohnson Transceiver, Portable; 501x-VHF	EFJohnson/Transcrypt, Waseca, Minnesota	34	67
EFJohnson Transceiver, Portable; 504x-UHF	EFJohnson/Transcrypt, Waseca, Minnesota	35	69
EFJohnson Transceiver, Portable; 508x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	36	71
EFJohnson Transceiver; 531x-VHF	EFJohnson/Transcrypt, Waseca, Minnesota	37	73
EFJohnson Transceiver; 538x-800 MHz	EFJohnson/Transcrypt, Waseca, Minnesota	38	75
Icom UHF Mobile Transceiver; IC-F2020	ICOM America Inc., Bellevue, Washington	46	91
Icom UHF Mobile Transceiver; IC-F320S/IC-F420S	ICOM America Inc., Bellevue, Washington	48	95
Icom UHF Transceiver, Portable; IC-F4	ICOM America Inc., Bellevue, Washington	42	83
Icom UHF Transceiver, Portable; IC-F4S	ICOM America Inc., Bellevue, Washington	43	85

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS	ICOM America Inc., Bellevue, Washington	44	87
Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT	ICOM America Inc., Bellevue, Washington	51	101
Icom UHF Transceiver, Portable; IC-F40LT Land Use IC-F40M/IC-F40LT Marine Version	ICOM America Inc., Bellevue, Washington	52	103
Icom VHF Mobile Transceiver; IC-F1020	ICOM America Inc., Bellevue, Washington	45	98
Icom VHF Mobile Transceiver; IC-F320/IC-F420	ICOM America Inc., Bellevue, Washington	47	93
Icom VHF Transceiver, Portable; IC-F3	ICOM America Inc., Bellevue, Washington	39	77
Icom VHF Transceiver, Portable; IC-F3S	ICOM America Inc., Bellevue, Washington	40	79
Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS	ICOM America Inc., Bellevue, Washington	41	81
Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT	ICOM America Inc., Bellevue, Washington	49	97
Icom VHF Transceiver, Portable; IC-F30LT Land Use, IC-F30LT Marine Version	ICOM America Inc., Bellevue, Washington	50	99
Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-80 NPSPAC	Kenwood Communications Corp., Long Beach, California	82	163
Kenwood 800/900 MHz FM Transceiver; TK-481	Kenwood Communications Corp., Long Beach, California	83	165
Kenwood Compact Synthesized FM Mobile Radio; TK-760G	Kenwood Communications Corp., Long Beach, California	59	117
Kenwood Compact Synthesized FM Mobile Radio; TK-860G	Kenwood Communications Corp., Long Beach, California	60	119
Kenwood Compact Synthesized FM Mobile Radio; TK-762G	Kenwood Communications Corp., Long Beach, California	61	121
Kenwood Compact Synthesized FM Mobile Radio; TK-862G	Kenwood Communications Corp., Long Beach, California	62	123
Kenwood Compact Synthesized FM Mobile Radio; TK-760H	Kenwood Communications Corp., Long Beach, California	63	125

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Kenwood Compact Synthesized FM Mobile Radio; TK-860H	Kenwood Communications Corp., Long Beach, California	64	127
Kenwood Compact Synthesized FM Mobile Radio; TK-762H	Kenwood Communications Corp., Long Beach, California	65	129
Kenwood Compact Synthesized FM Mobile Radio; TK-862H	Kenwood Communications Corp., Long Beach, California	66	131
Kenwood Public Safety Mobile FM Radios; TK-690H	Kenwood Communications Corp., Long Beach, California	67	133
Kenwood Public Safety Mobile FM Radios; TK-790	Kenwood Communications Corp., Long Beach, California	68	135
Kenwood Public Safety Mobile FM Radios; TK-790H	Kenwood Communications Corp., Long Beach, California	69	137
Kenwood Public Safety Mobile FM Radios; TK-890	Kenwood Communications Corp., Long Beach, California	70	139
Kenwood Public Safety Mobile FM Radios; TK-890H	Kenwood Communications Corp., Long Beach, California	71	141
Kenwood Synthesized FM Portable Radio; TK-260/G	Kenwood Communications Corp., Long Beach, California	55	109
Kenwood Synthesized FM Portable Radio; TK-270/G	Kenwood Communications Corp., Long Beach, California	56	111
Kenwood Synthesized FM Portable Radio; TK-360/G	Kenwood Communications Corp., Long Beach, California	57	113
Kenwood Synthesized FM Portable Radio; TK-370/G	Kenwood Communications Corp., Long Beach, California	58	115
Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	Kenwood Communications Corp., Long Beach, California	80	159
Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	Kenwood Communications Corp., Long Beach, California	81	161
Kenwood Transceiver, Portable; TK-2100	Kenwood Communications Corp., Long Beach, California	74	147
Kenwood Transceiver, Portable; TK-3100	Kenwood Communications Corp., Long Beach, California	75	149
Kenwood Transceiver, Portable; TK-3101	Kenwood Communications Corp., Long Beach, California	76	151
Kenwood Trunked Compact Mobile Radio; TK-980	Kenwood Communications Corp., Long Beach, California	85	169

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Kenwood Trunked Compact Mobile Radio; TK-981	Kenwood Communications Corp., Long Beach, California	86	171
Kenwood Trunked Mobile Radio; TK-980 NSPAC	Kenwood Communications Corp., Long Beach, California	79	157
Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	Kenwood Communications Corp., Long Beach, California	84	167
Kenwood UHF Fm Transceivers; TK-390	Kenwood Communications Corp., Long Beach, California	78	155
Kenwood UHF Repeater; TKR-820	Kenwood Communications Corp., Long Beach, California	89	177
Kenwood VHF Base Transceiver; TKB-720	Kenwood Communications Corp., Long Beach, California	87	173
Kenwood VHF Fm Transceivers; TK-290	Kenwood Communications Corp., Long Beach, California	77	153
Kenwood VHF/UHF Mobile Radio; TK-780	Kenwood Communications Corp., Long Beach, California	72	143
Kenwood VHF/UHF Mobile Radio; TK-880	Kenwood Communications Corp., Long Beach, California	73	145
Kenwood VHF/UHF Repeater; TKR-720	Kenwood Communications Corp., Long Beach, California	88	175
Maxon Scanning Transceiver; SM-2000 Series	Topaz 3, LLC, Kansas City, Missouri	139	277
Maxon Scanning Transceiver; SM-4000 Series	Topaz 3, LLC, Kansas City, Missouri	140	279
Maxon UHF Transceiver, Portable; SP-150U	Topaz 3, LLC, Kansas City, Missouri	145	289
Maxon VHF/UHF RF Link Module; SD-125	Topaz 3, LLC, Kansas City, Missouri	138	275
Maxon VHF/UHF Transceiver, Portable; SP-120	Topaz 3, LLC, Kansas City, Missouri	141	281
Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	Topaz 3, LLC, Kansas City, Missouri	142	283
Maxon VHF/UHF Transceiver, Portable; SP-200	Topaz 3, LLC, Kansas City, Missouri	143	285
Maxon VHF/UHF Transceiver, Portable; SP-300	Topaz 3, LLC, Kansas City, Missouri	144	287

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Modular Interconnect System, ACU-1000	JPS Communications, Inc., Raleigh, North Carolina	53	105
Motorola Astro Transceiver, Portable; Saber 1	Motorola USA, Schaumburg, Illinois	90	178
Motorola Astro Transceiver, Portable; Saber 2	Motorola USA, Schaumburg, Illinois	91	181
Motorola Astro Transceiver, Portable; Saber 3	Motorola USA, Schaumburg, Illinois	92	183
Motorola Astro Transceiver, Portable; XTS 3000 Model 1	Motorola USA, Schaumburg, Illinois	93	185
Motorola Astro Transceiver, Portable; XTS 3000 Model 2	Motorola USA, Schaumburg, Illinois	94	187
Motorola Astro Transceiver, Portable; XTS 3000 Model 3	Motorola USA, Schaumburg, Illinois	95	189
Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	Motorola USA, Schaumburg, Illinois	96	191
Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	97	193
Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	Motorola USA, Schaumburg, Illinois	98	195
Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	Motorola USA, Schaumburg, Illinois	99	197
Motorola Portable Repeater; Portable Repeater 2	Motorola USA, Schaumburg, Illinois	117	233
Motorola Station/Repeater; QUANTAR	Motorola USA, Schaumburg, Illinois	115	229
Motorola Station/Repeater; QUANTRO	Motorola USA, Schaumburg, Illinois	116	231
Motorola Transceiver, Portable; VISAR	Motorola USA, Schaumburg, Illinois	105	209
Motorola Transceiver, Portable; HT 1000	Motorola USA, Schaumburg, Illinois	106	211
Motorola Transceiver, Portable; JT 1000	Motorola USA, Schaumburg, Illinois	107	213
Motorola Transceiver, Portable; MT 2000 VHF	Motorola USA, Schaumburg, Illinois	108	215

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Motorola Transceiver, Portable; MTS 2000 Model 1	Motorola USA, Schaumburg, Illinois	109	217
Motorola Transceiver, Portable; MTS 2000 Model 2	Motorola USA, Schaumburg, Illinois	110	219
Motorola Transceiver, Portable; MTS 2000 Model 3	Motorola USA, Schaumburg, Illinois	111	221
Motorola Transceiver; Astro Digital Spectra W3	Motorola USA, Schaumburg, Illinois	100	199
Motorola Transceiver; Astro Spectra W4	Motorola USA, Schaumburg, Illinois	101	201
Motorola Transceiver; Astro Spectra W5	Motorola USA, Schaumburg, Illinois	102	203
Motorola Transceiver; Astro Spectra W7	Motorola USA, Schaumburg, Illinois	103	205
Motorola Transceiver; Astro Spectra W9	Motorola USA, Schaumburg, Illinois	104	207
Motorola Trunked Portable Radio; MTX 8000 Model B3	Motorola USA, Schaumburg, Illinois	112	223
Motorola Trunked Portable Radio; MTX 8000 Model B5	Motorola USA, Schaumburg, Illinois	113	225
Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	Motorola USA, Schaumburg, Illinois	114	227
Racal Transceiver, Portable; 20 Meter MSHR	Racal Communications Inc., Rockville, Maryland	120	239
Racal Transceiver, Portable; Racal 25	Racal Communications Inc., Rockville, Maryland	121	241
Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	Racal Communications Inc., Rockville, Maryland	118	235
Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	Racal Communications Inc., Rockville, Maryland	119	237
Relm Mobile Radio; 256NB	Relm Communication, West Melbourne, Florida	132	263
Relm Mobile Radios; SMV2516	Relm Communication, West Melbourne, Florida	136	271
Relm Mobile Radios; SMV4016	Relm Communication, West Melbourne, Florida	137	273

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Relm Portable Radios; MPU08 (UHF)	Relm Communication, West Melbourne, Florida	133	265
Relm Portable Radios; MPU32 (UHF)	Relm Communication, West Melbourne, Florida	134	267
Relm Portable Radios; MPV32 (VHF)	Relm Communication, West Melbourne, Florida	135	269
Transportable Radio Interconnect System, TRP-1000	JPS Communications, Inc., Raleigh, North Carolina	54	106
Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	Yaesu/Vertex-Standard, Cerritos, California	146	291
Vertex FTL Series; FTL-1011 (VHF LowBand)	Yaesu/Vertex-Standard, Cerritos, California	147	293
Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	Yaesu/Vertex-Standard, Cerritos, California	148	295
Vertex FTL Series; FTL-2011 (VHF Highband)	Yaesu/Vertex-Standard, Cerritos, California	149	297
Vertex FTL Series; FTL-7011 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	150	299
Vertex GX4800UT Mobile Transceiver	Yaesu/Vertex-Standard, Cerritos, California	151	301
Vertex HX Series; HX120 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	155	309
Vertex HX Series; HX120 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	156	311
Vertex HX Series; HX140 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	157	313
Vertex HX Series; HX381 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	158	315
Vertex HX Series; HX381 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	159	317
Vertex HX Series; HX240 VHF Portable	Yaesu/Vertex-Standard, Cerritos, California	160	319
Vertex HX Series; HX240 UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	161	321
Vertex HX Series; HX482UT UHF Portable	Yaesu/Vertex-Standard, Cerritos, California	162	323

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Vertex HX Series; HX580 Dual Protocol Hand Held	Yaesu/Vertex-Standard, Cerritos, California	163	324
Vertex Repeater or Base Station; VXR-7000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	181	361
Vertex Repeaters or Base Station; VXR-5000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	180	359
Vertex Repeaters; VXR-1000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	177	353
Vertex Repeaters; VXR-1000 (UHF)	Yaesu/Vertex-Standard, Cerritos, California	178	355
Vertex Repeaters; VXR-5000 (VHF)	Yaesu/Vertex-Standard, Cerritos, California	179	357
Vertex VX Series; VX-10V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	152	303
Vertex VX Series; VX-10U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	153	305
Vertex VX Series; VX-210V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	164	327
Vertex VX Series; VX-210U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	165	329
Vertex VX Series; VX-400V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	166	331
Vertex VX Series; VX-400U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	167	333
Vertex VX Series; VX-500	Yaesu/Vertex-Standard, Cerritos, California	168	335
Vertex VX Series; VX-510LX (Low Band VHF)	Yaesu/Vertex-Standard, Cerritos, California	169	337
Vertex VX Series; VX-510V (VHF Model)	Yaesu/Vertex-Standard, Cerritos, California	170	339
Vertex VX Series; VX-510U (UHF Model)	Yaesu/Vertex-Standard, Cerritos, California	171	341
Vertex VX Series; VX-2000V Mobile Radio (VHF)	Yaesu/Vertex-Standard, Cerritos, California	172	343
Vertex VX Series; VX-2000U Mobile Radio (UHF)	Yaesu/Vertex-Standard, Cerritos, California	173	345

Communication Equipment Name	*Manufacturer*	*ID #*	*Page E-#*
Vertex VX Series; VX-3000L (VHF Lowband)	Yaesu/Vertex-Standard, Cerritos, California	174	347
Vertex VX Series; VX-3000V (VHF)	Yaesu/Vertex-Standard, Cerritos, California	175	349
Vertex VX Series; VX-3000U (UHF)	Yaesu/Vertex-Standard, Cerritos, California	176	351
Vertex VX Series; VX-300	Yaesu/Vertex-Standard, Cerritos, California	154	307

APPENDIX D—INDEX BY COMMUNICATION EQUIPMENT MANUFACTURER

Index by Communication Equipment Manufacturer Name

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Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson ProVoice™ MASTR™ III Base Station 800 MHz	24	47
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson ProVoice™ Orion™ Mobile 800 MHz	25	49
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ LPE-200™ Portable 800 MHz, 900 MHz	5	9
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK I	6	11
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ Portable VHF, UHF, 800 MHz, M-RK II	7	13
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson EDACS™ M-RK™ Aegis™ SCAN Portable VHF, UHF, 800 MHz	8	15
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson M-RK™ Analog Portable, M-RK II	12	23
Com-Net Ericsson Critical Radio Systems, Inc., Lynchburg, Virginia	ComNet Ericsson Jaguar™ 700P, 800 MHz	9	17
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Analog Base Station; RS-5601-VHF Single Channel	26	51
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater; RS-5601-VHF Single Channel	27	53
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater; RS-5611-VHF Dual Channel	28	55
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Base Station; RS-5611-VHF Dual Channel	29	57
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Digital Repeater/ Basestation; RS-5604 (Single Channel)/ 5614 (Dual Channel)-UHF	30	59
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Auris Repeater; RS-5604 (Single Channel)/5614 (Dual Channel)-UHF	31	61
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 77xx-800 MHz	32	63
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 98xx-800 MHz	33	65

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 501x-VHF	34	67
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 504x-UHF	35	69
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver, Portable; 508x-800 MHz	36	71
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver; 531x-VHF	37	73
EFJohnson/Transcrypt, Waseca, Minnesota	EFJohnson Transceiver; 538x-800 MHz	38	75
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3	39	77
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3S	40	79
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS	41	81
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4	42	83
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4S	43	85
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS	44	87
ICOM America Inc., Bellevue, Washington	Icom VHF Mobile Transceiver; IC-F1020	45	98
ICOM America Inc., Bellevue, Washington	Icom UHF Mobile Transceiver; IC-F2020	46	91
ICOM America Inc., Bellevue, Washington	Icom VHF Mobile Transceiver; IC-F320/IC-F420	47	93
ICOM America Inc., Bellevue, Washington	Icom UHF Mobile Transceiver; IC-F320S/IC-F420S	48	95
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT	49	97
ICOM America Inc., Bellevue, Washington	Icom VHF Transceiver, Portable; IC-F30LT Land Use IC-F30LT Marine Version	50	99

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT	51	101
ICOM America Inc., Bellevue, Washington	Icom UHF Transceiver, Portable; IC-F40LT Land Use IC-F40M/IC-F40LT Marine Version	52	103
JPS Communications, Inc., Raleigh, North Carolina	Modular Interconnect System, ACU-1000	53	105
JPS Communications, Inc., Raleigh, North Carolina	Transportable Radio Interconnect System, TRP-1000	54	106
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-260/G	55	109
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-270/G	56	111
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-360/G	57	113
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio; TK-370/G	58	115
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-760G	59	117
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-860G	60	119
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-762G	61	121
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-862G	62	123
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-760H	63	125
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-860H	64	127
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-762H	65	129
Kenwood Communications Corp., Long Beach, California	Kenwood Compact Synthesized FM Mobile Radio; TK-862H	66	131
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-690H	67	133

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-790	68	135
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-790H	69	137
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-890	70	139
Kenwood Communications Corp., Long Beach, California	Kenwood Public Safety Mobile FM Radios; TK-890H	71	141
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Mobile Radio; TK-780	72	143
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Mobile Radio; TK-880	73	145
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-2100	74	147
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-3100	75	149
Kenwood Communications Corp., Long Beach, California	Kenwood Transceiver, Portable; TK-3101	76	151
Kenwood Communications Corp., Long Beach, California	Kenwood VHF Fm Transceivers; TK-290	77	153
Kenwood Communications Corp., Long Beach, California	Kenwood UHF Fm Transceivers; TK-390	78	155
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Mobile Radio; TK-980 NSPAC	79	157
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio/Trunked System; TK-280	80	159
Kenwood Communications Corp., Long Beach, California	Kenwood Synthesized FM Portable Radio/Trunked System; TK-380	81	161
Kenwood Communications Corp., Long Beach, California	Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC	82	163
Kenwood Communications Corp., Long Beach, California	Kenwood 800/900 MHz FM Transceiver; TK-481	83	165
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC	84	167

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Compact Mobile Radio; TK-980	85	169
Kenwood Communications Corp., Long Beach, California	Kenwood Trunked Compact Mobile Radio; TK-981	86	171
Kenwood Communications Corp., Long Beach, California	Kenwood VHF Base Transceiver; TKB-720	87	173
Kenwood Communications Corp., Long Beach, California	Kenwood VHF/UHF Repeater; TKR-720	88	175
Kenwood Communications Corp., Long Beach, California	Kenwood UHF Repeater; TKR-820	89	177
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Digital Spectra W3	100	199
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W4	101	201
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W5	102	203
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W7	103	205
Motorola USA, Schaumburg, Illinois	Motorola Transceiver; Astro Spectra W9	104	207
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; VISAR	105	209
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; HT 1000	106	211
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; JT 1000	107	213
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MT 2000 VHF	108	215
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 1	109	217
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 2	110	219
Motorola USA, Schaumburg, Illinois	Motorola Transceiver, Portable; MTS 2000 Model 3	111	221
Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000 Model B3	112	223

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000 Model B5	113	225
Motorola USA, Schaumburg, Illinois	Motorola Trunked Portable Radio; MTX 8000/9000 Model B7	114	227
Motorola USA, Schaumburg, Illinois	Motorola Station/Repeater; QUANTAR	115	229
Motorola USA, Schaumburg, Illinois	Motorola Station/Repeater; QUANTRO	116	231
Motorola USA, Schaumburg, Illinois	Motorola Portable Repeater; Portable Repeater 2	117	233
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 1	90	178
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 2	91	181
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; Saber 3	92	183
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 1	93	185
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 2	94	187
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000 Model 3	95	189
Motorola USA, Schaumburg, Illinois	Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3	96	191
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	97	193
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model II	98	195
Motorola USA, Schaumburg, Illinois	Motorola Dual Mode Mobile; MCS 2000 Mobile Model III	99	197
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)	118	235
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)	119	237
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; 20 Meter MSHR	120	239

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Racal Communications Inc., Rockville, Maryland	Racal Transceiver, Portable; Racal 25	121	241
Relm Communication, West Melbourne, Florida	BK Base Station; EBU Series	122	243
Relm Communication, West Melbourne, Florida	BK Radio FM Transceiver; EMH 599 2X	123	245
Relm Communication, West Melbourne, Florida	BK Synthesized FM Mobile Radio; EMV	124	247
Relm Communication, West Melbourne, Florida	BK Synthesized FM E Series DES EPH 599, EPU 499 and EPV 499 Models	125	249
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPH 51 and 52 Models	126	251
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPI 510 Models	127	253
Relm Communication, West Melbourne, Florida	BK Synthesized FM Portable Radio; E Series, EPU and EPV 414 and 499 Models	128	255
Relm Communication, West Melbourne, Florida	BK Repeater; ERU Series	129	257
Relm Communication, West Melbourne, Florida	BK Radio FM Transceiver, Portable; G Series, GPH Models	130	259
Relm Communication, West Melbourne, Florida	BK Radio Airborne Transceiver; KFM 985	131	261
Relm Communication, West Melbourne, Florida	Relm Mobile Radio; 256NB	132	263
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPU08 (UHF)	133	265
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPU32 (UHF)	134	267
Relm Communication, West Melbourne, Florida	Relm Portable Radios; MPV32 (VHF)	135	269
Relm Communication, West Melbourne, Florida	Relm Mobile Radios; SMV2516	136	271
Relm Communication, West Melbourne, Florida	Relm Mobile Radios; SMV4016	137	273
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF RF Link Module; SD-25	138	275

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Topaz 3, LLC, Kansas City, Missouri	Maxon Scanning Transceiver; SM-2000 Series	139	277
Topaz 3, LLC, Kansas City, Missouri	Maxon Scanning Transceiver; SM-4000 Series	140	279
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-120	141	281
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140	142	283
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-200	143	285
Topaz 3, LLC, Kansas City, Missouri	Maxon VHF/UHF Transceiver, Portable; SP-300	144	287
Topaz 3, LLC, Kansas City, Missouri	Maxon UHF Transceiver, Portable; SP-150U	145	289
Yaesu/Vertex-Standard, Cerritos, California	Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070	146	291
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-1011 (VHF LowBand)	147	293
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)	148	295
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-2011 (VHF Highband)	149	297
Yaesu/Vertex-Standard, Cerritos, California	Vertex FTL Series; FTL-7011 (UHF)	150	299
Yaesu/Vertex-Standard, Cerritos, California	Vertex GX4800UT Mobile Transceiver	151	301
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-10V (VHF Model)	152	303
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-10U (UHF Model)	153	305
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-300	154	307
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX120 UHF Portable	155	309
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX120 VHF Portable	156	311

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX140 VHF Portable	157	313
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX381 VHF Portable	158	315
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX381 UHF Portable	159	317
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX240 VHF Portable	160	319
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX240 UHF Portable	161	321
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX482UT UHF Portable	162	323
Yaesu/Vertex-Standard, Cerritos, California	Vertex HX Series; HX580 Dual Protocol Hand Held	163	324
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-210V (VHF Model)	164	327
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-210U (UHF Model)	165	329
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-400V (VHF Model)	166	331
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-400U (UHF Model)	167	333
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-500	168	335
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510LX (Low Band VHF)	169	337
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510V (VHF Model)	170	339
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-510U (UHF Model)	171	341
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-2000V Mobile Radio (VHF)	172	343
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-2000U Mobile Radio (UHF)	173	345

Manufacturer	*Communication Equipment Name*	*ID #*	*Page E-#*
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000L (VHF Lowband)	174	347
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000V (VHF)	175	349
Yaesu/Vertex-Standard, Cerritos, California	Vertex VX Series; VX-3000U (UHF)	176	351
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-1000 (VHF)	177	353
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-1000 (UHF)	178	355
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters; VXR-5000 (VHF)	179	357
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeaters or Base Station; VXR-5000 (UHF)	180	359
Yaesu/Vertex-Standard, Cerritos, California	Vertex Repeater or Base Station; VXR-7000 (VHF)	181	361

APPENDIX E—COMMUNICATION EQUIPMENT DATA SHEETS

COMMUNICATION EQUIPMENT DATA SHEETS

General

Name	***Communications-Applied Technology; AWIS Portable Radio***
ID# 1	
Model Number(s)	AWIS
Technology	Portable, Digital DSSS TOMA
Manufacturer	Communications-Applied Technology 11250–14 Roger Bacon Drive Reston, Virginia 20190–5202 800–229–3925 (Tel) 703–481–0068 (Tel)
Secure Communication Capability	Yes, with accessory
Availability	90 d after receipt of order
Frequency Range	2400 MHz to 2483 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Hazardous materials response teams, explosive ordnance disposal teams, medical triage teams, NASA ground and flight programs, and fixed and rotary wing air crews
Source	www.c-at.com

Operational Parameters

Number of Channels	11 preprogrammed channels, 2402 channels through 2482 channels on 8 MHz increments, 5 nonoverlapping channels on 16 MHz increments, and 3 nonoverlapping channels on 24 MHz increments
Transmitter Power Output Levels	Portable radios: +17 dBm (optional +19 and +14)
Battery Options	Plug-in module battery packs (8, single-use, AA alkaline batteries, or NiMH rechargeable)
Battery Recharging Options	Portable radio: single or 4–station “smart” charger

Physical Parameters

Size	Portable radio with AA battery pack: 4 in x 9 in x 1 in
Weight	Portable: 1.8 lb (with batteries)
Power Requirements	Portable radio: 6.45 V and 300 mA

External Power	10 V to 24 V or 17 V dc to 31 V dc; 115 V ac, 60 Hz; 220 V, 50 Hz

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Yes
Battery Eliminators	Yes (repeater)
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Frequency, time slot, and group identifier by dip switch
Repairs	Manufacturer
Decontamination	No (portable radios worn inside PPE)
Durability/Ruggedness	Portable radios are installed in heavy gauge aluminum chassis with welded corners with rugged 1050 denier ballistic housings
Environmental Conditions	-30 °F to 120 °F
Unit Cost	$2.2K portable radio
Battery Cycle Life	Portable radios: 6 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Less than $100/yr
Interface Capability	Yes, LMR/cellular phone/wired intercom

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	“Plug and go” compatible and interchangeable with lightweight headsets/boom microphones for “plastic suit” work, or hearing protector headsets
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	Intrinsically Safe Class 1, Division 1, Groups C, and D (USAF Safety Directorate)

General

Name	Communications-Applied Technology; DWIS Portable Repeater System
ID# 2	
Model Number(s)	DWIS
Technology	Repeater, Digital DSSS TOMA
Manufacturer	Communications-Applied Technology 11250−14 Roger Bacon Drive Reston, Virginia 20190−5202 800−229−3925 (Tel) 703−481−0068 (Tel)
Secure Communication Capability	Yes, with accessory
Availability	90 d after receipt of order
Frequency Range	2400 MHz to 2483 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Hazardous materials response teams, Explosive Ordnance Disposal Teams, medical triage teams, NASA ground and flight programs, and fixed and rotary wing air crews
Source	www.c-at.com

Operational Parameters

Number of Channels	11 preprogrammed channels, 2402 channels through 2482 channels on 8 MHz increments, 5 nonoverlapping channels on 16 MHz increments, and 3 nonoverlapping channels on 24 MHz increments
Transmitter Power Output Levels	Repeater: +19 dBm; portable radios
Battery Options	Plug-in module battery packs (8, single-use, AA alkaline batteries, or NiMH rechargeable), external SLA, dc, and ac
Battery Recharging Options	Repeater: built-in “smart” charger; portable radio: single or 4−station “smart” charger

Physical Parameters

Size	Repeater: 12 in x 12 in x 3.5 in Repeater with SLA battery and charger: 13.75 in x 12 in x 3.5 in
Weight	Repeater with SLA battery and charger: 7.2 lb

Power Requirements	Repeater: 12 V dc, 1 A; portable radio: 6.45 V and 300 mA
External Power	External SLA, dc, and ac
Available Accessories	
Speaker-Microphones	Yes
Carrying Cases	Yes
Battery Eliminators	Yes (repeater)
Vehicle Adapters	Not applicable
Logistical Parameters	
Pro12gramming	Frequency, time slot, and group identifier by dip switch
Repairs	Manufacturer
Decontamination	No (portable radios worn inside PPE)
Durability/Ruggedness	Portable radios are installed in heavy gauge aluminum chassis with welded corners with rugged 1050 denier ballistic housings
Environmental Conditions	-30 °F to 120 °F
Unit Cost	$7K portable repeater
Battery Cycle Life	Repeaters: 4 h
Rapid Charge Battery Cycle Life	2 yr
Maintenance Cost	Less than $100/yr
Interface Capability	Yes, LMR/cellular phone/wired intercom
Special Requirements	
Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	“Plug and go” compatible and interchangeable with lightweight headsets/boom microphones for “plastic suit” work, or hearing protector headsets
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***Communications-Applied Technology; QB Series: QB-3S, QB-3S/IS QB-3R Portable Radios***

ID# 3

Model Number(s) — QB-3S, QB-3S/IS/ QB-3R; QB-3 Series portable radio (shown outside PPE for visibility)

Technology — Portable, conventional

Manufacturer — Communications-Applied Technology
11250−14 Roger Bacon Drive
Reston, Virginia 20190−5202
800−229−3925 (Tel)
703−481−0068 (Tel)

Secure Communication Capability — No

Availability — 90 d after receipt of order

Frequency Range — 150 MHz to 220 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — Not applicable

Current User(s) — Army chemical munitions storage/demilitarization sites, military and commercial nuclear power generating plants, military base and municipal hazmat teams, medical triage teams, and NASA ground and flight programs

Source — www.c-at.com

Operational Parameters

Number of Channels — Not specified

Transmitter Power Output Levels — Portable radios: +17 dBm (optional +20 and +14)

Battery Options — NiCad or 2 9 V alkaline or 6 AA alkaline

Battery Recharging Options — Wall “wart” or “smart” charger

Physical Parameters

Size — Not specified

Weight — Portable: 1.8 lb (with batteries)

Power Requirements — Portable radio: 6.45 V, 100 mA

External Power — None

Available Accessories

Speaker-Microphones — No

Carrying Cases	Yes
Battery Eliminators	Yes (repeater)
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	No
Repairs	Manufacturer
Decontamination	No (portable radios worn inside PPE)
Durability/Ruggedness	Portable radios are installed in heave gauge aluminum chassis with welded corners with rugged 1050 denier ballistic housings. Used in more than 100000 h of Level A entries.
Environmental Conditions	-30 °F to 120 °F
Unit Cost	$7K portable repeater $2K portable radio
Battery Cycle Life	Repeater and portable radios: 6 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Less than $100/yr
Interface Capability	Yes, LMR/cellular phone/wired intercoms

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	“Plug and go” compatible and interchangeable with lightweight headsets/boom microphones, throat microphones for “plastic suit” work, or hearing protector headsets
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	Intrinsically Safe Versions available - Class 1, Division 1, Groups A, B, C, and D (FRMC)

General

Name ***Communications-Applied Technology; QB Series Repeater; Portable Repeater Systems***

ID# 4

Model Number(s)	MDL
Technology	Repeater, conventional
Manufacturer	Communications-Applied Technology 11250−14 Roger Bacon Drive Reston, Virginia 20190−5202 800−229−3925 (Tel) 703−481−0068 (Tel)
Secure Communication Capability	No
Availability	90 d after receipt of order
Frequency Range	150 MHz to 220 MHz
Number of Personnel Supported by System	Unlimited, 8 in duplex mode
Geographic Coverage	Not applicable
Current User(s)	Army chemical munitions storage/demilitarization sites, military and commercial nuclear power generating plants, military base and municipal hazmat teams, medical triage teams, and NASA ground and flight programs
Source	www.c-at.com

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	Repeater: +20 dBm
Battery Options	SLA, external dc
Battery Recharging Options	Wall “wart” or “smart” charger

Physical Parameters

Size	Repeater: 19 in x 22 in x 10 in (transportable, molded plastic case); portable: 12 in x 4 in x 0.75 in (flexible/body-conforming)
Weight	Repeater: 35 lb (including SLA battery)
Power Requirements	Repeater: 12 V dc, 1 A
External Power	12 V dc to 24 V dc, 115 V ac 60 Hz

Available Accessories

Speaker-Microphones	No

Carrying Cases	Yes
Battery Eliminators	Yes (repeater)
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	No
Repairs	Manufacturer
Decontamination	No (portable radios worn inside PPE)
Durability/Ruggedness	Portable radios are installed in heave gauge aluminum chassis with welded corners with rugged, 1050 denier ballistic housings. Used in more than 100000 h of Level A entries.
Environmental Conditions	-30 °F to 120 °F
Unit Cost	$7K portable repeater
Battery Cycle Life	Repeater and portable radios: 6 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Less than $100/yr
Interface Capability	Yes, LMR/cellular phone/wired intercoms

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	“Plug and go” compatible and interchangeable with lightweight headsets/boom microphones, throat microphones for “plastic suit” work, or hearing protector headsets
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	Intrinsically Safe Versions available - Class 1, Division 1, Groups A, B, C, and D (FRMC)

General

Name ***EDACS® LPE-200® Portable 800 MHz, 900 MHz***

ID# 5

Model Number(s)	LPE-200™
Technology	Portable, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption available for 800 MHz only
Availability	Available
Frequency Range	800 MHz: 806 MHz to 825 MHz, 851 MHz to 870 MHz 900 MHz: 896 MHz to 901 MHz, 935 MHz to 940 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Transmission can travel 10 mi or more
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Up to 800 different trunked system/group combinations and up to 200 conventional channels
Transmitter Power Output Levels	800 MHz: 0.5 W to 3 W trunked; 1 W to 2 W talk around 900 MHz: 0.5 W to 2 W trunked; 2 W talk around
Battery Options	High and extra high capacity
Battery Recharging Options	Vehicular charger, desk and wall chargers

Physical Parameters

Size	5.7 in x 2.6 in x 1.7 in (with high capacity battery)
Weight	20.8 oz (with high capacity battery)
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Remote microphone, headset, and earpiece
Carrying Cases	Cases, belt loops, and swivel mounts
Battery Eliminators	Not specified
Vehicle Adapters	Has vehicle adapter

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 1 m drop (per EIA/TIA−603) Vibration: 5 G (per U.S. Forest Service)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	Battery life @ 5/5/90: high capacity battery - 8 h; low capacity battery - 9 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital technology

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance No: AXATR−336−A and AXATR−357−A2, Industry Canada (RSS−119) 287−194−340−NA, TR−357
Support Equipment	Headset, earpiece, remote microphones, PC programming software and cables, subminiature surveillance accessories, cases, straps, belt loops and swivel mounts, desk and wall chargers, and vehicular charger
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E, equivalent to Mil-Std 810C and Mil-Std D
Intrinsically Safe	No

General

Name ***EDACSä M-RKä Aegisä Portable VHF, UHF, 800 MHz***

ID# 6

Model Number(s)	M-RK I
Technology	Portable, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES, Aegis™ DES, and Aegis VGE encryption are available encryption also available
Availability	Available
Frequency Range	VHF: 136 MHz to 160 MHz, 150 MHz to 174 MHz UHF: 403 MHz to 430 MHz, 440 MHz to 470 MHz 800: 806 MHz to 824 MHz, 851 MHz to 869 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	VHF: 0.5 W to 5 W, 0.5 W to 6 W UHF: 0.5 W to 5 W 800: 0.5 W to 3 W
Battery Options	Medium, high, extra high capacity
Battery Recharging Options	Single and multiple unit desk-style chargers and vehicular chargers

Physical Parameters

Size	M-RK I: 7 in x 2.7 in x 1.6 in (less battery, knobs, and antenna)
Weight	M-RK I: 8.8 oz (less battery)

Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carry case
Battery Eliminators	Not specified
Vehicle Adapters	Yes, available in standard and enhanced models

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 3 ft drop (per EIA) Vibration: 5 gravity (G) (per U.S. Forest Service) Altitude: (operational, 15000 ft; in transit, and 50000 ft)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	Equal to or greater than 8 h
Rapid Charge Battery Cycle Life	No
Maintenance Cost	Not specified
Interface Capability	Aegis digital voice technology, PC programming software

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance, Industry Canada Certification, and Applicable Industry Canada Rules
Support Equipment	Earpiece, remote microphones, subminiature surveillance accessories, leather cases, belt loops, swivel mounts, and PC programming software and cables. Single and multiple unit desk-style chargers and two types of vehicular chargers.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Intrinsically safe options and accessories are pending

General

Name ***EDACS® M-RK® Aegis® Portable VHF, UHF, 800 MHz***

ID# 7

Model Number(s)	M-RK II
Technology	Portable, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES, Aegis™ DES, and Aegis VGE encryption are available encryption also available
Availability	Available
Frequency Range	VHF: 136 MHz to 160 MHz, 150 MHz to 174 MHz UHF: 403 MHz to 430 MHz, 440 MHz to 470 MHz 800: 806 MHz to 824 MHz, 851 MHz to 869 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	VHF: 0.5 W to 5 W, 0.5 W to 6 W UHF: 0.5 W to 5 W 800: 0.5 W to 3 W
Battery Options	Medium, high, extra high capacity
Battery Recharging Options	Single and multiple unit desk-style chargers and vehicular chargers

Physical Parameters

Size	M-RK II/M-RK II Scan: 4 in x 2.7 in x 1.6 in (less battery, knobs, and antenna)
Weight	M-RK II/M-RK II Scan: (less battery) 10 oz

Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carry case
Battery Eliminators	Not specified
Vehicle Adapters	Yes, available in standard and enhanced models

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 3 ft drop (per EIA) Vibration 5 G (per U.S. Forest Service) Altitude: (operational, 15000 ft; in transit, 50000 ft)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	Equal to or greater than 8 h
Rapid Charge Battery Cycle Life	No
Maintenance Cost	Not specified
Interface Capability	Aegis digital voice technology, PC programming software

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance, Industry Canada Certification, and Applicable Industry Canada Rules
Support Equipment	Earpiece, remote microphones, subminiature surveillance accessories, leather cases, belt loops, swivel mounts, and PC programming software and cables. Single and multiple unit desk-style chargers and two types of vehicular chargers.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Intrinsically safe options and accessories are pending

General

Name ***EDACS® M-RK® Aegis® Portable VHF, UHF, 800 MHz***

ID# 8

Model Number(s) M-AK II SCAN

Technology Portable, Conventional

Manufacturer Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES, Aegis™ DES, and Aegis VGE encryption are available encryption also available

Availability Available

Frequency Range VHF: 136 MHz to 160 MHz, 150 MHz to 174 MHz
UHF: 403 MHz to 430 MHz, 440 MHz to 470 MHz
800: 806 MHz to 824 MHz, 851 MHz to 869 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Com-Net Ericsson

Operational Parameters

Number of Channels Not specified

Transmitter Power Output Levels VHF: 0.5 W to 5 W, 0.5 W to 6 W
UHF: 0.5 W to 5 W
800: 0.5 W to 3 W

Battery Options Medium, high, extra high capacity

Battery Recharging Options Single and multiple unit desk-style chargers and vehicular chargers

Physical Parameters

Size M-RK II/M-RK II Scan: 4 in x 2.7 in x 1.6 in (less battery, knobs, and antenna)

Weight	M-RK II/M-RK II Scan: (less battery) 10 oz
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carry case
Battery Eliminators	Not specified
Vehicle Adapters	Yes, available in standard and enhanced models

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 3 ft drop (per EIA) Vibration 5 G (per U.S. Forest Service) Altitude: (operational, 15000 ft; in transit, 50000 ft)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	Equal to or greater than 8 h
Rapid Charge Battery Cycle Life	No
Maintenance Cost	Not specified
Interface Capability	Aegis digital voice technology and PC programming software

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance, Industry Canada Certification, and Applicable Industry Canada Rules
Support Equipment	Earpiece, remote microphones, subminiature surveillance accessories, leather cases, belt loops, swivel mounts, and PC programming software and cables. Single and multiple unit desk-style chargers and two types of vehicular chargers.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Intrinsically safe options and accessories are pending

General

Name ***ProVoiceä Jaguarä 700P, 800 MHz***

ID# 9

Model Number(s)	Jaguar 700P
Technology	Portable, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES, Aegis™ DES, and Aegis VGE encryption are available encryption also available
Availability	Available
Frequency Range	806 MHz to 825 MHz, 851 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Transmission can travel 10 mi or more
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Up to 200 conventional channels and up to 800 different trunked system/group combinations
Transmitter Power Output Levels	Rated RF Power: trunked 1, 3, 0.5–3 (auto mode) Rated RF Power: talk around 1, 3
Battery Options	NiCad, NiMh
Battery Recharging Options	Desk and wall chargers

Physical Parameters

Size	6.75 in x 2.58 in x 1.79 in with battery
Weight	26 oz
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carry case
Battery Eliminators	Not specified
Vehicle Adapters	In development

Logistical Parameters

Programming	Dealer/User (authorized)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 6 ft drop (per EIA) Vibration 5 G (per U.S. Forest Service) Altitude: (operational, 15000 ft; in transit, 50000 ft)
Environmental Conditions	NiCad: -22 °F to 140 °F; NiMH: 14 °F to 122 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	NiCad: 9 h (5/5/90); NiMH: 11 h (5/5/90)
Rapid Charge Battery Cycle Life	No
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance Number (Pending), Industry Canada Certification Number (Pending)
Support Equipment	Headset, earpiece, speaker microphones, PC programming software and cables, subminiature surveillance accessories, cases, straps, belt loops and swivel mounts, and desk and wall chargers
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Intrinsically safe options and accessories are pending

General

Name ***ComNet Ericsson Jaguar Transceiver, Portable; Jaguar 700P, 800 MHz***

ID# 10

Model Number(s)	EDACS, Jaguar 700P
Technology	Portable, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Yes, built-in encryption security
Availability	Available
Frequency Range	806 MHz to 825 MHz, 851 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Transmission can travel 10 mi or more
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Up to 200 conventional channels
Transmitter Power Output Levels	Rated RF Power: trunked 1, 3, 0.5–3 (auto mode) Rated RF Power: talk around 1, 3
Battery Options	NiCad, NiMh
Battery Recharging Options	Desk and wall chargers

Physical Parameters

Size	6.75 in x 2.58 in x 1.79 in with battery
Weight	26 oz
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone

Carrying Cases	Carry case
Battery Eliminators	Not specified
Vehicle Adapters	In development

Logistical Parameters

Programming	Dealer/User (authorized)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 6 ft drop (per EIA) Vibration 5 G (per U.S. Forest Service) Altitude: (operational, 15,000 ft; in transit, 50000 ft)
Environmental Conditions	NiCad: -22 °F to 140 °F; NiMH: 14 °F to 122 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $1K
Battery Cycle Life	NiCad: 9 h (5/5/90); NiMH: 11 h (5/5/90)
Rapid Charge Battery Cycle Life	No
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance Number (Pending), Industry Canada Certification Number (Pending)
Support Equipment	Headset, earpiece, speaker microphones, PC programming software and cables, subminiature surveillance accessories, cases, straps, belt loops and swivel mounts, and desk and wall chargers
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Intrinsically safe options and accessories are pending

General

Name — ***ComNet Ericsson M-RK™ Analog Portable, M-RK I***

ID# 11

Model Number(s) — M-RK I

Technology — Portable, conventional and trunked

Manufacturer — Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — UHF: 403 MHz to 430 MHz
VHF: 136 MHz to 174 MHz
800 MHz: 806 MHz to 824 MHz, 851 MHz to 869 MHz

Number of Personnel Supported by System — Multiple

Geographic Coverage — Transmission can travel 10 miles or more

Current User(s) — Not specified

Source — Com-Net Ericsson

Operational Parameters

Number of Channels — Multi-channel dependent on control system

Transmitter Power Output Levels — VHF: 0.5 W to 5 W, 0.5 W to 6 W
UHF: 0.5 W to 5 W
800 MHz: 0.5 W to 3 W

Battery Options — Medium, high, and extra high

Battery Recharging Options — Single and multiple unit desk-style chargers and two types of vehicular chargers

Physical Parameters

Size — 4 in x 2.7 in x 1.2 in (without battery)

Weight — 8 oz (without battery)

Power Requirements — 7.5 V dc

External Power — No

Available Accessories

Speaker-Microphones	Remote microphone, and earpieces
Carrying Cases	Leather cases, belt loops, and swivel mounts
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 1 m drop (per EIA/TIA−603) Vibration: 5 G (per U.S. Forest Service)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $500 but less than $1K
Battery Cycle Life	Equal to or greater than 8 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Capable of digital communications with an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Logically positioned LCD indicators provide easy-read operation. Battery chargers, earpieces, remote microphones, subminiature surveillance accessories, leather cases, belt loops, swivel mounts, and PC programming software and cables.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson M-RK™ Analog Portable, M-RK II***

ID# 12

Model Number(s) — M-RK II

Technology — Portable, conventional and trunked

Manufacturer — Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — UHF: 403 MHz to 430 MHz
VHF: 136 MHz to 174 MHz
800 MHz: 806 MHz to 824 MHz, 851 MHz to 869 MHz
470 MHz to 500 MHz

Number of Personnel Supported by System — Multiple

Geographic Coverage — Transmission can travel 10 mi or more

Current User(s) — Not specified

Source — Com-Net Ericsson

Operational Parameters

Number of Channels — Multi-channel dependent on control system

Transmitter Power Output Levels — VHF: 0.5 W to 5 W, 0.5 W to 6 W
UHF: 0.5 W to 5 W
800 MHz: 0.5 W to 3 W

Battery Options — Medium, high, and extra high

Battery Recharging Options — Single and multiple unit desk-style chargers and two types of vehicular chargers

Physical Parameters

Size — 4 in x 2.7 in x 1.6 in (without battery)

Weight — 10 oz (without battery)

Power Requirements — 7.5 V dc

External Power — No

Available Accessories

Speaker-Microphones	Remote microphone, and earpieces
Carrying Cases	Leather cases, belt loops, and swivel mounts
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 1 m drop (per EIA/TIA−603) Vibration: 5 G (per U.S. Forest Service) Altitude: 15000 ft operational
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $K per unit
Battery Cycle Life	Greater than 8 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions with an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Features a full system keypad and provides access to system and radio features including individual calls, scan, and menu select. Battery chargers, earpieces, remote microphones, subminiature surveillance accessories, leather cases, belt loops, and swivel mounts.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, MIL Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson M-RK™ Analog Portable, M-RK II Scan***

ID# 13

Model Number(s) — M-RK II Scan

Technology — Portable, conventional and trunked

Manufacturer — Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — UHF: 403 MHz to 430 MHz
VHF: 136 MHz to 174 MHz
800 MHz: 806 MHz to 824 MHz, 851 MHz to 869 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — Transmission can travel 10 mi or more

Current User(s) — Not specified

Source — Com-Net Ericsson

Operational Parameters

Number of Channels — Multi-channel dependent on control system

Transmitter Power Output Levels — VHF: 0.5 W to 5 W, 0.5 W to 6 W
UHF: 0.5 W to 5 W
800 MHz: 0.5 W to 3 W

Battery Options — Medium, high, and extra high

Battery Recharging Options — Single and multiple unit desk-style chargers and two types of vehicular chargers

Physical Parameters

Size — 4 in x 2.7 in x 1.6 in (without battery)

Weight — 8 oz (without battery)

Power Requirements — 7.5 V dc

External Power — No

Available Accessories

Speaker-Microphones	Remote microphone, and earpieces
Carrying Cases	Leather cases, belt loops, and swivel mounts
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 1 m drop (per EIA/TIA−603) Vibration: 5 G (per U.S. Forest Service)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $1K
Battery Cycle Life	Greater than 8 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Capable of digital communications with an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Features a six-button keypad and provides access to scan and menu select features. A slanted dot matrix LCD can be read easily when worn on the user's hip. Battery chargers, earpieces, remote microphones, subminiature surveillance accessories, and leather cases.
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***ComNet Ericsson Repeater; MASTR III***

ID# 14

Picture Not Available

Model Number(s)	MASTR III
Technology	Repeater, conventional or trunking
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	9 W to 18 W
Battery Options	Limited options
Battery Recharging Options	Not specified

Physical Parameters

Size	17 in x 21 in x 7.5 in
Weight	35 lb (without cables)
Power Requirements	13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged use
Environmental Conditions	Not specified
Unit Cost	Greater than $1K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions without an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	Not specified
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Orion Mobile Radio***

ID# 15

Model Number(s)	Orion
Technology	VHF and UHF Mobile, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption using either the DES or proprietary VGE algorithm
Availability	Available
Frequency Range	VHF: 136 MHz to 153 MHz, 150 MHz to 174 MHz UHF: 403 MHz to 440 MHz, 440 MHz to 470 MHz 470 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	ComNet Ericsson

Operational Parameters

Number of Channels	EDACS System/group combinations: 800 channels and 192 conventional channels
Transmitter Power Output Levels	Watts are adjustable to 50 % of rated power VHF: 50 W, 110 W UHF: 40 W, 100 W (35 W, 80 W for 470 MHz to 512 MHz)
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2 in x 6.9 in x 9.3 in
Weight	Not specified
Power Requirements	10.8 V dc to 16.6 V dc negative ground

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Construction: Control unit is high impact plastic transceiver is cast metal Weatherproof microphone with hookswitch
Environmental Conditions	-22 °F to 140 °F @ 90 % 50° relative humidity
Unit Cost	Greater than $1K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Field programmable using an IBM PC

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Certified
Support Equipment	Remote mount kit, public address, siren and light controls, unity and gain antennas, multiple control units for single radio, multiple radios from single control head, RF pre-amplifier, internal Aegis, Aegis Encryption (wideband mode only)
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Repeater; Orion Transportable Repeater***

ID# 16

Model Number(s)	Orion Transportable Repeater
Technology	Repeater, conventional or trunking
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Yes, with optional accessory
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	9 W to 18 W
Battery Options	Limited options
Battery Recharging Options	Not specified

Physical Parameters

Size	17 in x 21 in x 7.5 in
Weight	35 lb (without cables)
Power Requirements	13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Yes

Battery Eliminators	Not specified
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	Not specified
Unit Cost	Greater than $1K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions without an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Very durable
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Panther Transceiver, Mobile Panther 400M***

ID# 17

Picture Not Available

Model Number(s) — 400M

Technology — Mobile, conventional

Manufacturer — Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability — Yes, with accessory

Availability — Available

Frequency Range — UHF: 400 MHz to 470 MHz or 450 MHz to 520 MHz
VHF: 136 MHz to 174 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — Not specified

Current User(s) — Not specified

Source — Com-Net Ericsson

Operational Parameters

Number of Channels — 24 channels with priority scan

Transmitter Power Output Levels — Hi: 25 W; low: 5 W

Battery Options — Not applicable

Battery Recharging Options — Not applicable

Physical Parameters

Size — 1.97 in x 5.90 in x 7.28 in

Weight — 2.65 lb

Power Requirements — 13.6 V dc ± 20 % operating range (negative ground)

External Power — Not applicable

Available Accessories

Speaker-Microphones — External 4 W speaker

Carrying Cases — Not applicable

Battery Eliminators — Not applicable

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast aluminum frame, top and bottom covers for main body. Plastic (Noryl SE1) user interface
Environmental Conditions	-22 °F to 140 °F 90 % @ relative humidity (maximum)
Unit Cost	Less than $500
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not capable of digital transmission

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	DTMF microphone, PC programming software and cable, external 4 W speaker, accessory cable, modem, hands-free kit, noise suppression kit, scrambler, desktop power supply, and desktop microphone
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Panther Transceiver, Mobile Panther 600M***

ID# 18

Picture Not Available

Model Number(s)	600M
Technology	Mobile, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Yes, with accessory
Availability	Available
Frequency Range	UHF: 400 MHz to 470 MHz or 450 MHz to 520 MHz VHF: 136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	100 channels with priority scan
Transmitter Power Output Levels	Hi: 25 W; low: 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1.97 in x 5.90 in x 7.28 in
Weight	2.65 lb
Power Requirements	13.6 V dc ± 20 % operating range (negative ground)
External Power	Not applicable

Available Accessories

Speaker-Microphones	External 4 W speaker
Carrying Cases	Not applicable
Battery Eliminators	Not applicable

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast aluminum frame, top and bottom covers for main body. Plastic (Noryl SE1) user interface
Environmental Conditions	-22 °F to 140 °F 90 % @ relative humidity (maximum)
Unit Cost	Greater than $500 but less than $1K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not capable of digital transmission

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	DTMF microphone, PC programming software and cable, external 4 W speaker, accessory cable, modem, hands-free kit, noise suppression kit, scrambler, desktop power supply, and desktop microphone
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name	***ComNet Ericsson Panther Transceiver, Portable; Panther 400P***
ID# 19	

Picture Not Available

Model Number(s)	Panther 400P VHF/UHF
Technology	Portable, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	UHF: 400 MHz to 470 MHz or 450 MHz to 520 MHz VHF: 136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	VHF and UHF: 1 W, 2.5 W, 5 W
Battery Options	1100 mAh NiCad, 1500 mAh NiCad, 1850 mAh NiMh
Battery Recharging Options	Single unit and multi-unit rapid chargers, vehicular chargers

Physical Parameters

Size	6.1 in x 2.6 in x 1.8 in with 1000 mAh battery
Weight	11.5 oz without battery; 18.1 oz with 1100 mAh battery
Power Requirements	7.5 V dc (nominal); 6.0 V dc to 9.0 V dc (operating range)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Heavy duty case, holster case, belt clips and strap

Battery Eliminators	Not specified
Vehicle Adapters	Enhanced vehicular charger

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable radio built to withstand demanding use.
Environmental Conditions	-24 °F to 145 °F 90 % @ 122 °F relative humidity
Unit Cost	Less than $500
Battery Cycle Life	1100 mAh NiCad: 8 h (5/5/90); 1500 mAh NiCad: 10.5 h (5/5/90); 1850 mAh NiMH: 13 h (5/5/90)
Rapid Charge Battery Cycle Life	Single-unit and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Not capable of digital transmissions

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance Number, Applicable FCC Rules, Industry Canada Certification Number and Applicable Industry Canada Rules
Support Equipment	Speaker microphones, earpiece, single-unit and multi-unit rapid chargers, PC programming software and cable vehicular chargers, heavy-duty case, holster case, belt clips, and strap
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Panther Transceiver, Portable; Panther 500P***

ID# 20

Picture Not Available

Model Number(s)	Panther 500P VHF/UHF
Technology	Portable, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	UHF: 403 MHz to 440 MHz, 440 MHz to 470 MHz, 470 MHz to 512 MHz VHF: 136 MHz to 155 MHz, 150.76 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	16 channels with priority scan
Transmitter Power Output Levels	VHF hi: 5 W, low: 1 W; UHF hi: 4 W, low: 1 W
Battery Options	High capacity and extra high capacity
Battery Recharging Options	Single unit and multi-unit rapid chargers, and vehicular chargers

Physical Parameters

Size	3.7 in x 2.5 in x 0.9 in with high capacity battery
Weight	7.2 oz with high capacity battery
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone

Carrying Cases	Case, belt loop, swivel mount, and strap
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC Friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $500 but less than $1K
Battery Cycle Life	Equal to or greater than 8 h
Rapid Charge Battery Cycle Life	Single-unit and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Not capable of digital transmission

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance Number, Applicable FCC Rules, Industry Canada Certification Number and Applicable Industry Canada Rules
Support Equipment	Speaker microphones, earpiece, single-unit and multi-unit rapid chargers, PC programming software and cable vehicular chargers, heavy-duty case, holster case, belt clips, and strap
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name — ***ComNet Ericsson Panther Transceiver, Portable; Panther 600P***

ID# 21

Picture Not Available

Model Number(s) — Panther 600P VHF/UHF

Technology — Portable, conventional

Manufacturer — Com-Net Ericsson Critical Radio Systems, Inc.
P.O. Box 2000
Lynchburg, Virginia 24501
800–431–2345 (Tel)
www.com-netericsson.com

POC: John Hobbs
804–385–2336 (Tel)

Secure Communication Capability — No

Availability — Available

Frequency Range — UHF: 400 MHz to 470 MHz, 450 MHz to 530 MHz
VHF: 136 MHz to 174 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — Not specified

Current User(s) — Not specified

Source — Com-Net Ericsson

Operational Parameters

Number of Channels — 100 channel capacity

Transmitter Power Output Levels — VHF: 1 W, 2.5 W, 5 W
UHF: 1 W, 2.5 W, 4 W

Battery Options — 1100 mAh NiCad, 1500 mAh NiCad, 1850 mAh NiMh

Battery Recharging Options — Single and multi-unit rapid chargers

Physical Parameters

Size — 6.1 x 2.6 x 1.8 inches with 1000 mAh battery

Weight — 11.5 oz without battery; 18.1 oz with 1100 mAh battery

Power Requirements — 7.5 V dc (nominal)
6.0 V dc to 9.0 V dc (operating range)

External Power — No

Available Accessories

Speaker-Microphones — Speaker microphone

Carrying Cases	Heavy-duty case, holster case
Battery Eliminators	Not specified
Vehicle Adapters	Enhanced vehicular charger (adapter)

Logistical Parameters

Programming	Dealer/User (authorized)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Reliable construction, weatherproof accessory connector
Environmental Conditions	-24 °F to 145 °F 90 % @ 122 °F relative humidity
Unit Cost	Less than $500
Battery Cycle Life	1100 mAh NiCad: 8 h (5/5/90); 1500 mAh NiCad: 10.5 h (5/5/90); 1850 mAh NiMH: 13 h (5/5/90)
Rapid Charge Battery Cycle Life	Single-unit and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Versatile UDC allows users to attach a full range of accessories or connect to a PC for programming, testing, and calibration

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance, Industry Canada Certification
Support Equipment	Speaker microphones, earpiece, single-unit and multi-unit rapid chargers, PC programming software and cable, vehicular chargers, heavy-duty case, holster case, belt clips, and strap
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E and IP54 standards
Intrinsically Safe	No

General

Name ***ComNet Ericsson Panther Transceiver, Portable; Panther™ 625P***

ID# 22

Model Number(s)	Panther™ 625P VHF, UHF
Technology	Portable, conventional
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	UHF: 400 MHz to 470 MHz, 450 MHz to 530 MHz VHF: 136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Multiple
Transmitter Power Output Levels	VHF: 1 W, 2.5 W, 5 W UHF: 1 W, 2.5 W, 4 W
Battery Options	1100 mAh NiCad, 1500 mAh NiCad, 1850 mAh NiMh
Battery Recharging Options	Single and multi-unit rapid chargers, vehicular charger

Physical Parameters

Size	6.1 in x 2.6 in x 1.8 in with 1000 mAh battery
Weight	11.5 oz without battery; 18.1 oz with 1100 mAh battery
Power Requirements	7.5 V dc (nominal) 6.0 V dc to 9.0 V dc (operating range)
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Heavy-duty case, holster case
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Built to withstand demanding use, weatherproof accessory connector
Environmental Conditions	-24 °F to 145 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $500 but less than $1K
Battery Cycle Life	1100 mAh NiCad: 8 h (5/5/90); 1500 mAh NiCad: 10.5 h (5/5/90); 1850 mAh NiMH: 13 h (5/5/90)
Rapid Charge Battery Cycle Life	Single-unit and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Versatile UDC allows users to attach a full range of accessories or connect to a PC for programming, testing, and calibration

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance, Industry Canada Certification
Support Equipment	Speaker microphones, earpiece, single-unit and multi-unit rapid chargers, PC programming software and cable, vehicular chargers, heavy-duty case, holster case, belt clips, and strap
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name ***ProVoice® LPE-200® Portable 800 MHz***

ID# 23

Model Number(s)	ProVoice LPE-200™
Technology	Portable, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES encryption also available
Availability	Available
Frequency Range	UHF: 403 MHz to 430 MHz VHF: 136 MHz to 174 MHz 800: 806 MHz to 824 MHz, 851 MHz to 869 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Transmission can travel 10 mi or more
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Up to 800 different trunked system/group combinations and up to 200 conventional channels
Transmitter Power Output Levels	0.5 W to 3 W trunked; 1 W to 2 W talk around
Battery Options	High and extra high capacity
Battery Recharging Options	Vehicular charger, desk and wall chargers

Physical Parameters

Size	5.7 in x 2.6 in x 1.7 in (with high capacity battery)
Weight	20.8 oz (with high capacity battery)
Power Requirements	7.5 V dc (nominal)
External Power	No

Available Accessories

Speaker-Microphones	Remote microphone, headset, earpiece
Carrying Cases	Leather cases, belt loops, swivel mounts
Battery Eliminators	Not specified
Vehicle Adapters	Has vehicle adapter

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Shock: 1 m drop (per EIA/TIA−603) Vibration: 5 G (per U.S. Forest Service)
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Not specified
Battery Cycle Life	Battery life @ 5/5/90: high capacity battery - 8 h; low capacity battery - 9 h
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital technology

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance No: AXATR−336−A, Industry Canada (RSS−119) 287−194−340−NA
Support Equipment	Headset, earpiece, remote microphones, PC programming software and cables, subminiature surveillance accessories, cases, straps, belt loops and swivel mounts
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E, equivalent Mil-Std 810C and Mil-Std 810D
Intrinsically Safe	No

General

Name ***ProVoiceä MASTRä III Base Station 800 MHz***

ID# 24

Picture Not Available

Model Number(s)	MASTR III
Technology	Base station or repeater, conventional or trunking (with programmable GETC™ shelf)
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption, Improved MultiBand Excitation (IMBE) vocoder, DES encryption also available
Availability	Available
Frequency Range	851 MHz to 870 MHz transmit (TX); 806 MHz to 825 MHz TX
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Com-Net Ericsson

Operational Parameters

Number of Channels	Up to 16
Transmitter Power Output Levels	100 W
Battery Options	13.8 V dc, 100 AH (min) standby battery source
Battery Recharging Options	Not applicable

Physical Parameters

Size	37 in x 21.5 in x 18.25 in; or 69.1 in x 23.1 in x 21 in
Weight	150 lb or 520 lb
Power Requirements	120 V ac (± 20 %); 230 V ac (± 15 %); 13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Not specified
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged
Environmental Conditions	-22 °F to 140 °F 90 % @ 122 °F relative humidity
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	The modular design makes maintenance and servicing simple and fast
Interface Capability	Digital communications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Type Acceptance No: AXATR–336–A2, Industry Canada Certification No (TR–329), Industry Canada Certification No (RSS–119)
Support Equipment	Test handset, antenna multicoupler, 50 Hz power supply, combiner, isolator, squelch-operated relay, voice guard encryption, aegis digital, switchable channel spacing, 4800/9600 data rate, plus programmable options
Warranty	Not specified
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***ProVoice™ Orion™ Mobile 800 MHz***

ID# 25

Model Number(s)	ProVoice™ Orion™ Mobile 800 MHz
Technology	Mobile, conventional and trunked
Manufacturer	Com-Net Ericsson Critical Radio Systems, Inc. P.O. Box 2000 Lynchburg, Virginia 24501 800–431–2345 (Tel) www.com-netericsson.com POC: John Hobbs 804–385–2336 (Tel)
Secure Communication Capability	Encryption Technique: Nonlinear product/block transformation Algorithm type: data encryption standard (DES)
Availability	Available
Frequency Range	806 MHz to 825 MHz 851 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	ComNet Ericsson

Operational Parameters

Number of Channels	EDACS System/group combinations: 800 192 conventional channels
Transmitter Power Output Levels	Watts are adjustable to 50 % of rated power 12 W, 35 W (806 MHz to 825 MHz) 30 W (851 MHz to 870 MHz)
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2 in x 6.9 in x 9.3 in radio only
Weight	Not specified
Power Requirements	10.8 V dc to 16.6 V dc negative ground

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Construction: Control unit: high impact plastic Transceiver: cast metal Weatherproof microphone with hookswitch
Environmental Conditions	-22 °F to 140 °F @ 90 % 50° relative humidity
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Field programmable using an IBM PC

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Certified (AXATR–318–A2 and AXATR–317–B2) Industry Canada Cert. (287–194–232 and 287–194–237)
Support Equipment	Remote mount kit, unity and gain antennas, adaptive multi-path pop filter (AMPF), and motorcycle kit
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***EFJohnson Auris Digital Base Station; RS-5601 VHF; Single Channel***

ID# 26

Picture Not Available

Model Number(s)	RS-5601/11 VHF
Technology	Base station, conventional, digital
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups per rapid channel
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	120 V ac/12 V dc revert or 12 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified

Battery Eliminators	Not applicable
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard Use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions without an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***EFJohnson Auris Digital Repeater; RS-5601 VHF; Single Channel***

ID# 27

Picture Not Available

Model Number(s)	RS-5601/11 VHF
Technology	Repeater, conventional, digital
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Capable of secure transmissions without an accessory
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	12 V dc or 120 V ac/12 V dc revert
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified

Battery Eliminators	Not applicable
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard Use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions without an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***EFJohnson Auris Digital Repeater; RS-5611 VHF; Dual Channel***

ID# 28

Picture Not Available

Model Number(s)	RS-5601/11 VHF
Technology	Repeater, conventional, digital
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	512 channels; 256 channels/radio channel
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	12 V dc or 120 V ac/12 V dc revert
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified

Battery Eliminators	Not applicable
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard Use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital compatibility

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***EFJohnson Auris Digital Base Station; RS-5611 VHF; Dual Channel***

ID# 29

Picture Not Available

Model Number(s)	RS-5601/11 VHF
Technology	Base station, conventional, digital
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	512 channels, 256 channels/radio channel
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	12 V dc or 120 V ac/12 V dc revert
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital compatibility

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name — ***EFJohnson Auris Digital Repeater/Basestation; RS-5604 (Single Channel)/5614 (Dual Channel) UHF***

ID# 30

Model Number(s)	RS-5604/14 UHF
Technology	Repeater, conventional, digital
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Repeater only
Availability	Available
Frequency Range	403 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/radio channel
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	12 V dc or 120 V ac/120 V dc revert
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Ruggedized
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital communications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***EFJohnson Auris Repeater; RS-5604 (Single Channel)/5614 (Dual Channel) UHF***

ID# 31

Model Number(s)	RS-5604 UHF
Technology	Repeater, conventional
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Capable of secure transmissions without an accessory
Availability	Available
Frequency Range	Not specified
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels
Transmitter Power Output Levels	60 W or 125 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	19 in x 14 in x 17.4 in
Weight	50 lb
Power Requirements	12 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not specified
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $1K per unit
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Capable of digital transmissions without an adapter

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***EFJohnson Transceiver, Portable; 77xx-800 MHz***

ID# 32

Picture Not Available

Model Number(s)	77xx-800 MHz
Technology	Portable, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	806 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Talk around and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	3 W to 1 W
Battery Options	NiMH
Battery Recharging Options	Single unit rapid charger

Physical Parameters

Size	6.5 in x 2.2 in x 1.2 in
Weight	18 oz (with battery)
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Leather cases, and belt clips

Battery Eliminators	Yes
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	List price starting at $1.1K
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	SmartNet/SmartZone trunking

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	Chargers, leather cases, belt clips, speaker microphones, high capacity batteries, and programming accessories
Warranty	0 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name	***EFJohnson Transceiver, Portable; 98xx-800 MHz***
ID# 33	

Picture Not Available

Model Number(s)	98xx-800 MHz
Technology	Portable, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	806 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Talk around and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	2 W to 30 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6 in x 2.1 in x 7.5 in
Weight	3.5 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	List price starting at $1.1K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not applicable
Interface Capability	SmartNet/SmartZone trunking

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	Remote mount, DTMF microphone, 12 W external speaker, multi-position mounting bracket, programming accessories
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***EFJohnson Transceiver, Portable; 501x VHF***

ID# 34

Model Number(s)	501x VHF
Technology	Portable, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Talk around and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	1 W to 5 W
Battery Options	Two types available, NiMH
Battery Recharging Options	Single unit rapid, multi unit rapid, trickle single unit

Physical Parameters

Size	2.4 in x 8.8 in x 1.9 in (without antenna)
Weight	29 oz (with battery)
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes

Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Analog list price starting at $1.9K; P25 Digital list price starting at $2.3K
Battery Cycle Life	13 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	Chargers, leather cases, belt clips, speaker microphones, high capacity batteries, and programming accessories
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***EFJohnson Transceiver, Portable; 504x UHF***

ID# 35

Model Number(s)	504x UHF
Technology	Portable, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Project 25 encryption options SecureNet™ encryption options
Availability	Available
Frequency Range	403 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Talk around and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	4 W to 1 W
Battery Options	NiMH
Battery Recharging Options	Single and multi-unit rapid chargers

Physical Parameters

Size	2.4 in x 8.8 in x 1.9 in (without antenna)
Weight	29 oz (with battery)
Power Requirements	7.2 V dc
External Power	No

Available Accessories

General

Speaker-Microphones	Speaker-microphone
Carrying Cases	Leather cases, belt clips
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use Polycarbonate case
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Analog list price starting at $1.9K; P25 Digital list price starting at $2.3K
Battery Cycle Life	13 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Single and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Digital communications; Smart Net/Smart Zone

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	Chargers, leather cases with belt clips, speaker-microphone, high and medium capacity batteries, and programming accessories
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***EFJohnson Transceiver, Portable; 508x-800 MHz***

ID# 36

Model Number(s)	508x-800 MHz
Technology	Portable, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	806 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Talk around and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	3 W to 1 W
Battery Options	NiMH
Battery Recharging Options	Single and multi-unit rapid chargers

Physical Parameters

Size	2.4 in x 8.8 in x 1.9 in (without antenna)
Weight	29 oz (with battery)
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker-microphone

Carrying Cases	Leather cases, belt clips
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use Polycarbonate case
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Analog list price starting at $1.9K; P25 Digital list price starting at $2.3K
Battery Cycle Life	13 h at 5/5/90 Cycle
Rapid Charge Battery Cycle Life	Single and multi-unit rapid chargers
Maintenance Cost	Not specified
Interface Capability	Digital communications; Smart Net/Smart Zone trunking

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	Chargers, leather cases with belt clips, speaker-microphone, high and medium capacity batteries, and programming accessories
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name	***EFJohnson Transceiver; 531x VHF***
ID# 37	

Model Number(s)	531x VHF
Technology	Mobile, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507–835–6222 (Tel) 507–835–8356 (Fax) POC: Dave Helfrich 507–835–9643 (Tel) 507–835–6283 (Fax)
Secure Communication Capability	Compatibility with high-tier encrypted radio systems
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Line of site and Repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	10 W to 50 W variable or 100 W option
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2.1 in x 7.2 in x 8.3 in
Weight	5.3 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Analog list price starting at $2.4K; P25 Digital list price starting at $2.8K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital communications, Smart Net/Smart Zone trunking

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Acceptance
Support Equipment	12 W external speaker, remote-mount conversion kit, spare control head kit, desk microphone, DTMF microphone, lockable mounting tray, and power supply
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***EFJohnson Transceiver; 538x-800 MHz***

ID# 38

Model Number(s)	538x-800 MHz
Technology	Mobile, conventional and trunked
Manufacturer	EFJohnson 299 Johnson Ave. P.O. Box 1249 Waseca, Minnesota 56093 507−835−6222 (Tel) 507−835−8356 (Fax) POC: Dave Helfrich 507−835−9643 (Tel) 507−835−6283 (Fax)
Secure Communication Capability	Compatibility with high-tier encrypted radio systems
Availability	Available
Frequency Range	806 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Line of site and repeated
Current User(s)	Not specified
Source	EFJohnson

Operational Parameters

Number of Channels	256 channels/talk groups
Transmitter Power Output Levels	10 W to 50 W variable; 100 W option
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2.1 in x 7.2 in x 8.3 in
Weight	5.3 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Analog list price starting at $2.4K; P25 Digital list price starting at $2.8K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital communications; Smart Net/Smart Zone trunking

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Part 15 and Canada Accceptance
Support Equipment	12 W external speaker, remote-mount conversion kit, spare control head kit, desk microphone, DTMF microphone, lockable mounting tray, and power supply
Warranty	1 yr with 2 yr optional
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Icom VHF Transceiver, Portable; IC-F3***

ID# 39

Model Number(s)	IC-F3
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	Voice scrambler units, nonrolling type and rolling type
Availability	Available
Frequency Range	136 MHz to 150 MHz or 146 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 12 mi line of sight
Current User(s)	U.S. Army soldier intercom
Source	ICOM

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Battery pack (8 AA batteries); 9.6 V/700 mAh; 9.6 V/1050 mAh
Battery Recharging Options	Wall charger, desktop charger, multi-charger, and dc power charger (connected to a cigarette lighter in vehicle)

Physical Parameters

Size	2.4 in x 5.5 in x 1.5 in
Weight	13.8 oz
Power Requirements	9.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone: Slim dimensions, equipped with an earphone jack and a transmit indicator; headset for hands-free operation, includes VOX, PTT, and "one-touch" PTT with a time-out timer
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable design features a one-piece polycarbonate front panel, aluminum die-cast frame and screw-type antenna. Radios are built to withstand demanding environments.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$360
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and rapid multi-charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, headset, belt clip, dc power cable, earphone, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Icom VHF Transceiver, Portable; IC-F3S***

ID# 40

Model Number(s)	IC-F3S
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 150 MHz or 146 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 12 mi line of sight
Current User(s)	U.S.Army soldier intercom
Source	ICOM

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Battery pack (8 AA batteries); 9.6 V/700 mAh; 9.6 V/1050 mAh
Battery Recharging Options	Wall charger, desktop charger, multi-charger, dc power charger (connected to a cigarette lighter in vehicle)

Physical Parameters

Size	2.4 in x 5.5 in x 1.5 in
Weight	13.8 oz
Power Requirements	9.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone: Slim dimensions, equipped with an earphone jack and a transmit indicator; headset for hands-free operation, includes VOX, PTT, and "one-touch" PTT with a time-out timer
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged, dependable construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$360
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and rapid multi-charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, headset, belt clip, dc power cable, earphone, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Icom VHF Transceiver, Portable; IC-F3GT/IC-F3GTS***

ID# 41

Model Number(s)	IC-F3GT/IC-F3GTS
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	Yes, with optional accessory. Voice scrambler units, non-rolling type and rolling type.
Availability	Available
Frequency Range	136 MHz to 150 MHz, 146 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	10 mi
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	40 channels
Transmitter Power Output Levels	5 W 1.6 A 1 W 0.7 A
Battery Options	Batteries (6 AA) NiCad, 7.2 V/1100 mAh NiMH, 7.2 V/1650 mAh
Battery Recharging Options	Desktop charger, multi-charger

Physical Parameters

Size	2–1/8 in x 5–3/16 in x 1–7/16 in
Weight	13.1 oz
Power Requirements	7.2 V dc

External Power	No

Available Accessories

Speaker-Microphones	Speaker-microphone equipped with an earphone jack and a transmit indicator. Headset for hands-free operation, and an earphone provides clear audio in noisy environments.
Carrying Cases	Leather and nylon
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Less than or equal to $500 per unit
Battery Cycle Life	8 h; 5/5/90
Rapid Charge Battery Cycle Life	Desktop rapid charger: charging time 1.5 h to 2 h and multi-charger for rapid charging up to 6 battery packs simultaneously (charging time 1.5 h to 2 h)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Battery chargers, speaker-microphone, headset, belt clip, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Icom UHF Transceiver, Portable; IC-F4***

ID# 42

Model Number(s)	IC-F4
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	Voice scrambler units, nonrolling type and rolling type
Availability	Available
Frequency Range	400 MHz to 430, MHz, 440 MHz to 470 MHz , 470 MHz to 500 MHz, or 490 MHz to 512 MHz to 520 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 4 W; low: 1 W
Battery Options	Battery pack (8 AA batteries); 9.6 V/700 mAh; 9.6 V/1050 mAh
Battery Recharging Options	Wall charger, desktop charger, multi-charger, and dc power charger (connected to a cigarette lighter in vehicle)

Physical Parameters

Size	2.4 in x 5.5 in x 1.5 in
Weight	13.8 oz
Power Requirements	9.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone: Slim dimensions, equipped with an earphone jack and a transmit indicator; headset for hands-free operation, includes VOX, PTT, and "one-touch" PTT with a time-out timer
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable design features a one-piece polycarbonate front panel, aluminum die-cast frame and screw-type antenna. Radios are built to withstand demanding environments.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$392
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and rapid multi-charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, headset, belt clip, dc power cable, earphone, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Icom UHF Transceiver, Portable; IC-F4S***

ID# 43

Model Number(s)	IC-F4S
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	400 MHz to 430 MHz or 440 MHz to 470 MHz 470 MHz to 500 MHz or 490 MHz to 512 MHz to 520 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 4 W; low: 1 W
Battery Options	Battery pack (8 AA batteries); 9.6 V/700 mAh; 9.6 V/1050 mAh
Battery Recharging Options	Wall charger, desktop charger, multi-charger, and dc power charger (connected to a cigarette lighter in vehicle)

Physical Parameters

Size	2.4 in x 5.5 in x 1.5 in
Weight	13.8 oz
Power Requirements	9.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone: Slim dimensions, equipped with an earphone jack and a transmit indicator; headset for hands-free operation, includes VOX, PTT, and "one-touch" PTT with a time-out timer.
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged, dependable construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$392
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and rapid multi-charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, headset, belt clip, dc power cable, earphone, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Icom UHF Transceiver, Portable; IC-F4GT/IC-F4GTS***

ID# 44

Model Number(s)	IC-F4GT/IC-F4GTS (F3GT shown)
Technology	Portable, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	Yes, with optional accessory. Voice scrambler units, non-rolling type and rolling type.
Availability	Available
Frequency Range	400 MHz to 430 MHz, 440 MHz to 470 MHz, 470 MHz to 500 MHz, 490 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	10 mi
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	40 channels
Transmitter Power Output Levels	4 W 1.5 A
Battery Options	Batteries (6 AA) NiCad, 7.2 V/1100 mAh NiMH, 7.2 V/1650 mAh
Battery Recharging Options	Desktop charger, and multi-charger

Physical Parameters

Size	2–1/8 in x 5–3/16 in x 1–7/16 in
Weight	13.1 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker-microphone equipped with an earphone jack and a transmit indicator. Headset for hands-free operation, and an earphone provides clear audio in noisy environments.
Carrying Cases	Not specified
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Less than or equal to $500 per unit
Battery Cycle Life	8 h; 5/5/90
Rapid Charge Battery Cycle Life	Desktop rapid charger: charging time 1.5 h to 2 h and multi-charger for rapid charging up to 6 battery packs simultaneously (charging time 1.5 h to 2 h)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Battery chargers, speaker-microphone, headset, belt clip, SmarTrunk™, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name *Icom VHF Mobile Transceiver; IC-F1020*

ID# 45

Model Number(s) IC-F1020

Technology Mobile, conventional; trunking capable with optional accessory board

Manufacturer ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 136 MHz to 155 MHz
146 MHz to 174 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 50+ with repeater; 10 mi line of sight

Current User(s) Not specified

Source ICOM

Operational Parameters

Number of Channels 32 standard
160 optional

Transmitter Power Output Levels Hi: 45 W; low: 4.5 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 5.9 in x 2 in x 7 in

Weight 3.3 lb

Power Requirements 13.6 ± V dc (15 % negative ground)

External Power Not applicable

Available Accessories

Speaker-Microphones Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Can be fully decontaminated
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E; shock and vibration
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$599
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	ACC cable (for external terminal connection), separation kit (for front panel detachment installation), external speaker, 2–tone unit, 5–tone unit, SmarTrunk II™ and Logic Board
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name *Icom UHF Mobile Transceiver; IC-F2020*

ID# 46

Model Number(s)	IC-F2020
Technology	Mobile, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	400 MHz to 430 MHz 450 MHz to 470 MHz 470 MHz to 490 MHz 490 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 10 mi line of sight
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	32 standard, 160 optional
Transmitter Power Output Levels	Hi: 35 W; low: 2 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.9 in x 2 in x 7 in
Weight	3.3 lb
Power Requirements	13.6 ± V dc (15 % negative ground)
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not applicable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$650
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	ACC cable (for external terminal connection), separation kit (for front panel detachment installation), external speaker, 2–tone unit, 5–tone unit, SmartTrunk II* and Logic Board
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name *Icom VHF Mobile Transceiver; IC-F320/IC-F420*

ID# 47

Model Number(s)	IC-F320/IC-F420
Technology	Mobile, conventional; trunking capable with optional accessory board
Manufacturer	ICOM America Inc. Corporate Headquarters 2380 – 116th Ave., NE P.O. Box C–90029 Bellevue, Washington 98009–9029 POC: Mr. Ron Spencer 425–454–8155 (Tel) 425–454–1509 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	Frequency range varies according to versions IC-F320: 136 MHz to 155 MHz or 146 MHz to 174 MHz IC-F420: 400 MHz to 430 MHz, 450 MHz to 470 MHz, 470 MHz to 490 MHz, 490 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 10 mi line of sight
Current User(s)	Not specified
Source	ICOM

Operational Parameters

Number of Channels	32 channels (16 x 2 banks)
Transmitter Power Output Levels	IC-F320: 45 W IC-F420: 35 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.6 lb
Power Requirements	13.6 ± V dc (15 % negative ground)

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not applicable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$379
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	5–tone unit, SmarTrunk II* Logic Board, external speaker, ACC cable, DTMF microphone, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name — ***Icom UHF Mobile Transceiver; IC-F320S/ IC-F420S***

ID# 48

Model Number(s) — IC-F320S/IC-F420S

Technology — Mobile, conventional; trunking capable with optional accessory board

Manufacturer — ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability — Optional voice scrambler units allow operating security

Availability — Available

Frequency Range — Frequency range varies according to versions
IC-F320: 136 MHz to 155 MHz or 146 MHz to 174 MHz
IC-F420: 400 MHz to 430 MHz, 450 MHz to 470 MHz, 470 MHz to 490 MHz, 490 MHz to 512 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — 50+ with repeater; 10 mi line of sight

Current User(s) — Not specified

Source — ICOM

Operational Parameters

Number of Channels — 4 channels

Transmitter Power Output Levels — IC-F320S: 45 W of RF output, adjustable through cloning-fixed power outputs of 45 W, 25 W, and 4.5 W can be adjusted through programming. IC-F420S: 35 W of RF output, adjustable through cloning-fixed power outputs of 35 W, 20 W, and 3.5 W can be adjusted through programming.

Battery Options — Not applicable

Battery Recharging Options — Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.6 lb
Power Requirements	13.6 V dc (15 % negative ground)
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$420
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	ACC cable, dc power cables, external speakers, hand microphones, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Not applicable
Intrinsically Safe	Not specified

General

Name — ***Icom VHF Transceiver, Portable; IC-F30GS/IC-F30GT***

ID# 49

Model Number(s) — IC-F30GS IC-30FGT

Technology — Portable, conventional; trunking capable with optional accessory board

Manufacturer — ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability — Yes, scrambling or rolling code

Availability — Available

Frequency Range — 136 MHz to 174 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — 12 mi to 15 mi line of sight

Current User(s) — Not specified

Source — ICOM

Operational Parameters

Number of Channels — 256 memory channels, 12 character names, up to 16 banks

Transmitter Power Output Levels — Hi: 5 W; low: dealer programmable

Battery Options — AA battery case, 1100 mAh NiCad, 1650 mAh NiMHD

Battery Recharging Options — DTC charger, rapid charger, 6–unit charger, and charger adapter

Physical Parameters

Size — 2.4 in x 5.5 in x 1.7 in

Weight — 24 oz

Power Requirements — 7.2 V dc

External Power — Yes

Available Accessories

Speaker-Microphones — Speaker microphones provide hands-free operation

Carrying Cases	Not specified
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged construction, backlit keypad, 1550 NiMH battery standard, one-piece aluminum die-cast chassis Meets Mil-Std requirements and strict environmental standards
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $500 but less than $1K per unit
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and multi-charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker microphone, ac adapter for use with charger, belt clip, keypad, SmarTrunk II™ Logic Board, and LTR Trunk
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Icom VHF Transceiver, Portable; IC-F30LT Land Use; IC-F30LT Marine Version***

ID# 50

Model Number(s) IC-F30LT (Land Version) (Marine Version)

Technology Portable, conventional; trunking capable with optional accessory board

Manufacturer ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability (Land) Yes, simple inversion or rolling code
(Marine) Yes, with optional accessory. Voice scrambler units, nonrolling type and rolling type.

Availability Available

Frequency Range 136 MHz to 150 MHz or 146 MHz to 174 MHz (Land Model) 156.025 MHz to 157.425 MHz (Marine Model)

Number of Personnel Supported by System Unlimited

Geographic Coverage (Land) 12 mi to 15 mi line of sight
(Marine) 50+ with repeater; 12 mi to 15 mi line of sight

Current User(s) Not specified

Source ICOM

Operational Parameters

Number of Channels IC-F30LT: 99

Transmitter Power Output Levels Hi: 5 W; low: dealer programmable

Battery Options Batteries (6 AA); NiCad, 7.2 V/1100 mAh; NiMH, 7.2 V/1650 mAh; and NiCad battery pack for intrinsically safe operation

Battery Recharging Options Desktop charger, multi-charger

Physical Parameters

Size 2.4 in x 5.5 in x 1.7 in

Weight 24 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker-microphone provides convenient, lightweight operation while hanging the transceiver on a belt
Carrying Cases	Yes
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Polycarbonate case over a one-piece die-cast aluminum frame and a durable screw-base antenna ensure reliability under demanding commercial operations. Meets Mil-Std requirements and strict environmental standards.
Environmental Conditions	-22 °F to 140 °F Hazardous marine environments (Marine Version)
Unit Cost	Greater than $500 but less than $1K per unit
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop charger for rapid charging a battery pack (charging time 2 h). Multi-charger for charging up to 6 batteries simultaneously (charging time 6 h).
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, NiCad/NiMH battery pack, speaker-microphones, ac adapter for charger, speaker-microphone, belt clip, keypad, SmarTrunk II™ Logic Board, and LTR Trunk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	(Land) Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E. (Marine) Meets Mil Spec 810C and Mil Spec 810D
Intrinsically Safe	Yes

General

Name ***Icom UHF Transceiver, Portable; IC-F40GS/IC-F40GT***

ID# 51

Model Number(s) IC-F40GS IC-F40GT

Technology Portable, conventional; trunking capable with optional accessory board

Manufacturer ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability Yes, scrambling or rolling code

Availability Available

Frequency Range 400 MHz to 430 MHz, 450 MHz to 490 MHz, 480 MHz to 512 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 50+ with repeater; 12 mi line of sight

Current User(s) Not specified

Source ICOM

Operational Parameters

Number of Channels 256 memory channels, 12 character names, up to 16 banks

Transmitter Power Output Levels Hi: 5 W VHF and 4 W UHF

Battery Options AA battery case, 1100 mAh NiCad, 1650 mAh NiMHD

Battery Recharging Options DTC charger, rapid charger, 6–unit charger, and charger adapter

Physical Parameters

Size 2.4 in x 5.5 in x 1.7 in

Weight 24 oz

Power Requirements 7.2 V dc

External Power Yes, ac and AD adapters

Available Accessories

Speaker-Microphones	Cell-phone type speaker-microphone
Carrying Cases	Yes
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged construction, backlit keypad, 1550 NiMH battery standard, and one-piece aluminum die-cast chassis. Meets Mil-Std requirements and strict environmental standards.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Greater than $500 but less than $1K per unit
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid desktop and multi-charger
Maintenance Cost	Not specified
Interface Capability	Data communications

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, ac adapter for use with charger, speaker-microphone, case, keypad, SmarTrunk II™ and Logic Board
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Pending

General

Name ***Icom UHF Transceiver, Portable;***
IC-F40LT Land Use;
IC-F40M/IC-F40LT Marine Version

ID# 52

Model Number(s) IC- F40LT (Land Use)
IC-F40M/IC-F40LTM (Marine Version)

Technology Portable, conventional; trunking capable with optional accessory board

Manufacturer ICOM America Inc.
Corporate Headquarters
2380 – 116th Ave., NE
P.O. Box C–90029
Bellevue, Washington 98009–9029

POC: Mr. Ron Spencer
425–454–8155 (Tel)
425–454–1509 (Fax)

Secure Communication Capability (Land) Yes, simple inversion or rolling code.
(Marine) Yes, with optional accessory. Voice scrambler units, nonrolling type and rolling type.

Availability Available

Frequency Range 400 MHz to 430 MHz, 430 MHz to 470 MHz, 470 MHz to 520 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 10 mi

Current User(s) Not specified

Source ICOM

Operational Parameters

Number of Channels Marine: up to 83; LMR: up to 16

Transmitter Power Output Levels Hi: 5 W; low: 1 W

Battery Options Batteries (6 AA)
NiCad, 7.2 V/1100 mAh
NiCad battery pack for Intrinsically safe operation, NiMH, 7.2 V/1650 mAh

Battery Recharging Options Desktop charger, and multi-charger

Physical Parameters

Size 2.4 in x 5.5 in x 1.7 in

Weight	17.6 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker-microphone provides convenient, lightweight operation while hanging the transceiver on a belt
Carrying Cases	Yes
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Polycarbonate case over a one-piece die-cast aluminum frame and a durable screw-base antenna ensure reliability under demanding commercial operations. Meets Mil-Std requirements and strict environmental standards.
Environmental Conditions	-22 °F to 140 °F Hazardous marine environments
Unit Cost	$585
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop charger for rapid charging a battery pack (charging time 2 h). Multi-charger for charging up to 6 batteries simultaneously (charging time 6 h).
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Chargers, battery pack, speaker-microphones, ac adapter for use with charger, speaker-microphone, belt clip, keypad, SmarTrunk II™ and Logic Board
Warranty	2 yr
Mil Spec/Mil-Std Ratings	(Land) Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E. (Marine) Meets Mil Spec 810C and Mil Spec 810D.
Intrinsically Safe	Yes

General

Name ***Modular Interconnect System, ACU-1000***

ID# 53

Model Number(s) ACU-1000

Technology Interconnect
Conventional Modular Interface/Interconnect System

Manufacturer JPS Communications, Inc.
5720M Capital Blvd.
Raleigh, North Carolina 27616
919–790–1011 (Tel)
919–790–1456 (Fax)

e-mail: jps@jps.com
http://www.jps.com

Secure Communication Capability Yes

Availability Available

Frequency Range Each module is designed to connect to a specific communications medium (VHF/UHF radio, telephone or Satcom, HF radio, and local operator)

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) U.S. Army Corps of Engineers, and Federal Emergency Management Agency

Source JPS Communications
http://www.jps.com

Operational Parameters

Number of Channels Provides communications interoperability between HF, VHF low band, VHF high band, UHF, 800 MHz, trunking talk-groups and encrypted networks

Transmitter Power Output Levels Not specified

Battery Options Not specified

Battery Recharging Options Built-in 1 A capacity battery charger

Physical Parameters

Size 5.3 in x 19 in x 11 in

Weight Not specified

Power Requirements 115 V ac to 230 V ac
+12 V, +24 V dc to 28 V dc, or external battery

External Power	External and internal

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	Yes

Logistical Parameters

Programming	Yes
Repairs	Not specified
Decontamination	Not specified
Durability/Ruggedness	HAZMAT, EMS, fire, and law enforcement use
Environmental Conditions	Operating: -43.6 °F to 140 °F Storage: -40 °F to 185 °F, and up to 95 % @ 131 °F
Unit Cost	Not specified
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Yes
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Not specified
Operator Training Requirements	Not specified
Training Available	Not specified
Manuals Available	Not specified
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Method 516.3, Procedure VI and Mil Spec 810D, Method 514.3, and Category I
Intrinsically Safe	Not specified

General

Name — ***Transportable Radio Interconnect System, TRP-1000***

ID# 54

Model Number(s) — TRP-1000

Technology — Interconnect, trunking/conventional Transportable Radio Interconnect System

Manufacturer — JPS Communications, Inc.
5720M Capital Blvd.
Raleigh, North Carolina 27616
919–790–1011 (Tel)
919–790–1456 (Fax)

e-mail: jps@jps.com
http://www.jps.com

Secure Communication Capability — Yes

Availability — Available

Frequency Range — Not applicable

Number of Personnel Supported by System — Multiple

Geographic Coverage — Not specified

Current User(s) — U.S. Army Corps of Engineers, and Federal Emergency Management Agency

Source — JPS Communications
http://www.jps.com

Operational Parameters

Number of Channels — Provides communications interoperability between HF, VHF low band, VHF high band, UHF, 800 MHz, trunking talk-groups and encrypted networks

Transmitter Power Output Levels — Not specified

Battery Options — Not specified

Battery Recharging Options — Not specified

Physical Parameters

Size — Not specified

Weight — Not specified

Power Requirements — Not specified

External Power — No

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Yes
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Not specified
Repairs	Not specified
Decontamination	Not specified
Durability/Ruggedness	HAZMAT, EMS, fire, and law enforcement use
Environmental Conditions	Not specified
Unit Cost	Not specified
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Not specified
Operator Training Requirements	Not specified
Training Available	Not specified
Manuals Available	Not specified
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	Not specified
Mil Spec/Mil-Std Ratings	Not specified
Intrinsically Safe	Not specified

General

Name ***Kenwood Synthesized FM Portable Radio; TK-260/G***

ID# 55

Model Number(s) TK-260/G

Technology Portable, conventional; trunking capable with optional accessory board

Manufacturer Kenwood Communications Corporation
P.O. Box 22745
East Dominguez St.
Long Beach, California 90801

POC: Barry Morris
800–752–0986, ext. 8280 (Tel)

Secure Communication Capability No

Availability Available

Frequency Range 150 MHz to 174 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Kenwood

Operational Parameters

Number of Channels 8 channels

Transmitter Power Output Levels Hi: 5 W; low: 1 W

Battery Options NiCad (7.2 V, 600 mAh)
NiCad (7.2 V, 1100 mAh)

Battery Recharging Options Regular rate charger, rapid charger, conditioning rapid battery charger, multi-charger adapter, regular rate and rapid rate vehicular charger adapter

Physical Parameters

Size 2.3 in x 5.3 in x 1.3 in

Weight 14 oz with battery and antenna

Power Requirements 7.5 V dc

External Power No

Available Accessories

Speaker-Microphones	Speaker microphone, compact low-profile speaker microphone, earphone, headset, and lapel microphone with earphone
Carrying Cases	Leather case, swivel case adapter, swivel belt loop, and water-resistant bag
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Monocoque aluminum die-cast chassis-heat sink surrounded by polycarbonate case. Gasket seals and polyvinyl speaker cone prevent moisture penetration for wet weather use.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$380
Battery Cycle Life	At least 4 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid charger, conditioning rapid battery charger, and rapid rate vehicular charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Battery, battery case, chargers, microphone, earphone, coil cord, antenna, belt hook, leather case, and water-resistant bag
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Synthesized FM Portable Radio; TK-270/G***

ID# 56

Picture Not Available

Model Number(s)	TK-270/G
Technology	Portable, conventional; trunking capable with accessory
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 174 MHz 136 MHz to 150 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	128 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	AA alkaline batteries NiCad (7.2 V, 600 mAh) NiCad (7.2 V, 1100 mAh)
Battery Recharging Options	Six unit charger adapter, regular rate single unit desk charger, 220 V regular rate single unit desk charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate dc vehicular charger, and rapid rate dc vehicular charger

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in
Weight	14 oz with battery and antenna
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Microphone and speakers, heavy duty and light duty
Carrying Cases	Heavy duty carrying case with bungi-cord, cordura nylon carrying case, water-resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Monocoque aluminum die-cast chassis-heat sink surrounded by polycarbonate case. Gasket seals and polyvinyl speaker cone prevent moisture penetration for wet weather use.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$465
Battery Cycle Life	At least 4 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Microphone and speakers, service related accessories, antennas, batteries and chargers, carrying accessories, and digital radio camera
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Synthesized FM Portable Radio; TK-360/G***

ID# 57

Model Number(s)	TK-360/G
Technology	Portable, conventional; trunking capable with accessory
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	8 channels
Transmitter Power Output Levels	Hi: 4 W; low: 1 W
Battery Options	NiCad (7.2 V, 600 mAh) NiCad (7.2 V, 1100 mAh)
Battery Recharging Options	Regular rate charger, rapid charger, conditioning rapid battery charger, multi-charger adapter, regular rate and rapid rate vehicular charger adapter

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in
Weight	14.4 oz
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone, compact low-profile speaker microphone, earphone, headset, and lapel microphone with earphone
Carrying Cases	Leather case, swivel case adapter, swivel belt loop, and water-resistant bag
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Monocoque aluminum die-cast chassis-heat sink surrounded by polycarbonate case. Gasket seals and polyvinyl speaker cone prevent moisture penetration for wet weather use.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$430
Battery Cycle Life	At least 4 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid charger, conditioning rapid battery charger, and rapid rate vehicular charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Battery, battery case, chargers, microphone, earphone, coil cord, antenna, belt hook, leather case, and water-resistant bag
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Synthesized FM Portable Radio; TK-370/G***

ID# 58

Model Number(s)	TK-370/G
Technology	Portable, conventional; trunking capable with accessory
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 470 MHz 470 MHz to 490 MHz 490 MHz to 512 MHz 403 MHz to 430 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	128 channels
Transmitter Power Output Levels	Hi: 4 W; low: 1 W
Battery Options	AA alkaline batteries NiCad (7.2 V, 600 mAh) NiCad (7.2 V, 1100 mAh)
Battery Recharging Options	Six unit charger adapter, regular rate single unit desk charger, 220 V regular rate single unit desk charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate dc vehicular charger, and rapid rate dc vehicular charger

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in
Weight	4 oz with battery and antenna

Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Microphone and speakers, heavy duty and light duty
Carrying Cases	Heavy duty carrying case with bungi-cord, cordura nylon carrying case, water-resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Monocoque aluminum die-cast chassis-heat sink surrounded by polycarbonate case. Gasket seals and polyvinyl speaker cone prevent moisture penetration for wet weather use.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$505
Battery Cycle Life	At least 4 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Microphone and speakers, service related accessories, antennas, batteries and chargers, carrying accessories, and digital radio camera
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Kenwood Compact Synthesized FM Mobile Radio; TK-760G***

ID# 59

Model Number(s) — TK-760G

Technology — Mobile, conventional; trunking capable with optional accessory board

Manufacturer — Kenwood Communications Corporation
P.O. Box 22745
East Dominguez St.
Long Beach, California 90801

POC: Barry Morris
800–752–0986, ext. 8280 (Tel)

Secure Communication Capability — No

Availability — Available

Frequency Range — 136 MHz to 162 MHz
148 MHz to 174 MHz

Number of Personnel Supported by System — Unlimited

Geographic Coverage — Not specified

Current User(s) — Transportation

Source — Kenwood

Operational Parameters

Number of Channels — Maximum 128 channels

Transmitter Power Output Levels — 25 W

Battery Options — Not applicable

Battery Recharging Options — Not applicable

Physical Parameters

Size — 5.5 in x 1.6 in x 5.7 in

Weight — 2.1 lb

Power Requirements — 13.6 ± 15 % V dc

External Power — Yes

Available Accessories

Speaker-Microphones — Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Heavy-duty construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$489
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Mobile data ready data connection port allows voice and/or data communications using modems, MTD's and digital messaging equipment

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1 and 2 FCC Compliance: Type 1 and 2
Support Equipment	Switching unit, ignition sense cable, accessories connection cable, external speakers, mobile GPS, receiver, base modem unit, line noise filter, mounting case, key lock adapter, microphones, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-860G***

ID# 60

Picture Not Available

Model Number(s)	TK-860G
Technology	Mobile, conventional; trunking capable with optional accessory board
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 490 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	Maximum 128 channels
Transmitter Power Output Levels	25 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 ± 15 % V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Heavy-duty construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$519
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Mobile data ready data connection port allows voice and/or data communications using modems, MTD's and digital messaging equipment

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1 and 2 FCC Compliance: Type 1 and 2
Support Equipment	GPS receiver, base modem unit, line noise filter, mounting case, key lock adapter, microphones, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-762G***

ID# 61

Model Number(s) TK-762G

Technology Mobile, conventional; trunking capable with optional accessory board

Manufacturer Kenwood Communications Corporation
P.O. Box 22745
East Dominguez St.
Long Beach, California 90801

POC: Barry Morris
800–752–0986, ext. 8280 (Tel)

Secure Communication Capability No

Availability Available

Frequency Range 136 MHz to 162 MHz
148 MHz to 174 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Transportation

Source Kenwood

Operational Parameters

Number of Channels Maximum 8 channels

Transmitter Power Output Levels 25 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 5.5 in x 1.6 in x 5.7 in

Weight 2.1 lb

Power Requirements 13.6 V dc ± 15 %

External Power Not applicable

Available Accessories

Speaker-Microphones Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meet or exceed government environmental standards covering shock, vibration, and dust for long-term durability in rough vehicle environments. Heavy-duty construction provides long-lasting field life.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$429
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Data ready connection port for MDT/modem application

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1 and 2 FCC Compliance: Type 1 and 2
Support Equipment	PA/HA switching unit, ignition sense cable, accessories connection cable, connection cable, external speakers, mobile GPS modem unit, base modem unit, line noise filter, mounting case, key lock adapter, microphones, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-862G***

ID# 62

Model Number(s)	TK-862G
Technology	Mobile, conventional; trunking capable with optional accessory board
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 490 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	Maximum 8 channels
Transmitter Power Output Levels	25 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 V dc ± 15 %
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meet or exceed government environmental standards covering shock, vibration, and dust for long-term durability in rough vehicle environments. Heavy-duty construction provides long-lasting field life.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$459
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Data ready connection port for MDT/modem applications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1 and 2 FCC Compliance: Type 1 and 2
Support Equipment	PA/HA switching unit, ignition sense cable, accessories connection cable, connection cable, external speakers, mobile GPS modem unit, base modem unit, line noise filter, mounting case, key lock adapter, microphones, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-760H***

ID# 63

Model Number(s)	TK-760H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Voice encryption-ready using voice scrambler control (on/off & code selection)
Availability	Available
Frequency Range	148 MHz to 174 MHz 136 MHz to 156 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	32 semiduplex channels
Transmitter Power Output Levels	25 W to 45 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.2 lb
Power Requirements	13.6 ± 15 % V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-case chassis/heat sink and rugged design meets Mil-Std specifications for shock, vibration and dust
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$549
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Mobile data-ready port for MDT/modem applications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID and Compliance: Type 1, 2, 3, and 4 IC Certification: Type 1 and 2 Applicable EIA/TIA Standard
Support Equipment	Hand microphone, programming disk, PA/HA unit, programming interface cable, external speaker, control station desktop microphone, line noise filter, dc power supply, ignition sense cable, accessories connection cable, and mounting case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-860H***

ID# 64

Model Number(s)	TK-860H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Voice encryption-ready using voice scrambler control (on/off & code selection)
Availability	Available
Frequency Range	450 MHz to 476 MHz 470 MHz to 496 MHz 488 MHz to 512 MHz 406 MHz to 430 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	32 semiduplex channels
Transmitter Power Output Levels	25 W to 35 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.2 lb
Power Requirements	13.6 ± 15 % V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-case chassis/heat sink and rugged design meets Mil-Std specifications for shock, vibration and dust
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$599
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Mobile data-ready port for MDT/modem applications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Hand microphone, programming disk, PA/HA unit, programming interface cable, external speaker, control station desktop microphone, line noise filter, dc power supply, ignition sense cable, accessories connection cable, and mounting case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-762H***

ID# 65

Model Number(s)	TK-762H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Voice encryption-ready: easy access connection points provided
Availability	Available
Frequency Range	136 MHz to 156 MHz 148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	2 semiduplex channels
Transmitter Power Output Levels	Standard 25 W H-Model 45 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.2 lb
Power Requirements	13.6 V dc negative ground
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis/heat sink and rugged design
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$469
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Data ready connection port for MDT/Modem applications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID and Compliance: Type 1, 2, 3, and 4 IC Certification: Type 1 and 2 Applicable EIA/TIA Standard
Support Equipment	Hand microphone, programming disk, PA/HA unit, programming interface cable, external speaker, desktop microphone, line noise filter, dc power supply, ignition sense cable, accessories connection cable, and mounting case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Compact Synthesized FM Mobile Radio; TK-862H***

ID# 66

Model Number(s)	TK-862HG
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Voice encryption-ready: easy access connection points provided
Availability	Available
Frequency Range	450 MHz to 476 MHz 470 MHz to 496 MHz 488 MHz to 512 MHz 406 MHz to 430 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Transportation
Source	Kenwood

Operational Parameters

Number of Channels	2 semiduplex channels
Transmitter Power Output Levels	Standard 25 W H-Model 35 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 6.7 in
Weight	2.2 lb
Power Requirements	13.6 V dc negative ground
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis/heat sink and rugged design
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$539
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Data ready connection port for MDT/Modem applications

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID and Compliance: Type 1, 2, 3, and 4 IC Certification: Type 1 and 2 Applicable EIA/TIA Standard
Support Equipment	Hand microphone, programming disk, PA/HA unit, programming interface cable, external speaker, desktop microphone, line noise filter, dc power supply, ignition sense cable, accessories connection cable, and mounting case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Public Safety Mobile FM Radios; TK-690H***

ID# 67

Picture Not Available

Model Number(s)	TK-690H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: Secure voice capabilities are available with optional scrambler modules. An internal port permits the addition of these modules to provide voice scrambling from low-level inversion to high-level encryption.
Availability	Available
Frequency Range	29.7 MHz to 37.0 MHz 35 MHz to 43 MHz 40 MHz to 50 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Public Safety Units
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	110 adjustable to 45 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	7 in x 2.4 in x 12.9 in
Weight	7.9 lb
Power Requirements	13.4 V dc ± 15 %
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Aluminum die-cast chassis heat-sink provides strength and heat dissipation, spring-action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties, making units resistant to water, dust, and other environmental conditions. Satisfies the driven rain standard.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

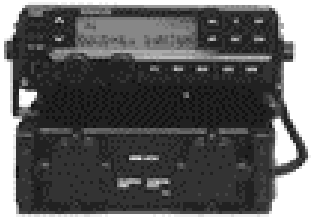
Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Remote control heads and kits, remote control cables, ignition sense cable, mounting brackets, key lock adapter, external speaker, microphone, keypad microphone, desktop microphone, line filter, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Public Safety Mobile FM Radios; TK-790***

ID# 68



Model Number(s)	TK-790
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 156 MHz 148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Public Safety Units
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	110 adjustable to 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	7 in x 2.4 in x 7.7 in
Weight	5.7 lb
Power Requirements	13.6 V dc ± 15 %
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged Use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$730
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

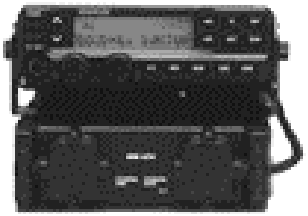
Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Public Safety Mobile FM Radios; TK-790H***

ID# 69



Model Number(s)	TK-790H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: Secure voice capabilities are available with optional scrambler modules. An internal port permits the addition of these modules to provide voice scrambling from low-level inversion to high-level encryption.
Availability	Available
Frequency Range	148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Public Safety Units
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	110 adjustable to 45 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	7 in x 2.4 in x 12.9 in
Weight	7.9 lb
Power Requirements	13.4 V dc ± 15 %
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Aluminum die-cast chassis heat-sink provides strength and heat dissipation, spring-action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties, making units resistant to water, dust, and other environmental conditions. Satisfies the driven rain standard.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.2K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

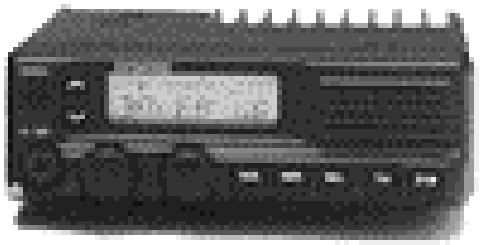
Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Remote control heads and kits, remote control cables, ignition sense cable, mounting brackets, key lock adapter, external speaker, microphone, keypad microphone, desktop microphone, line filter, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Public Safety Mobile FM Radios; TK-890***

ID# 70



Model Number(s)	TK-890
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	403 MHz to 430 MHz 450 MHz to 490 MHz 480 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Public Safety Units
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	40 W adjustable to 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	7 in x 2.4 in x 7.7 in
Weight	5.7 lb
Power Requirements	13.6 ± 15 % V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$780
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

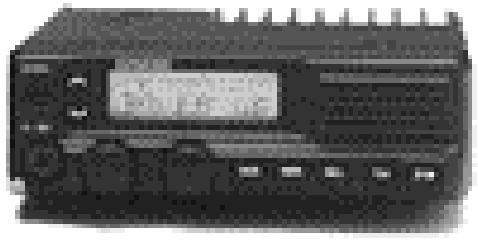
Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Not specified
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Public Safety Mobile FM Radios; TK-890H***

ID# 71



Model Number(s)	TK-890H
Technology	Mobile, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: Secure voice capabilities are available with optional scrambler modules. An internal port permits the addition of these modules to provide voice scrambling from low-level inversion to high-level encryption.
Availability	Available
Frequency Range	450 MHz to 490 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Public Safety Units
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	40 W to 100 W (depending on the version)
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	7 in x 2.4 in x 12.9 in
Weight	7.9 lb
Power Requirements	13.4 ± 15 % V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Aluminum die-cast chassis heat-sink provides strength and heat dissipation, spring-action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties, making units resistant to water, dust, and other environmental conditions. Satisfies the driven rain standard.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.2K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Remote control heads and kits, remote control cables, ignition sense cable, mounting brackets, key lock adapter, external speaker, microphone, keypad microphone, desktop microphone, line filter, and dc power supply
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood VHF/UHF Mobile Radio; TK-780***

ID# 72

Model Number(s)	TK-780
Technology	Mobile, conventional and trunked
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types. The radio programming also provides both automatic and manual control for clear and coded modes
Availability	Available
Frequency Range	136 MHz to 162 MHz 146 MHz to 174 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Systems (trunked mode): maximum 32 channels Groups (trunked mode): maximum 250 channels Trunked/conventional: maximum 600/maximum 250 channels
Transmitter Power Output Levels	25 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 V dc ± 15 %

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Lightweight die-cast chassis provides exceptional strength while providing natural transmit heat dissipation. Inter-locking metal covers and seals lockout moisture and dust.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$580
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1, 2, and 3 FCC Compliance: Type 1, 2, and 3 IC Certification: Type 1, 2, and 3
Support Equipment	Microphones (desktop, mobile, mobile with keypad), ignition sense cable, accessories connector cable, external speakers, mounting case, key lock adapter, dc power supply, line noise filter, and PA/HA unit
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood VHF/UHF Mobile Radio; TK-880***

ID# 73

Model Number(s) TK-880

Technology Mobile, conventional and trunked

Manufacturer Kenwood Communications Corporation
P.O. Box 22745
East Dominguez St.
Long Beach, California 90801

POC: Barry Morris
800–752–0986, ext. 8280 (Tel)

Secure Communication Capability Encryption control: An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types. The radio programming also provides both automatic and manual control for clear and coded modes.

Availability Available

Frequency Range 450 MHz to 490 MHz
485 MHz to 512 MHz
400 MHz to 430 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Not specified

Source Kenwood

Operational Parameters

Number of Channels Systems (trunked mode): maximum 32 channels
Groups (trunked mode): maximum 250 channels
Trunked/conventional: maximum 600/maximum 250 channels

Transmitter Power Output Levels 25 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 5.5 in x 1.6 in x 5.7 in

Weight 2.1 lb

Power Requirements	13.6 V dc ± 15 %
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Lightweight die-cast chassis provides exceptional strength while providing natural transmit heat dissipation. Inter-locking metal covers and seals lockout moisture and dust.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$600
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC ID: Type 1, 2, and 3 FCC Compliance: Type 1, 2, and 3 IC Certification: Type 1, 2, and 3
Support Equipment	Microphones (desktop, mobile, mobile with keypad), ignition sense cable, accessories connector cable, external speakers, mounting case, key lock adapter, dc power supply, line noise filter, and PA/HA unit
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Transceiver, Portable; TK-2100***

ID# 74

Model Number(s)	TK-2100, ProTalk*
Technology	Portable, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 160 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	5 mi line of sight
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	1 or 2 channels
Transmitter Power Output Levels	2 W
Battery Options	AA alkaline, NiCad battery, extended NiCad battery
Battery Recharging Options	Six unit charger adapter, single unit desk charger (regular and rapid rate), 220 V single unit desk charger (regular and rapid rate), dc vehicular charger adapter (regular and rapid rate), and rapid rate single unit charger with pre-conditioning discharge features

Physical Parameters

Size	2.3 in x 4.9 in x 1.3 in (with battery)
Weight	11.2 oz (with battery)
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Clip microphone with earphone, headset, earphone kit, earset with flex boom microphone and swivel earloop, single muff headset with boom microphone, palm microphone with earphone, and speaker microphone
Carrying Cases	Heavy duty carrying case, nylon case, horizontal-wear nylon case, water resistant bag, and rubber protective case
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, polycarbonate case, weather-sealed construction. Meets military environmental standards for light rain, humidity, dust, vibration, and shock.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$259
Battery Cycle Life	8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Single unit desk charger (rapid rate), 220 V single unit desk charger (rapid rate), dc vehicular charger adapter (rapid rate), and rapid rate single unit charger with pre-conditioning discharge features
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Antennas, batteries and chargers, carrying accessories, microphone and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Transceiver, Portable; TK-3100***

ID# 75

Picture Not Available

Model Number(s)	TK-3100, ProTalk™
Technology	Portable, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	460 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	5 mi line of sight
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	1 or 2 channels
Transmitter Power Output Levels	2 W
Battery Options	AA alkaline, NiCad battery, extended NiCad battery
Battery Recharging Options	Six unit charger adapter, single unit desk charger (regular and rapid rate), 220 V single unit desk charger (regular and rapid rate), dc vehicular charger adapter (regular and rapid rate), and rapid rate single unit charger with pre-conditioning discharge features

Physical Parameters

Size	2.3 in x 4.9 in x 1.3 in (with battery)
Weight	11.2 oz (with battery)
Power Requirements	Not specified
External Power	No

Available Accessories

Speaker-Microphones	Clip microphone with earphone, headset, earphone kit, earset with flex boom microphone and swivel earloop, single muff headset with boom microphone, palm microphone with earphone, and speaker microphone
Carrying Cases	Heavy duty carrying case, nylon case, horizontal-wear nylon case, water resistant bag, and rubber protective case
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, polycarbonate case, weather-sealed construction. Meets military environmental standards for light rain, humidity, dust, vibration, shock.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$275
Battery Cycle Life	8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Single unit desk charger (rapid rate), 220 V single unit desk charger (rapid rate), dc vehicular charger adapter (rapid rate), and rapid rate single unit charger with pre-conditioning discharge features
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Antennas, batteries and chargers, carrying accessories, microphone and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Transceiver, Portable; TK-3101***

ID# 76

Picture Not Available

Model Number(s)	TK-3101, FreeTalk*
Technology	Portable, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	460 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	5 mi line of sight
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	15 channels
Transmitter Power Output Levels	2 W
Battery Options	AA alkaline, NiCad battery, extended NiCad battery
Battery Recharging Options	Six unit charger adapter, single unit desk charger (regular and rapid rate), 220 V single unit desk charger (regular and rapid rate), dc vehicular charger adapter (regular and rapid rate), and rapid rate single unit charger with pre-conditioning discharge features

Physical Parameters

Size	2.3 in x 4.9 in x 1.3 in (with battery)
Weight	11.2 oz (with battery)
Power Requirements	Not specified
External Power	No

Available Accessories

Speaker-Microphones	Clip microphone with earphone, headset, earphone kit, earset with flex boom microphone and swivel earloop, single muff headset with boom microphone, palm microphone with earphone, and speaker microphone
Carrying Cases	Heavy duty carrying case, nylon case, horizontal-wear nylon case, water resistant bag, and rubber protective case
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, polycarbonate case, weather-sealed construction. Meets military environmental standards for light rain, humidity, dust, vibration, and shock.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$292
Battery Cycle Life	8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Single unit desk charger (rapid rate), 220 V single unit desk charger (rapid rate), dc vehicular charger adapter (rapid rate), and rapid rate single unit charger with pre-conditioning discharge features
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Antennas, batteries and chargers, carrying accessories, microphone and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood VHF Fm Transceivers; TK-290***

ID# 77

Model Number(s)	TK-290
Technology	Portable, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	5 W
Battery Options	AA alkaline batteries, NiCad battery, and NiCad intrinsically safe battery
Battery Recharging Options	Six unit charger adapter (regular and rapid rate), regular rate single unit desk charger, 220 V regular and rapid rate single unit desk charger, rapid rate single unit with pre-conditioning discharge features, and dc vehicular charger adapter (rapid and regular rate)

Physical Parameters

Size	2.3 in x 6.1 in x 1.6 in
Weight	20 oz with antenna and belt hook
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, palm microphone with earphone, mini lapel microphone with earphone, and heavy duty noise reduction behind the headset with noise canceling boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, weather-sealed universal connector and battery contacts use spring action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$800
Battery Cycle Life	10 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit rapid rate charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Batteries and chargers, carrying accessories, digital radio camera, microphones and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Kenwood UHF Fm Transceivers; TK-390***

ID# 78

Model Number(s)	TK-390
Technology	Portable, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	450 MHz to 490 MHz, 470 MHz to 512 MHz, 403 MHz to 430 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	4 W
Battery Options	AA alkaline batteries, NiCad battery, and NiCad intrinsically safe battery
Battery Recharging Options	Six unit charger adapter (regular and rapid rate), regular rate single unit desk charger, 220 V regular and rapid rate single unit desk charger, rapid rate single unit with pre-conditioning discharge features, and dc vehicular charger adapter (rapid and regular rate)

Physical Parameters

Size	2.3 in x 6.1 in x 1.6 in
Weight	20 oz with antenna and belt hook
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, palm microphone with earphone, mini lapel microphone with earphone, and heavy duty noise reduction behind the headset with noise canceling boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, weather-sealed universal connector and battery contacts use spring action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$850
Battery Cycle Life	10 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit rapid rate charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Batteries and chargers, carrying accessories, digital radio camera, microphones and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Kenwood Trunked Mobile Radio; TK-980 NSPAC***

ID# 79

Model Number(s)	TK-980 NSPAC
Technology	Mobile, trunked
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption/scrambler control
Availability	Available
Frequency Range	800 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Trunked: 32 systems Conventional: 250 channels
Transmitter Power Output Levels	15 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.5 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$634
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Control head cables, line filter, key lock adapter, control station mounting case for power supply, mobile mounting bracket, control conversion kit, microphones, keypad, dc power supply, 220 V dc power supply, mobile programming interface cable, and programming software disk
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Kenwood Synthesized FM Portable Radio/Trunked System; TK-280***

ID# 80

Model Number(s)	TK-280
Technology	Portable, conventional and trunked
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control provides secure voice communications. An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types.
Availability	Available
Frequency Range	146 MHz to 174 MHz 136 MHz to 162 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	250 channels (conventional mode) 600 channels (trunked mode)
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	1100 mAh/8 h, 7.2 V dc NiCad battery, 1500 mAh/10 h, 7.2 V dc NiCad battery, intrinsically safe NiCad battery, and AA alkaline batteries
Battery Recharging Options	Six unit charger adapter, regular rate single unit desk charger, 220 V regular and rapid single unit desk charger, rapid and regular dc vehicular charger adapter, and rapid rate single unit with preconditioning discharge features

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in

Weight	16 oz
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, Mil Spec noise canceling speaker microphone, 2−wire palm microphone with earphone, lapel microphone with earphone, and single muff headset with boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, water resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Integrated elements such as the keypad membrane, gasket seals and the polypropylene speaker help prevent moisture penetration. Water resistant in wet weather.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$520
Battery Cycle Life	At least 8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit charger adapter rapid rate, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Microphone and speakers, service related accessories, antennas, batteries and chargers, carrying accessories, and digital radio camera
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Kenwood Synthesized FM Portable Radio/Trunked System; TK-380***

ID# 81

Model Number(s) TK-380

Technology Portable, conventional and trunked

Manufacturer Kenwood Communications Corporation
P.O. Box 22745
East Dominguez St.
Long Beach, California 90801

POC: Barry Morris
800–752–0986, ext. 8280 (Tel)

Secure Communication Capability Encryption control provides secure voice communications. An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types.

Availability Available

Frequency Range 403 MHz to 430 MHz
450 MHz to 490 MHz
470 MHz to 512 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Not specified

Source Kenwood

Operational Parameters

Number of Channels 250 channels (conventional mode)
600 channels (trunked mode)

Transmitter Power Output Levels Hi: 4 W; low: 1 W

Battery Options 1100 mAh/8 h, 7.2 V dc NiCad battery, 1500 mAh/10 h, 7.2 V dc NiCad battery, intrinsically safe NiCad battery, and AA alkaline batteries

Battery Recharging Options Six unit charger adapter, regular rate single unit desk charger, 220 V regular and rapid single unit desk charger, rapid and regular dc vehicular charger adapter, and rapid rate single unit with preconditioning discharge features

Physical Parameters

Size 2.3 in x 5.3 in x 1.3 in

Weight	16 oz
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, Mil Spec noise canceling speaker microphone, 2−wire palm microphone with earphone, lapel microphone with earphone, and single muff headset with boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, water resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Integrated elements such as the keypad membrane, gasket seals and the polypropylene speaker help prevent moisture penetration. Water resistant in wet weather.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$570
Battery Cycle Life	At least 8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit charger adapter rapid rate, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Microphone and speakers, service related accessories, antennas, batteries and chargers, carrying accessories, and digital radio camera
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Kenwood 800/900 MHz FM Transceiver; TK-480 and TK-480 NPSPAC***

ID# 82

Model Number(s)	TK-480 and TK-480 NPSPAC
Technology	Portable, trunked system
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control for security. An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types.
Availability	Available
Frequency Range	851 MHz to 870 MHz 806 MHz to 825 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Systems: 32 Groups: 250 per system Channels: 486 per system
Transmitter Power Output Levels	1 W to 2.5 W
Battery Options	1100 mAh/8 h NiCad battery; 1500 mAh/10 h NiCad battery, and intrinsically safe NiCad battery
Battery Recharging Options	Six unit charger adapter (regular and rapid rate), regular rate single unit desk charger, 220 V regular and rapid rate single unit desk charger, rapid rate single unit with pre-conditioning discharge features, and dc vehicular charger adapter (rapid and regular rate)

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in

Weight	16 oz
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, Mil Spec noise canceling speaker microphone, palm microphone with earphone, mini lapel microphone with earphone, and heavy duty noise reduction behind the headset with noise canceling boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, water resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, weather-sealed universal connector and battery contacts use spring action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties. Polyvinyl keypad membrane and speaker cone prevent moisture penetration.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$640
Battery Cycle Life	At least 8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit rapid rate charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Digital ANI Modules by Cimarron Technologies

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Batteries and chargers, carrying accessories, digital radio camera, microphones and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Kenwood 800/900 MHz FM Transceiver; TK-481***

ID# 83

Model Number(s)	TK-481
Technology	Portable, trunked system
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control for security. An internal port permits addition of optional modules to provide voice scrambling from low-level inversion to high-level encryption types.
Availability	Available
Frequency Range	896 MHz to 902 MHz TX 935 MHz to 941 MHz RX
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Systems: 32 Groups: 250 per system Channels: 486 per system
Transmitter Power Output Levels	1 W to 2.5 W
Battery Options	1100 mAh/8 h NiCad battery; 1500 mAh/10 h NiCad battery, and intrinsically safe NiCad battery
Battery Recharging Options	Six unit charger adapter (regular and rapid rate), regular rate single unit desk charger, 220 V regular and rapid rate single unit desk charger, rapid rate single unit with pre-conditioning discharge features, and dc vehicular charger adapter (rapid and regular rate)

Physical Parameters

Size	2.3 in x 5.3 in x 1.3 in

Weight	16 oz
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone kit, Mil Spec noise canceling speaker microphone, palm microphone with earphone, mini lapel microphone with earphone, and heavy duty noise reduction behind the headset with noise canceling boom microphone
Carrying Cases	Heavy duty leather carrying case, cordura nylon carrying case, water resistant bag, and rubber protective case
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die-cast chassis, weather-sealed universal connector and battery contacts use spring action gold-alloy elements for excellent contact, conductivity and anti-corrosive properties. Polyvinyl keypad membrane and speaker cone prevent moisture penetration.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$640
Battery Cycle Life	At least 8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Six unit rapid rate charger, rapid rate single unit desk charger, 220 V rapid rate single unit desk charger, rapid rate single unit battery charger with preconditioning discharge features, and rapid rate dc vehicular charger adapter
Maintenance Cost	Not specified
Interface Capability	Digital ANI Modules by Cimarron Technologies

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Batteries and chargers, carrying accessories, digital radio camera, microphones and speakers, and service related accessories
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Optional

General

Name ***Kenwood Trunked Portable Radios; TK-930HDK2 NSPAC***

ID# 84

Picture Not Available

Model Number(s)	TK-930HDK2 NSPAC
Technology	Portable, trunked system
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	800 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	LTR: 10 systems/200 trunked, 10 groups
Transmitter Power Output Levels	15 W to 35 W
Battery Options	Not applicable
Battery Recharging Options	None

Physical Parameters

Size	5.9 in x 2 in x 8.7 in
Weight	3.5 lb
Power Requirements	13.6 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not applicable
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$915
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Trunked Compact Mobile Radio; TK-980***

ID# 85

Model Number(s)	TK-980
Technology	Mobile, conventional and trunked
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: An internal port permits addition of optional modules for user-defined voice scrambling from low-level inversion to high-level encryption types. The radio programming also provides both automatic and manual control for clear and coded modes.
Availability	Available
Frequency Range	Type 1 851 MHz to 870 MHz RX Type 2 806 MHz to 825 MHz TX Type 3 851–870 MHz talk around
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Systems: maximum 32 channels Groups: maximum 250 channels Channels: maximum 600
Transmitter Power Output Levels	15 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 V dc ± 15 %

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Aluminum die-cast chassis gives strength to the unit and provides for natural heat dissipation. Interlocking metal covers and seals lockout moist and dust.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$550
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC, FCC Compliance, IC Certification
Support Equipment	Microphones (desktop, mobile, mobile with keypad), ignition sense cable, accessory connector cable, dc power supply, eternal speakers, line noise filter, mounting case, key lock adapter, and PA/HA unit
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Kenwood Trunked Compact Mobile Radio; TK-81***

ID# 86

Model Number(s)	TK-981
Technology	Mobile, conventional and trunked
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	Encryption control: An internal port permits addition of optional modules for user-defined voice scrambling from low-level inversion to high-level encryption types. The radio programming also provides both automatic and manual control for clear and coded modes.
Availability	Available
Frequency Range	Type 1 935 MHz to 941 MHz RX Type 2 896 MHz to 902 MHz TX Type 3 935 MHz to 941 MHz talk around
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	Systems: maximum 32 channels Groups: maximum 250 channels Channels: maximum 600
Transmitter Power Output Levels	15 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	5.5 in x 1.6 in x 5.7 in
Weight	2.1 lb
Power Requirements	13.6 V dc ± 15 %

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Aluminum die-cast chassis gives strength to the unit and provides for natural heat dissipation. Interlocking metal covers and seals lockout moist and dust.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$550
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC, FCC Compliance, IC Certification
Support Equipment	Microphones (desktop, mobile, mobile with keypad), ignition sense cable, accessory connector cable, dc power supply, eternal speakers, line noise filter, mounting case, key lock adapter, and PA/HA unit
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name *Kenwood VHF Base Transceiver; TKB-720*

ID# 87

Model Number(s)	TKB-720
Technology	Base radio, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	9 to16 channels
Transmitter Power Output Levels	20 W to 50 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	4.7 in x 13 in x 15.1 in
Weight	27.6 lb
Power Requirements	120 V ac 50 Hz/60 Hz
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not applicable
Battery Eliminators	Not applicable

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Kenwood VHF/UHF Repeater; TKR-720***

ID# 88

Picture Not Available

Model Number(s)	TKR-720
Technology	Repeater, conventional
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	1 channel
Transmitter Power Output Levels	15 W to 50 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	4.8 in x 13 in x 15 in
Weight	28.7 lb
Power Requirements	120 V ac 50 Hz/60 Hz
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Yes
Intrinsically Safe	No

General

Name ***Kenwood UHF Repeater; TKR-820***

ID# 89

Picture Not Available

Model Number(s)	TKR-820
Technology	Repeater, conventional desktop repeater
Manufacturer	Kenwood Communications Corporation P.O. Box 22745 East Dominguez St. Long Beach, California 90801 POC: Barry Morris 800–752–0986, ext. 8280 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	406 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Kenwood

Operational Parameters

Number of Channels	1 channel
Transmitter Power Output Levels	2 W to 20 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	48 in x 13 in x 15 in
Weight	28.7 lb
Power Requirements	120 V ac 50 Hz/60 Hz
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not applicable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Yes
Intrinsically Safe	No

General

Name ***Motorola Astro Transceiver, Portable; Saber 1***

ID# 90

Model Number(s)	Astro Saber 1
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 UHF: 403 MHz to 470, 450 MHz to 520 MHz 800: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	16 channels to 32 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	1 NiCad 1000 mAH; 1 NiCad 1100 mAH; 4 NiCad 1800 mAH; 1 NiMH 1650 mAH; and 1 Lithium Ion
Battery Recharging Options	2 desktop, single unit standard charge rate chargers; 3 desktop, single unit rapid charge rate chargers; 2 multi unit rapid rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 conditioning chargers

Physical Parameters

Size	5.2 in x 2.9 in x 1.2 in (without battery)
Weight	13 oz (without battery)
Power Requirements	7.5 V dc
External Power	Yes, with optional vehicular adapter

Available Accessories

Speaker-Microphones	4 standard models available; 5 ear worn speaker microphones available
Carrying Cases	6 leather carrying cases; 4 nylon carrying cases; 1 belt clips; universal chest pack; breakaway chest pack; and universal radio pack (worn around waist)
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.5K Manufacturer Suggested Retail Price (MSRP) Contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Motorola Astro Transceiver, Portable; Saber 2***

ID# 91

Model Number(s)	Astro Saber 2
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz, 450 MHz to 520 MHz 800: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	1 NiCad 1000 mAH; 1 NiCad 1100 mAH; 4 NiCad 1800 mAH; 1 NiMH 1650 mAH; and 1 Lithium Ion
Battery Recharging Options	2 desktop, single unit standard charge rate chargers; 3 desktop, single unit rapid charge rate chargers; 2 multi unit rapid rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 conditioning chargers

Physical Parameters

Size	5.2 in x 2.9 in x 1.2 in (without battery)
Weight	12.8 oz (without battery)
Power Requirements	7.5 V dc
External Power	Yes, with optional vehicular adapter

Available Accessories

Speaker-Microphones	4 standard models available; 5 ear worn speaker microphones available
Carrying Cases	6 leather carrying cases; 4 nylon carrying cases; 1 belt clips; universal chest pack; breakaway chest pack; and universal radio pack (worn around waist)
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.8K MSRP Contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Motorola Astro Transceiver, Portable; Saber 3***

ID# 92

Model Number(s)	Saber 3
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz, 450 MHz to 520 MHz 800: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	1 NiCad 1000 mAH; 1 NiCad 1100 mAH; 4 NiCad 1800 mAH; 1 NiMH 1650 mAH; and 1 Lithium Ion
Battery Recharging Options	2 desktop, single unit standard charge rate chargers; 3 desktop, single unit rapid charge rate chargers; 2 multi unit rapid rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 conditioning chargers

Physical Parameters

Size	5.2 in x 2.9 in x 1.2 in (without battery)
Weight	12.8 oz (without battery)
Power Requirements	7.5 V dc

External Power	Yes, with optional vehicular adapter

Available Accessories

Speaker-Microphones	4 standard models available; 5 ear worn speaker microphones available
Carrying Cases	6 leather carrying cases; 4 nylon carrying cases; 1 belt clips; universal chest pack; breakaway chest pack; and universal radio pack (worn around waist)
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2K MSRP Contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Motorola Astro Transceiver, Portable; XTS 3000 Model 1***

ID# 93

Model Number(s)	XTS 3000 Model I
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470, 450 MHz to 520 MHz 800: 806 MHz to 824 MHz, 851 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	16 to 48 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	3 NiCad 1500 mAH; 2 NiMH 1650 & 1800 mAH; and 1 Lithium Ion 1500 mAH
Battery Recharging Options	6 desktop, single unit rapid charge rate chargers; 4 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 2 conditioning chargers

Physical Parameters

Size	6.6 in x 2.4 in x 1.7 in (without battery)
Weight	14.4 oz (without battery)
Power Requirements	6 V dc to 9 V dc
External Power	No

Available Accessories

Speaker-Microphones	5 standard models available; 3 ear worn speaker microphones available
Carrying Cases	8 leather carrying cases; universal chest pack; and standard chest pack
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness; and weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.7K MSRP, add $250 for ruggedized version (see Item # 113) and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Motorola Astro Transceiver, Portable; XTS 3000 Model 2***

ID# 94

Model Number(s)	XTS 3000 Model II
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz, 450 MHz to 520 MHz 800: 806 MHz to 824 MHz, 851 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	3 NiCad 1500 mAH; 2 NiMH 1650 & 1800 mAH; and 1 Lithium Ion 1500 mAH
Battery Recharging Options	6 desktop, single unit rapid charge rate chargers; 4 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 2 conditioning chargers

Physical Parameters

Size	6.6 in x 2.4 in x 1.7 in (without battery)
Weight	14.4 oz (without battery)
Power Requirements	6 V dc to 9 V dc
External Power	No

Available Accessories

Speaker-Microphones	5 standard models available; 3 ear worn speaker microphones available
Carrying Cases	8 leather carrying cases; universal chest pack; and standard chest pack
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness; and weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2K MSRP, add $250 for ruggedized version (see ID# 113), and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Motorola Astro Transceiver, Portable; XTS 3000 Model 3***

ID# 95

Model Number(s)	XTS 3000 Model III
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz, 450 MHz to 520 MHz 800: 806 MHz to 824 MHz, 851 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	3 NiCad 1500 mAH; 2 NiMH 1650 & 1800 mAH; and 1 Lithium Ion 1500 mAH
Battery Recharging Options	6 desktop, single unit rapid charge rate chargers; 4 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 2 conditioning chargers

Physical Parameters

Size	6.6 in x 2.4 in x 1.7 in (without battery)
Weight	14.4 oz (without battery)
Power Requirements	6 V dc to 9 V dc
External Power	No

Available Accessories

Speaker-Microphones	5 standard models available; 3 ear worn speaker microphones available
Carrying Cases	8 leather carrying cases; universal chest pack; and standard chest pack
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness; weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.4K MSRP, add $250 for ruggedized version (see ID# 113), and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Motorola Astro Transceiver, Portable; XTS 3000R Series Models 1, 2, & 3***

ID# 96

Model Number(s) — XTS 3000R Model 1, 2, or 3 (ruggedized versions of ID#s 96, 97, and 98)

Technology — Portable, conventional and trunked

Manufacturer — Motorola USA
1301 E. Algonquin Road
Schaumburg, Illinois 60196
800–247–2346 (Tel)

POC: Ron Zeberlein
410–712–6014 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — VHF: 136 MHz to 174 MHz
UHF: 403 MHz to 470 MHz, 450 MHz to 520 MHz
800: 806 MHz to 824 MHz, 851 MHz to 870 MHz

Number of Personnel Supported by System — Multiple

Geographic Coverage — Not specified

Current User(s) — Not specified

Source — Motorola

Operational Parameters

Number of Channels — Model I: 16/48 channels
Model II and Model III: 255 channels

Transmitter Power Output Levels — 1 W to 5 W

Battery Options — 3 NiCad 1500 mAH; 2 NiMH 1650 & 1800 mAH; and 1 Lithium Ion 1500 mAH

Battery Recharging Options — 6 desktop, single unit rapid charge rate chargers; 4 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 2 conditioning chargers

Physical Parameters

Size — 6.6 in x 2.4 in x 1.7 in (without battery)

Weight — 14.4 oz (without battery)

Power Requirements — 6 V dc to 9 V dc

External Power	No

Available Accessories

Speaker-Microphones	5 standard models available; 3 ear worn speaker microphones available
Carrying Cases	8 leather carrying cases; universal chest pack; and standard chest pack
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged, submersible (withstand up to 4 h under 6 ft of water-fresh or salt)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Add $250 to ID#'s 97, 98, 99 for ruggedized versions and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Motorola Dual Mode Mobile; MCS 2000 Mobile Model I***

ID# 97

Model Number(s) — MCS 2000 Mobile Model 1

Technology — Mobile conventional and trunked radio

Manufacturer — Motorola USA
1301 E. Algonquin Road
Schaumburg, Illinois 60196
800–247–2346 (Tel)

POC: Ron Zeberlein
410–712–6014 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — VHF: 136 MHz to 174 MHz
UHF: 403 MHz to 512 MHz
800/900: 806 MHz to 870 MHz to 896 MHz to 941 MHz

Number of Personnel Supported by System — Multiple

Geographic Coverage — Not specified

Current User(s) — Not specified

Source — Motorola

Operational Parameters

Number of Channels — 48 with optional 150 channels

Transmitter Power Output Levels — 1 W to 35 W

Battery Options — Not applicable

Battery Recharging Options — Not applicable

Physical Parameters

Size — 1.7 in x 6.6 in x 6.3 in

Weight — 3.9 lb

Power Requirements — 12 V dc

External Power — Not applicable

Available Accessories

Speaker-Microphones — Not applicable

Carrying Cases — Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$958 MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Motorola Dual Mode Mobile; MCS 2000 Mobile Model II***

ID# 98

Model Number(s)	MCS 2000 Mobile Model 2
Technology	Mobile, conventional and trunked radio
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 512 MHz 800/900 MHz: 806 MHz to 870 MHz to 896 MHz to 941 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	160 with optional 250 channels
Transmitter Power Output Levels	1 W to 35 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1.7 in x 6.6 in x 6.3 in
Weight	3.9 lb
Power Requirements	12 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.3K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Motorola Dual Mode Mobile; MCS 2000 Mobile Model III***

ID# 99

Model Number(s)	MCS 2000 Mobile Model 3
Technology	Mobile, conventional and trunked radio
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 512 MHz 800/900MHz: 806 MHz to 870 MHz to 896 MHz to 941 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	160 with optional 250 channels
Transmitter Power Output Levels	1 W to 35 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2.3 in x 6.6 in x 11.7 in
Weight	5.5 lb
Power Requirements	12 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.6K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name — ***Motorola Transceiver; Astro Digital Spectra W3***

ID# 100

Model Number(s)	Astro Digital Spectra W3
Technology	Mobile, conventional and trunked radio
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz, 450 MHz to 482 MHz, 482 MHz to 512 MHz 800 MHz: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	10 W to 110 W (35 W on 800 MHz)
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2 in x 7.1 in x 2.2 in
Weight	6.1 lb
Power Requirements	12 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$3K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Motorola Transceiver; Astro Spectra W4***

ID# 101

Model Number(s) Astro Spectra W4

Technology Mobile, conventional and trunked portable radio

Manufacturer Motorola USA
1301 E. Algonquin Road
Schaumburg, Illinois 60196
800–247–2346 (Tel)

POC: Ron Zeberlein
410–712–6014 (Tel)

Secure Communication Capability Yes

Availability Available

Frequency Range VHF: 136 MHz to 174 MHz
UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz
450 MHz to 482 MHz and 482 MHz to 512 MHz
800 MHz: 806 MHz to 824 MHz and 851 MHz to 870 MHz

Number of Personnel Supported by System One

Geographic Coverage Not specified

Current User(s) Not specified

Source Motorola

Operational Parameters

Number of Channels 128 channels

Transmitter Power Output Levels 10 W to 110 W

Battery Options Limited options

Battery Recharging Options Not specified

Physical Parameters

Size 2 in x 7.1 in x 2.2 in

Weight 6.1 lb

Power Requirements 12 V dc

External Power Not specified

Available Accessories

Speaker-Microphones Yes

Carrying Cases	No
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.4K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Not specified

General

Name — ***Motorola Transceiver; Astro Spectra W5***

ID# 102

Model Number(s) — Astro Digital Spectra W5

Technology — Mobile, conventional and trunked portable radio

Manufacturer — Motorola USA
1301 E. Algonquin Road
Schaumburg, Illinois 60196
800–247–2346 (Tel)

POC: Ron Zeberlein
410–712–6014 (Tel)

Secure Communication Capability — Yes

Availability — Available

Frequency Range — VHF: 136 MHz to 174 MHz
UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz
450 MHz to 482 MHz, and 482 MHz to 512 MHz
800 MHz: 806 MHz to 870 MHz

Number of Personnel Supported by System — Multiple

Geographic Coverage — Not specified

Current User(s) — Not specified

Source — Motorola

Operational Parameters

Number of Channels — 128 channels

Transmitter Power Output Levels — 10 W to 110 W (35 W on 800 MHz)

Battery Options — Not applicable

Battery Recharging Options — Not applicable

Physical Parameters

Size — 2 in x 7.1 in x 2.2 in

Weight — 6.1 lb

Power Requirements — 12 V dc

External Power — Not applicable

Available Accessories

Speaker-Microphones — Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.4K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Not specified

General

Name — ***Motorola Transceiver; Astro Spectra W7***

ID# 103

Model Number(s)	Astro Digital Spectra W7
Technology	Mobile, conventional and trunked portable radio
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz 450 MHz to 482 MHz, and 482 MHz to 512 MHz 800 MHz: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	10 W to 110 W (35 W on 800 MHz)
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2 in x 7.1 in x 2.2 in
Weight	6.1 lb
Power Requirements	12 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.7K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Motorola Transceiver; Astro Spectra W9***

ID# 104

Model Number(s)	Astro Digital Spectra W9
Technology	Mobile, conventional and trunked portable radio
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz 450 MHz to 482 MHz, and 482 MHz to 512 MHz 800 MHz: 806 MHz to 870 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	10 W to 110 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	3.4 in x 6.5 in x 1.7 in
Weight	6.1 lb
Power Requirements	12 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$3K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Motorola Transceiver, Portable; VISAR***

ID# 105

Model Number(s)	VISAR
Technology	Portable, conventional
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	VHF: 136 MHz to 178MHz UHF: 403 MHz to 470 MHz and 450 MHz to 520 MHz 800 MHz: 806 MHz to 866 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	2 NiCad 1200 mAH; 1 NiMH 600 mAH; 1 NiMH 1300 mAH; and 1 NiMH 1500 mAH
Battery Recharging Options	1 desktop, single unit standard charge rate charger; 4 desktop, dual unit rapid charge rate chargers; 16 unit rapid rate charger; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	4.1 in x 2.2 in x 0.6 in (without battery)
Weight	4.8 oz (without battery)
Power Requirements	7.5 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	1 standard model available; 3 ear worn speaker microphones available
Carrying Cases	6 leather carrying cases; 2 nylon carrying cases; 1 belt clip; universal chest pack; breakaway chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Withstands rain testing; impact resistant housing, and weather resistant housing
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.1K MSRP, contact dealer for discount pricing
Battery Cycle Life	4+ h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; HT 1000***

ID# 106

Model Number(s)	HT 1000
Technology	Portable, conventional
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz and 450 MHz to 520 MHz 800 MHz: 806 MHz to 825 MHz and 851 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	2 channels to 16 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	3 NiCad 1200 mAH; 1 NiCad 1300 mAH; 4 NiCad 1400 mAH; 1 NiMH 1900 mAH; and 1 NiMH 2000 mAH
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit standard charge rate chargers; 3 multi unit rapid rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	6.3 in x 2.3 in x 1.5 in (without battery)
Weight	3.2 oz (without battery)
Power Requirements	7.5 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available; 6 ear worn speaker microphones available
Carrying Cases	12 leather carrying cases; 1 nylon carrying case; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1K MSRP and contact dealer for discount pricing
Battery Cycle Life	9 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; JT 1000***

ID# 107

Model Number(s)	JT 1000
Technology	Portable, conventional
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 403 MHz to 470 MHz and 450 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	1 NiCad 1200 mAH; 1 NiCad 1400 mAH; and 1 NiMH 2000 mAH
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit standard charge rate chargers; 1 multi unit rapid rate charger; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	6.3 in x 2.3 in x 1.5 in (without battery)
Weight	9.6 oz (without battery)
Power Requirements	7.5 V dc
External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available; 6 ear worn speaker microphones available
Carrying Cases	12 leather carrying cases; 2 nylon carrying cases; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.2K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; MT 2000 VHF***

ID# 108

Model Number(s)	MT 2000 Model I
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	No
Availability	Available
Frequency Range	VHF: 136 MHz to 178 MHz UHF: 405 MHz to 470 MHz and 450 MHz to 520 MHz 800 MHz: 806 MHz to 870 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	48 channels to 160 channels (depending upon configuration)
Transmitter Power Output Levels	1 W to 5 W
Battery Options	NiCad: 4 high capacity (1200 or 1300 mAH); 4 ultra high capacity (1400 mAH) NiMH: 2 high capacity (1900 mAH and 2000 mAH)
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit regular charge rate chargers; 2 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 multi units

Physical Parameters

Size	6.3 in x 2.3 in x 1.5 in (without battery)
Weight	9.6 oz (without battery)
Power Requirements	6 V dc to 9 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available and 6 ear worn speaker microphones available
Carrying Cases	11 leather carrying cases; 1 nylon carrying case; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness and weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.3K MSRP and contact dealer for discount pricing
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; MTS 2000 Model I***

ID# 109

Model Number(s)	MTS 2000 Model I
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 178 MHz UHF: 405 MHz to 470 MHz and 450 MHz to 520 MHz 800 MHz: 806 MHz to 825 MHz, 851 MHz to 870 MHz, 896 MHz to 902 MHz, and 935 MHz to 941 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	48 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	NiCad: 4 high capacity (1200 or 1300 mAH); 4 ultra high capacity (1400 mAH) NiMH: 2 high capacity (1900 mAH and 2000 mAH)
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit regular charge rate chargers; 3 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 multi units

Physical Parameters

Size	6.3 in x 2.3 in x 1.5 in (without battery)
Weight	9.6 oz (without battery)
Power Requirements	6 V dc to 9 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	3 standard models available; 6 ear worn speaker microphones available
Carrying Cases	11 leather carrying cases; 1 nylon carrying case; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness and weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.7K MSRP, contact dealer for discount pricing
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; MTS 2000 Model II***

ID# 110

Model Number(s)	MTS 2000 Model II
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 178 MHz UHF: 405 MHz to 470 MHz and450 MHz to 520 MHz 800/900 MHz: 806 MHz to 870 MHz, and 896 MHz to 941 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	160 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	NiCad: 4 high capacity (1200 or 1300 mAH); 4 ultra high capacity (1400 mAH) NiMH: 2 high capacity (1900 mAH and 2000 mAH)
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit regular charge rate chargers; 3 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 multi units

Physical Parameters

Size	6.3 in x 2.3 in x 1.5 in (without battery)
Weight	11.2 oz (without battery)

Power Requirements	6 V dc to 9 V dc
External Power	Yes, with optional battery eliminator

Available Accessories

SpeakerMicrophones	3 standard models available; 6 ear worn speaker microphones available
Carrying Cases	11 leather carrying cases; 1 nylon carrying case; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness; weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.1K MSRP and contact dealer for discount pricing
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Transceiver, Portable; MTS 2000 Model III***

ID# 111

Model Number(s) MTS 2000 Model III

Technology Portable, conventional and trunked

Manufacturer Motorola USA
1301 E. Algonquin Road
Schaumburg, Illinois 60196
800–247–2346 (Tel)

POC: Ron Zeberlein
410–712–6014 (Tel)

Secure Communication Capability Yes

Availability Available

Frequency Range VHF: 136 MHz to 178 MHz
UHF: 405 MHz to 470 MHz and 450 MHz to 520 MHz
800/900 MHz: 806 MHz to 870 MHz and 896 MHz to 941 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Not specified

Source Motorola

Operational Parameters

Number of Channels 160 channels

Transmitter Power Output Levels 1 W to 5 W

Battery Options NiCad: 4 high capacity (1200 or 1300 mAH); 4 ultra high capacity (1400 mAH) NiMH: 2 high capacity (1900 mAH and 2000 mAH)

Battery Recharging Options 7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit regular charge rate chargers; 3 desktop, multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 4 multi units

Physical Parameters

Size 6.3 in x 2.3 in x 1.5 in (without battery)

Weight 11.2 oz (without battery)

Power Requirements	6 V dc to 9 V dc
External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	3 standard models available and 6 ear worn speaker microphones available
Carrying Cases	11 leather carrying cases; 1 nylon carrying case; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	Yes

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Designed for ruggedness; weather sealed universal connector
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.5K MSRP and contact dealer for discount pricing
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

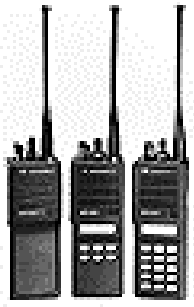
Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe option available

General

Name ***Motorola Trunked Portable Radio; MTX 8000 Model B3***

ID# 112



Model Number(s)	MTX 8000 Model B3
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	851 MHz to 870 MHz (8000) 896 MHz to 941 MHz (9000)
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	4/4 or 15/10 systems/talk groups
Transmitter Power Output Levels	3 W
Battery Options	3 NiCad 1200 mAH; 1 NiCad 1300 mAH; 4 NiCad 1400 mAH; 1 NiMH 1900 mAH; and 1 NiMH 1900 mAH
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit standard charge rate chargers; 3 multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	6.3 in x 2.3 in x 0.6 in (without battery)
Weight	9.6 oz (without battery)
Power Requirements	6 V dc to 9 V dc
External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available; 8 ear worn speaker microphones available
Carrying Cases	12 leather carrying cases; 1 nylon carrying cases; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$910 MSRP contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

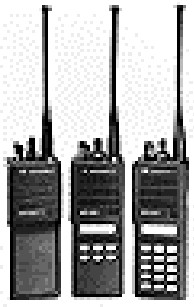
Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name — ***Motorola Trunked Portable Radio; MTX 8000 Model B5***

ID# 113



Model Number(s)	MTX 8000 Model B5
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	851 MHz to 870 MHz (8000) 896 MHz to 941 MHz (9000)
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	4/4 or 15/10 systems/talk groups
Transmitter Power Output Levels	3 W
Battery Options	3 NiCad 1200 mAH; 1 NiCad 1300 mAH; 4 NiCad 1400 mAH; 1 NiMH 1900 mAH; and 1 NiMH 1900 mAH
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit standard charge rate chargers; 3 multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	6.3 in x 2.3 in x 0.7 in (without battery)
Weight	11.2 oz (without battery)
Power Requirements	6 V dc to 9 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available; 8 ear worn speaker microphones available
Carrying Cases	12 leather carrying cases; 1 nylon carrying cases; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.1K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

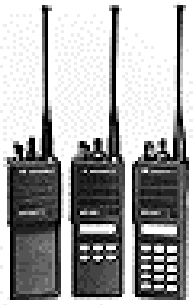
Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Motorola Trunked Portable Radio; MTX 8000/9000 Model B7***

ID# 114



Model Number(s)	MTX 8000/9000 Model B7
Technology	Portable, conventional and trunked
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	851 MHz to 870 MHz (8000) 896 MHz to 941 MHz (9000)
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	4/4 or 15/10 Systems/talkgroups
Transmitter Power Output Levels	3 W
Battery Options	3 NiCad 1200 mAH; 1 NiCad 1300 mAH; 4 NiCad 1400 mAH; 1 NiMH 1900 mAH; and 1 NiMH 1900 mAH
Battery Recharging Options	7 desktop, single unit rapid charge rate chargers; 3 desktop, single unit standard charge rate chargers; 3 multi unit rapid charge rate chargers; 2 multi unit battery maintenance systems; 2 multi unit battery optimizing systems; and 5 conditioning chargers

Physical Parameters

Size	6.3 in x 2.3 in x 0.7 in (without battery)
Weight	11.2 oz (without battery)
Power Requirements	7.5 V dc

External Power	Yes, with optional battery eliminator

Available Accessories

Speaker-Microphones	5 standard models available; 8 ear worn speaker microphones available
Carrying Cases	12 leather carrying cases; 1 nylon carrying cases; 2 belt clips; universal chest pack; breakaway chest pack; standard chest pack; and universal radio pack (worn around waist)
Battery Eliminators	Yes, available from Motorola
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.3K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Motorola Station/Repeater; QUANTAR***

ID# 115

Picture Not Available

Model Number(s)	QUANTAR
Technology	Functions as a base station or repeater (conventional or trunking)
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 132 MHz to 174 MHz UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz, 470 MHz to 494 MHz, and 494 MHz to 512 MHz 800/900 MHz: 806 MHz to 870 MHz and 896 MHz to 941 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	Not specified
Transmitter Power Output Levels	25 W to 125 W
Battery Options	Backup battery system available
Battery Recharging Options	Backup battery system available

Physical Parameters

Size	8.8 in x 19 in x 17 in
Weight	55 lb
Power Requirements	25 W Model: 12 V dc 100 W to 125 W Models: 24 V dc
External Power	Backup battery system available

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$11K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capability

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	Not specified

General

Name ***Motorola Station/Repeater; QUANTRO***

ID# 116

Picture Not Available

Model Number(s)	QUANTRO
Technology	Repeater, conventional or trunking base station or repeater
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 132 MHz to 174 MHz UHF: 403 MHz to 433 MHz, 438 MHz to 470 MHz, 470 MHz to 494 MHz, and 494 MHz to 512 MHz 800/900 MHz: 806 MHz to 870 MHz and 896 MHz to 941 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	Up to 128 modes
Transmitter Power Output Levels	2 W to 20 W or 3 W to 30 W
Battery Options	Backup battery system available
Battery Recharging Options	Backup battery system available

Physical Parameters

Size	8.8 in x 19 in x 17 in
Weight	55 lb
Power Requirements	Multiple options depending on power output of transmitter
External Power	Backup battery system available

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$11K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Digital capable

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	Not specified

General

Name ***Motorola Portable Repeater; Portable Repeater 2***

ID# 117

Picture Not Available

Model Number(s)	Portable Repeater 2
Technology	Conventional repeater
Manufacturer	Motorola USA 1301 E. Algonquin Road Schaumburg, Illinois 60196 800–247–2346 (Tel) POC: Ron Zeberlein 410–712–6014 (Tel)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	VHF: 136 MHz to 174 MHz UHF: 406 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Motorola

Operational Parameters

Number of Channels	Up to 128 modes
Transmitter Power Output Levels	2 W to 20 W or 3 W to 30 W
Battery Options	Internal emergency battery
Battery Recharging Options	Internal emergency backup battery recharger

Physical Parameters

Size	19.8 in x 13.3 in x 7.8 in
Weight	40 lb
Power Requirements	110 V ac/240 V ac or external 12 V dc
External Power	12 V dc

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$16K MSRP and contact dealer for discount pricing
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Racal Transceiver, Portable; MBITR (Multiband Inter/Intra Team Radio)***

ID# 118

Model Number(s) Multiband Inter/Intra Team Radio
AN/PRC-14 (V)(C)

Technology Portable, conventional

Manufacturer Racal Communications Inc.
5 Research Place
Rockville, Maryland 20850
301–948–4420 (Tel)
301–948–6371 (Fax)
www.racalcomm.com

POC: Steve Nichols
301–208–7654 (Tel)
steve.nichols@racalcomm.com

Secure Communication Capability 2 levels embedded: Type 1 COMSEC, commercial COMSEC
Keyfill devices: CYZ 10 (DTD), KYK 13, KOI 18

Availability Available

Frequency Range 30 MHz to 512 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 5 W FM/AM LOS, UHF military satellite with proper antenna

Current User(s) U.S. SOCOM

Source Racal Communications Inc.

Operational Parameters

Number of Channels 100 memory preset channels

Transmitter Power Output Levels 5 levels: 0.1 W, 0.5 W, 1 W, 3 W, and 5 W (FM)
2 levels: 1 W and 5 W (AM)

Battery Options Lithium-Ion rechargeable battery
nonrechargeable, disposable, and lithium cells

Battery Recharging Options An ac powered single battery charger, ac/dc powered 6–way battery charger, and vehicular charger

Physical Parameters

Size 8.4 in x 2.6 in x 1.5 in (with battery)

Weight	30.6 oz (with battery)
Power Requirements	Not specified
External Power	120 V ac, 240 V ac, 12 V dc via chargers

Available Accessories

Speaker-Microphones	Speaker microphone and audio connector is compatible with standard military audio devices
Carrying Cases	Radio system carrying bag
Battery Eliminators	SAPI accepts 1 V to 32 V
Vehicle Adapters	Vehicle adapter, radio holster, and radio system carrying bag

Logistical Parameters

Programming	Menu selectable groups: user programmable from front panel menu, PC programmer, and radio to radio cloning
Repairs	Manufacturer
Decontamination	Not specified
Durability/Ruggedness	Immiscibility: 20 m maritime version and 2 m urban version
Environmental Conditions	-22 °F to 140 °F Humidity: 95 % noncondensing
Unit Cost	Not specified
Battery Cycle Life	>8 h with 10/10/80 cycle, 500 cycles
Rapid Charge Battery Cycle Life	>8 h with 10/10/80 cycle, 500 cycles
Maintenance Cost	1 yr warranty
Interface Capability	NVG compatible, specialized headsets and audio devices mate to standard military audio connector. RF interface to FM conventional, AM, Type 1, and UHF military satellite.

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes, operator and service
applicable Regulations	Not specified
Support Equipment	Batteries, battery holder, vehicle adapter, radio holster, radio system carrying bag, battery chargers, antennas, PC programmer, programmer/data cable, and cloning cable
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name ***Racal Transceiver, Portable; MSHR (Miniature Secure Handheld Radio)***

ID# 119

Model Number(s)	Miniature Secure Handheld Radio (MSHR)
Technology	Portable, conventional
Manufacturer	Racal Communications Inc. 5 Research Place Rockville, Maryland 20850 301–948–4420 (Tel) 301–948–6371 (Fax) www.racalcomm.com POC: Steve Nichols 301–208–7654 (Tel) steve.nichols@racalcomm.com
Secure Communication Capability	Yes, 3 levels embedded: U.S. Type 1 COMSEC, commercial COMSEC, SBCF DES encryption keyfill devices: CYZ 10 (DTD), KYK 13, KOI 18, KVL, and Racal PCP
Availability	Commercially available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	5 W FM LOS
Current User(s)	U.S. Department of Justice and U.S. Department of Defense
Source	Racal Communications Inc.

Operational Parameters

Number of Channels	100 programmable channels
Transmitter Power Output Levels	5 levels: 0.1 W, 0.5 W, 1 W, 2 W, and 5 W
Battery Options	Rechargeable Lithium-Ion battery
Battery Recharging Options	Single 6–way and 12 V dc vehicular battery charger

Physical Parameters

Size	7 in x 2.63 in x 0.88 in (with battery)
Weight	15.5 oz with battery and antenna
Power Requirements	Not specified

External Power	120 V ac, 240 V ac, 12 V dc, via chargers

Available Accessories

Speaker-Microphones	Embedded speaker and microphone, and covert harness
Carrying Cases	Carrying bag
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Menu driven keypad entry, PC software download, radio-to-radio cloning, and keypad lockout
Repairs	Manufacturer
Decontamination	Not specified
Durability/Ruggedness	Water immersible to 2 m (20 m option available) acceleration: 20 G for 11 ms
Environmental Conditions	-22 °F to 140 °F Humidity: 95 % noncondensing
Unit Cost	Not specified
Battery Cycle Life	6 h @ 5/5/90 cycle, 500 cycles
Rapid Charge Battery Cycle Life	6 h @ 5/5/90 cycle, 500 cycles
Maintenance Cost	1 yr warranty
Interface Capability	Specialized headsets and audio devices wired through Racal custom side connector. RF interface to FM conventional (CTCSS, DCS), Type 1 encryption, and SBCF DES encryption.

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes, operator and service
applicable Regulations	Not specified
Support Equipment	Conforming body antenna, covert surveillance harness with wireless ear piece, carrying bag, PC programmer, data mode cable, cloning cable, key fill cable, test box, single, 6–way, and 12 V dc vehicular battery charger
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name ***Racal Transceiver, Portable; 20 Meter MSHR***

ID# 120

Model Number(s)	20 Meter Miniature Secure Handheld Radio
Technology	Portable, conventional
Manufacturer	Racal Communications Inc. 5 Research Place Rockville, Maryland 20850 301–948–4420 (Tel) 301–948–6371 (Fax) www.racalcomm.com POC: Steve Nichols 301–208–7654 (Tel) steve.nichols@racalcomm.com
Secure Communication Capability	Yes, 3 levels embedded: U.S. Type 1 COMSEC, commercial COMSEC, SBCF DES encryption keyfill devices: CYZ 10 (DTD), KYK 13, KOI 18, KVL, and Racal PCP
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	5 W FM LOS
Current User(s)	Navy SPECWAR, COCOM
Source	Racal Communications Inc.

Operational Parameters

Number of Channels	100 programmable channels
Transmitter Power Output Levels	5 levels: 0.1W, 0.5 W, 1 W, 2 W, and 5 W
Battery Options	Lithium-Ion rechargeable battery
Battery Recharging Options	Single, 6–way battery, and 12 V dc vehicular charger

Physical Parameters

Size	7.3 in x 2.6 in x 1.2 in (with battery)
Weight	24.5 oz with battery and antenna
Power Requirements	Not specified
External Power	120 V ac, 240 V ac, 12 V dc via chargers

Available Accessories

Speaker-Microphones	1 m submersible speaker microphone and diver headset
Carrying Cases	Carrying bag
Battery Eliminators	No
Vehicle Adapters	Yes

Logistical Parameters

Programming	Menu driven keypad entry, PC software download, radio-to-radio cloning, and keypad lockout
Repairs	Manufacturer
Decontamination	Not specified
Durability/Ruggedness	Submersible to 20 m acceleration: 20 G for 11 ms
Environmental Conditions	-22 °F to 140 °F Humidity: 95 % noncondensing
Unit Cost	Not specified
Battery Cycle Life	6 h @ 5/5/90 cycle, 500 cycles
Rapid Charge Battery Cycle Life	6 h @ 5/5/90 cycle, 500 cycles
Maintenance Cost	1 yr warranty
Interface Capability	Specialized headsets and audio devices wired through Racal custom side connector. RF interface to FM conventional (CTCSS, DCS), Type 1 encryption, and SBCF DES encryption.

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes, operator and service
applicable Regulations	Not specified
Support Equipment	20 m submersible diver headset, submersible miniature headset, 1 m submersible speaker microphone, carrying bag, PC programmer, data mode cable, cloning cable, key fill cable, test box, single, 6−way, and 12 V dc vehicular battery charger
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	No

General

Name ***Racal Transceiver, Portable; Racal 25***

ID# 121

Model Number(s) Racal 25

Technology Portable, conventional

Manufacturer Racal Communications Inc.
5 Research Place
Rockville, Maryland 20850
301−948−4420 (Tel)
301−948−6371 (Fax)
www.racalcomm.com

POC: Steve Nichols
301−208−7654 (Tel)
steve.nichols@racalcomm.com

Secure Communication Capability Yes, embedded; SBCF DES, OFB DES for project 25 digital channels; keyfill devices: KVL (Motorola), and Racal PC programmer

Availability Commercially available

Frequency Range 136 MHz to 174 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 5 W FM LOS

Current User(s) U.S. Department of Justice, U.S. Department of Interior, U.S. Navy, and U.S. Army

Source Racal Communications Inc.

Operational Parameters

Number of Channels 16 quick select via rotary channel selector
48 quick select via toggle and rotary channel selector
256 selectable from the keypad, and 16 zones of 16 channels

Transmitter Power Output Levels 5 levels: 0.1 W, 0.5 W, 1 W, 2 W, and 5 W (programmable)

Battery Options Lithium-Ion rechargeable battery, AA alkaline cassette (requires 10 “AA” disposable batteries)

Battery Recharging Options An ac powered single battery charger, ac powered 6−way battery charger, ac/dc powered 6−way battery charger. Vehicular charger in development.

Physical Parameters

Size	7.8 in x 2.6 in x 1.05 in (with battery)
Weight	16.7 oz
Power Requirements	Not specified
External Power	No

Available Accessories

Speaker-Microphones	Handheld speaker/microphone, surveillance harness, other headsets and audio devices via 6 pin hirose connector
Carrying Cases	Nylon duty case, leather duty case, and nylon tactical carrying case
Battery Eliminators	Yes
Vehicle Adapters	In development, 40 W, 110 W

Logistical Parameters

Programming	PC/cloning/front panel keyboard
Repairs	Manufacturer
Decontamination	Not specified
Durability/Ruggedness	Rugged metal housing. Submersible to 2 m.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	>11 h @ 5/5/90 cycle, 500 cycles
Rapid Charge Battery Cycle Life	>11 h @ 5/5/90 cycle, 500 cycles
Maintenance Cost	1 yr warranty
Interface Capability	Specialized headsets and audio devices mate to 6 pin hirose connector on audio adapter. RF interface to FM conventional (CTCSS DCS), project 25 digital, DES encrypter, and simultaneous multi-mode capability.

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC type accepted and Canadian type approval
Support Equipment	Carrying cases, hand held speaker/microphone, battery chargers, alkaline cassette, narrowband high gain antenna, PC programmer, and cloning cable
Warranty	1 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810E
Intrinsically Safe	Pending

General

Name ***BK Base Station; EBU Series***

ID# 122

Model Number(s)	EBU-Series
Technology	Conventional base station
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	400 MHz to 520 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	2 channels
Transmitter Power Output Levels	30 W to 125 W
Battery Options	Not applicable
Battery Recharging Options	None

Physical Parameters

Size	19 in x 14 in x 17.3 in
Weight	50 lb to 70 lb
Power Requirements	12 V dc/24 V dc/48 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibrations test
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***BK Radio FM Transceiver; EMH 599 2X***

ID# 123

Model Number(s)	EMH 599 2X
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	210 channels continuously selected or programmable for selection groups
Transmitter Power Output Levels	50 W can be turned down to 15 W for low power applications
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6 in x 9.4 in x 2.1 in
Weight	5 lb
Power Requirements	13.6 V dc to 13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets U.S. Forest Service vibrations and TIA/EIA–603 specifications
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.2K to $1.4K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Mobile installation kit and choice of microphone with hang-up box
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***BK Synthesized FM Mobile Radio; EMV***

ID# 124

Model Number(s)	EMV 499 0A EMV 199 0A
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	Not specified
Availability	Available
Frequency Range	403 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	114 channels
Transmitter Power Output Levels	EMV 499 0A: 10 W to 40 W and EMV 199 0A: 1 W to 4 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6 in x 8 in x 2.1 in
Weight	8 lb
Power Requirements	13.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets U.S. Forest Service vibration and EIA RS−316B vibration and shock specifications
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.2K to $1.4K
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Mobile installation kit and choice of microphone with hang-up box
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***BK Synthesized FM E Series DES EPH 599, EPU 499 and EPV 499 Models***

ID# 125

Model Number(s)	EPH
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	DES encryption keys: 3 encryption codes in memory
Availability	Available
Frequency Range	148 MHz to 174 MHz, 403 MHz to 457 MHz, and 450 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	14 channels/210 channels
Transmitter Power Output Levels	Hi: 5 W; low: 4 W
Battery Options	NiCad hi-power battery, AA battery cells, and NiMH battery
Battery Recharging Options	121 V ac dual rate desktop charger, 121 V ac and 242 V ac Charge Smart NiMH desktop charger

Physical Parameters

Size	2.6 in x 1.5 in x 6.6 in
Weight	20 oz (standard)
Power Requirements	10 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone with swivel spring clip, hi/lo volume switch, coiled cord, and earphone jack

Carrying Cases	Full leather cover that fits deluxe leather holster with belt loop/swivel
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibration, EIA RS–316B vibration, and shock specifications
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$2.2K to $2.3K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	121 V ac dual rate desktop charger (fast-charge and trickle-charge). Charges all NiCad battery packs in 1 h or less.
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries and power supplies, microphones and speakers, charging accessories, carrying accessories, antennas, speaker microphone, and signaling and channel options (factory installs)
Warranty	2 yr (can be extended up to 5 yr)
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	Depends on battery option

General

Name ***BK Synthesized FM Portable Radio; E Series, EPH 51 and 52 Models***

ID# 126

Model Number(s)	EPH
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	14 channels/210 channels
Transmitter Power Output Levels	5/2 W RF power
Battery Options	NiCad hi-power battery, AA battery cells, and NiMH battery
Battery Recharging Options	121 V ac dual rate desktop charger, 121 V ac and 242 V ac Charge Smart NiMH desktop charger

Physical Parameters

Size	2.6 in x 1.5 in x 6.6 in
Weight	20 oz
Power Requirements	10 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone with swivel spring clip, hi/ lo volume switch, coiled cord, and earphone jack

Carrying Cases	Full leather cover that fits deluxe leather holster with belt loop/swivel
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibration and EIA RS−316B vibration and shock specifications
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$675 to $1.2K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	121 V ac dual rate desktop charger (fast-charge/trickle-charge). Charges all NiCad battery packs in 1 h or less.
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries and power supplies, microphones and speakers, charging accessories, carrying accessories, antennas, speaker microphone, and signaling and channel options (factory installs)
Warranty	2 yr (can be extended up to 5 yr)
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	Depends on battery option

General

Name ***BK Synthesized FM Portable Radio; E Series, EPI 510 Models***

ID# 127

Model Number(s)	EPI
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 160 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	14 channels/210 channels
Transmitter Power Output Levels	Hi: 5 W; low: 2 W
Battery Options	NiCad hi-power battery, AA battery cells, and NiMH battery
Battery Recharging Options	121 V ac dual rate desktop charger, 121 V ac and 242 V ac Charge Smart NiMH desktop charger

Physical Parameters

Size	2.6 in x 1.5 in x 6.6 in
Weight	20 oz (standard)
Power Requirements	10 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone with swivel spring clip, hi/lo volume switch, coiled cord, and earphone jack

Carrying Cases	Full leather cover that fits deluxe leather holster with belt loop/swivel
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibration, EIA RS–316B vibration, and shock specifications
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$800 to $1.1K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	121 V ac dual rate desktop charger (fast-charge/trickle-charge). Charges all NiCad battery packs in 1 h or less.
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries/power supplies, microphones and speakers, charging accessories, carrying accessories, antennas, speaker microphone, and signaling/channel options (factory installs)
Warranty	2 yr (can be extended up to 5 yr)
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	Depends on battery option

General

Name ***BK Synthesized FM Portable Radio; E Series, EPU & EPV 414 and 499 Models***

ID# 128

Model Number(s)	EPV
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	403 MHz to 457 MHz (EPV) 450 MHz to 512 MHz (EPU)
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	14 channels/210 channels
Transmitter Power Output Levels	4 W
Battery Options	NiCad hi-power battery, AA battery cells, and NiMH battery
Battery Recharging Options	121 V ac dual rate desktop charger, 121 V ac/242 V ac Charge Smart NiMH desktop charger

Physical Parameters

Size	2.6 in x 1.5 in x 6.6 in
Weight	20 oz
Power Requirements	10 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone with swivel spring clip, hi/ lo volume switch, coiled cord, and earphone jack
Carrying Cases	Full leather cover that fits deluxe leather holster with belt loop and swivel
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibrations test
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$910 to $1.3K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	121 V ac dual rate desktop charger (fast-charge and trickle-charge). Charges all NiCad battery packs in 1 h or less.
Maintenance Cost	Not specified
Interface Capability	Not specified

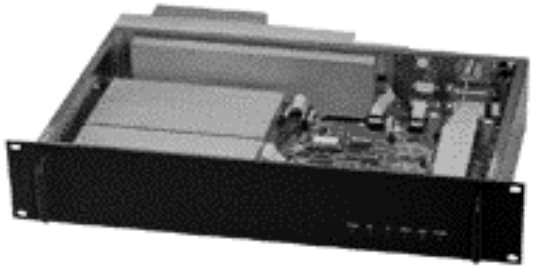
Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries and power supplies, microphones and speakers, charging accessories, carrying accessories, antennas, speaker microphone, and signaling/channel options (factory installs)
Warranty	2 yr (can be extended up to 5 yr)
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***BK Repeater; ERU Series***

ID# 129



Model Number(s)	ERU-Series
Technology	Conventional repeater
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	400 MHz to 520 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	255 channels
Transmitter Power Output Levels	Hi: 50 W; low: 35 W RF power
Battery Options	Not applicable
Battery Recharging Options	None

Physical Parameters

Size	19 in x 3.5 in x 14.2 in
Weight	19.8 lb
Power Requirements	13.8 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No

Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibrations test
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Experienced
Operator Training Requirements	Experienced
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***BK Radio FM Transceiver, Portable; G Series, GPH Models***

ID# 130

Model Number(s)	GPH21, GPH51
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	16 channels/240 channels
Transmitter Power Output Levels	5 W
Battery Options	NiCad hi-power battery, AA battery cells, and NiMH battery
Battery Recharging Options	121 V ac dual rate desktop charger, 121 V ac/242 V ac Charge Smart NiMH desktop charger

Physical Parameters

Size	2.55 in x 15 in x 6.6 in (with standard battery)
Weight	20.8 oz (with standard battery)
Power Requirements	10 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone with swivel spring clip, hi/lo volume, coiled cord, and earphone jack
Carrying Cases	Leather case with belt loop (optional viewing window)

Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$750 to $1.2K
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	121 V ac dual rate desktop charger (fast-charge/trickle-charge). Charges all NiCad battery packs in 1 h or less.
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries/power supplies, microphones and speakers, charging accessories, carrying accessories, antennas, speaker microphone, and signaling/channel options (factory installs)
Warranty	2 yr (can be extended up to 5 yr)
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, Mil Spec 810E, and U.S. Forest Service vibrations test
Intrinsically Safe	Depends on battery option

General

Name ***BK Radio Airborne Transceiver; KFM 985***

ID# 131

Model Number(s)	KFM 985
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	Downband VHF: 136 MHz to 160 MHz VHF: 148 MHz to 174 MHz UHF: 450 MHz to 512 MHz Downband UHF: 403 MHz to 457 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	Up to 210 channels
Transmitter Power Output Levels	VHF: 4 W UHF: 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	3 in x 5.8 in x 5.3 in
Weight	2 lb
Power Requirements	14 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	U.S. Forest Service vibrations test
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Not specified
Warranty	2 yr
Mil Spec/Mil-Std Ratings	U.S. Forest Service vibrations test
Intrinsically Safe	No

General

Name ***Relm Mobile Radio; 256NB***

ID# 132

Picture Not Available

Model Number(s)	256NB
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 162 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	1 channel/16 channels
Transmitter Power Output Levels	25 W minimum
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2.75 in x 6.5 in x 10.75 in
Weight	4.4 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Mobile hand microphone, 5 A dc power cord, telephone handset with hookswitch, mounting bracket, DTMF encoder microphone, alternator filter, desk microphone, and external speaker
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Relm Portable Radios; MPU08 (UHF)***

ID# 133

Model Number(s)	MPU08 (UHF)
Technology	Portable
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 480 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	8 channels
Transmitter Power Output Levels	4 W
Battery Options	700 mA battery 1000 mA battery
Battery Recharging Options	Desk (rapid rate), 6 unit multi-charger, and wall charger

Physical Parameters

Size	6.4 in x 2.5 in x 1.4 in
Weight	15.5 oz
Power Requirements	Not specified
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carrying case

Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Nor specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$458
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid rate desk charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Battery charger, battery pack, speaker microphone, carry case, rubber antenna, 12.5 channel space conversion kit for MPV and MPU, cloning cable, and PC programming kit
Warranty	Individual warranty provided with each product
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Relm Portable Radios; MPU32 (UHF)***

ID# 134

Model Number(s)	MPU 32 (UHF)
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	403 MHz to 430 MHz and 450 MHz to 480 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	32 channels/64 channels, option available
Transmitter Power Output Levels	4 W
Battery Options	700 mA battery 1000 mA battery
Battery Recharging Options	Desk (rapid rate), 6 unit multi-charger, and wall charger

Physical Parameters

Size	6.4 in x 2.5 in x 1.4 in
Weight	15.5 oz
Power Requirements	10.8 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carrying case

Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$473
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid rate desk charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Battery charger, battery pack, speaker microphone, carry case, rubber antenna, 12.5 channel space conversion kit for MPV and MPU, cloning cable, and PC programming kit
Warranty	Individual warranty provided with each product
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name	***Relm Portable Radios; MPV32 (VHF)***
ID# 135	
Model Number(s)	MPV 32 (VHF)
Technology	Portable, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	136 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	32 channels/64 channels, option available
Transmitter Power Output Levels	5 W
Battery Options	700 mA battery 1000 mA battery
Battery Recharging Options	Desk (rapid rate), 6 unit multi-charger, and wall charger

Physical Parameters

Size	6.4 in x 2.5 in x 1.4 in
Weight	15.5 oz
Power Requirements	10.8 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carrying case

Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$473
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Rapid rate desk charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Battery charger, battery pack, speaker microphone, carry case, rubber antenna, 12.5 channel space conversion kit for MPV and MPU, cloning cable, and PC programming kit
Warranty	Individual warranty provided with each product
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Relm Mobile Radios; SMV2516***

ID# 136

Model Number(s)	SMV2516 UHF
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 482 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	Either 16 channel or 99 channel formats with scan capability
Transmitter Power Output Levels	25 W minimum at 7 MHz 12.5 W minimum at 10 MHz
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1.5 in x 5.8 in x 7 in
Weight	2.4 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable

Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Specially designed metal covers and a die-cast metal frame offer unparalleled structural durability and protection
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$550
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Type Acceptance
Support Equipment	DTMF Decoder, external speaker 12 A dc power cord, mobile hand microphone, programmer desk microphone, DTMF Touch-Tone* Microphone, and two-tone sequential decoder
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Relm Mobile Radios; SMV4016***

ID# 137

Model Number(s)	SMV4016 VHF
Technology	Mobile, conventional
Manufacturer	Relm Communication 7100 Technology Drive West Melbourne, Florida 32904 321–984–1414 (Tel) 321–984–0434 (Fax) POC: Mary Stone
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Relm

Operational Parameters

Number of Channels	Either 16 channel or 99 channel formats with scan capability
Transmitter Power Output Levels	40 W minimum at 7 MHz 20 W minimum at 10 MHz
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1.5 in x 5.8 in x 7 in
Weight	2.4 lb
Power Requirements	13.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable

Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Specially designed metal covers and a die-cast metal frame offer unparalleled structural durability and protection
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$548
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Type Acceptance
Support Equipment	DTMF Decoder, external speaker 12 A dc power cord, mobile hand microphone, programmer desk microphone, DTMF Touch-Tone* Microphone, and two-tone sequential decoder
Warranty	1 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Maxon VHF/UHF RF Link Module; SD-125***

ID# 138

Model Number(s)	SD-125
Technology	Link (repeater), conventional RF Link Module
Manufacturer	Topaz 3, LLC 10828 NW Air World Drive Kansas City, Missouri 64153 816–891–6320 ext. 699 (Tel) 816–891–8815 (Fax) POC: Liz Hawkins Maxon America 800–821–7848, ext 611 (Tel) liz.hawkins@topaz3.com
Secure Communication Capability	No
Availability	Available
Frequency Range	148 MHz to 174 MHz and 440 MHz to 470 MHz
Number of Personnel Supported by System	Not applicable
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Topaz 3, LLC

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	1 W to 5 W
Battery Options	Not specified
Battery Recharging Options	Not specified

Physical Parameters

Size	4.6 in x 2.4 in x 1.2 in
Weight	8 oz
Power Requirements	9 V dc to 18 V dc
External Power	No

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not specified
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	2 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Maxon Scanning Transceiver; SM-2000 Series***

ID# 139

Model Number(s)	SM-2150 VHF SM-2450 UHF
Technology	Mobile, conventional
Manufacturer	Topaz 3, LLC 10828 NW Air World Drive Kansas City, Missouri 64153 816–891–6320 ext. 699 (Tel) 816–891–8815 (Fax) POC: Liz Hawkins Maxon America 800–821–7848, ext 611 (Tel) liz.hawkins@topaz3.com
Secure Communication Capability	No
Availability	Available
Frequency Range	VHF: 148 MHz to 174 MHz UHF: 440 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Topaz 3, LLC

Operational Parameters

Number of Channels	UHF: 4 channels (programmable in 5 kHz steps) VHF: 4 channels (programmable in 6.25 kHz steps)
Transmitter Power Output Levels	1 W to 3 W, low 1 W to 25 W, high
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	2 in x 7 in x 6.3 in
Weight	3.4 lb (with microphone)
Power Requirements	13.8 V dc negative ground
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician), programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Case material is die-cast aluminum
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified and IC Certification
Support Equipment	Heavy duty remote speaker, heavy duty mobile microphone, base station microphone, power supply (110 V ac/220V ac, 10 A, 50 % duty), and power supply cover
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Maxon Scanning Transceiver; SM-4000 Series***

ID# 140

Model Number(s) SM-4150 VHF
SM-4450 UHF

Technology Mobile, conventional

Manufacturer Topaz 3, LLC
10828 NW Air World Drive
Kansas City, Missouri 64153
816–891–6320 ext. 699 (Tel)
816–891–8815 (Fax)

POC: Liz Hawkins
Maxon America
800–821–7848, ext 611 (Tel)
liz.hawkins@topaz3.com

Secure Communication Capability No

Availability Available

Frequency Range VHF: 136 MHz to 150 MHz (L)
150 MHz to 165 MHz (M)
160 MHz to 174 MHz (H)
UHF: 450 MHz to 470 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Topaz 3, LLC

Operational Parameters

Number of Channels 16 channel capability

Transmitter Power Output Levels 40 W (adjustable)

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 2 in x 6 in x 8.3 in

Weight 4.2 lb (with microphone)

Power Requirements 13.8 V dc negative ground

External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Case material is die-cast aluminum
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
Applicable Regulations	FCC Compliance, FCC Identifier, and IC Certification
Support Equipment	Heavy duty remote speaker, heavy duty mobile microphone, base station microphone, and power supply (110 V ac, 10 A, 50 % duty)
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Maxon VHF/UHF Transceiver, Portable; SP-120***

ID# 141

Model Number(s)	SP-120
Technology	Portable, conventional
Manufacturer	Topaz 3, LLC 10828 NW Air World Drive Kansas City, Missouri 64153 816–891–6320 ext. 699 (Tel) 816–891–8815 (Fax) POC: Liz Hawkins Maxon America 800–821–7848, ext 611 (Tel) liz.hawkins@topaz3.com
Secure Communication Capability	Yes; after market (Midian Electronics) VPU II Inversion Voice Scrambler TVS–2 Rolling Code Scrambler
Availability	Available
Frequency Range	VHF: 148 MHz to 174 MHz UHF: 440 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Topaz 3, LLC

Operational Parameters

Number of Channels	4 channels
Transmitter Power Output Levels	2 W
Battery Options	NiCad 7.5V dc (with 700 mAh battery or with 1200 mAh battery)
Battery Recharging Options	6–unit gang charger (regular and rapid), dual slot/dual rate desktop charger, and pedestal charger

Physical Parameters

Size	5.6 in x 2.3 in x 1.7 in (with battery)
Weight	15 oz (with battery)

Power Requirements	NiCad 7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Deluxe speaker/microphone, ear speaker microphone, voice operated mini-VOX control and headset, and 2 wire palm microphone
Carrying Cases	Leather case with swivel and nylon case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Manufactured with a die-cast aluminum frame and tough-tested polycarbonate cabinet. Can work in all environments.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	> 8 h
Rapid Charge Battery Cycle Life	6–unit gang rapid charger, dual slot/dual rate "smart" desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified for use in USA and its possessions, and IC approved for sale in Canada
Support Equipment	Battery pack, VHF antenna, UHF antenna, battery chargers, speaker/microphone, palm microphone, coil-cord earphone, ear speaker microphone, leather case, and nylon case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Maxon VHF/UHF Transceiver, Portable; SP-130/SP-140***

ID# 142

Model Number(s) SP-130/SP-140

Technology Portable, conventional

Manufacturer Topaz 3, LLC
10828 NW Air World Drive
Kansas City, Missouri 64153
816–891–6320 ext. 699 (Tel)
816–891–8815 (Fax)

POC: Liz Hawkins
Maxon America
800–821–7848, ext 611 (Tel)
liz.hawkins@topaz3.com

Secure Communication Capability Yes; after market (Midian Electronics)
VPU II Inversion Voice Scrambler
TVS–2 Rolling Code Scrambler

Availability Available

Frequency Range VHF: 148 MHz to 174 MHz
UHF: 440 MHz to 470 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Topaz 3, LLC

Operational Parameters

Number of Channels 4 channels/16 channels programmable

Transmitter Power Output Levels Hi: 5 W; low: 1 W programmable per channel

Battery Options NiCad 7.5V dc

Battery Recharging Options 4–station conditioning charger (110 V/220 V), 6–unit gang charger (regular and rapid), dual slot/dual rate "smart" charger, and pedestal charger

Physical Parameters

Size 5.6 in x 2.3 in x 1.7 in (with battery)

Weight 16.4 oz (with battery)

Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Deluxe speaker/microphone with angled connector, 2 wire palm microphone, voice operated mini VOX control and headset, and ear speaker microphone
Carrying Cases	Leather case with swivel and nylon case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Manufactured with a die-cast aluminum frame and tough-tested polycarbonate cabinet. Can adapt to tough work conditions like dust, vibration, and humidity.
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	> 8 h
Rapid Charge Battery Cycle Life	6–unit gang rapid charger, dual slot/dual rate "smart" desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified for use in USA and its possessions, and IC approved for sale in Canada
Support Equipment	Battery pack, VHF antenna, UHF antenna, battery chargers, speaker and microphone, palm microphone, coil-cord earphone, ear speaker microphone, leather case, and nylon case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	SP140 Model only

General

Name ***Maxon VHF/UHF Transceiver, Portable; SP-200***

ID# 143

Model Number(s)	SP-200
Technology	Portable, conventional
Manufacturer	Topaz 3, LLC 10828 NW Air World Drive Kansas City, Missouri 64153 816–891–6320 ext. 699 (Tel) 816–891–8815 (Fax) POC: Liz Hawkins Maxon America 800–821–7848, ext 611 (Tel) liz.hawkins@topaz3.com
Secure Communication Capability	No
Availability	Available
Frequency Range	UHF: 403 MHz to 430 MHz VHF: 136 MHz to 174 MHz 800 MHz: 806 MHz to 824 MHz and 851 MHz to 869 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Topaz 3, LLC

Operational Parameters

Number of Channels	199 channel capability, up to 13 scan groups of up to 16 channels each
Transmitter Power Output Levels	1 W or 5 W ± 10 %
Battery Options	1350 mAh Ni-MH battery
Battery Recharging Options	Rapid rate charger

Physical Parameters

Size	4.25 in x 2.31 in x 1.5 in
Weight	7.65 oz (with battery)
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Ear bud speaker with in-line P-T-T and microphone, lapel speaker/microphone with ear jack, and ear speaker with cord
Carrying Cases	Not specified
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Industrial use, die cast aluminum chassis, and polycarbonate case
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid rate charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified for use in USA and its possessions, and IC approved for sale in Canada
Support Equipment	1350 mAh Ni-MH battery pack, UHF antenna, VHF antenna, rapid rate charger, speaker microphone, and cord
Warranty	2 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Maxon VHF/UHF Transceiver, Portable; SP-300***

ID# 144

Model Number(s) SP-300

Technology Portable, conventional

Manufacturer Topaz 3, LLC
10828 NW Air World Drive
Kansas City, Missouri 64153
816–891–6320 ext. 699 (Tel)
816–891–8815 (Fax)

POC: Liz Hawkins
Maxon America
800–821–7848, ext 611 (Tel)
liz.hawkins@topaz3.com

Secure Communication Capability No

Availability Available

Frequency Range UHF: 403 MHz to 430 MHz
VHF: 136 MHz to 174 MHz
800 MHz: 806 MHz to 824 MHz and 851 MHz to 869 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Topaz 3, LLC

Operational Parameters

Number of Channels 4 channel/16 channel models

Transmitter Power Output Levels Hi: 5 W; low: 1 W programmable per channel

Battery Options NiCad 7.5 V dc
Bu-MH 1350 mAh

Battery Recharging Options 6–unit gang charger, 6–unit regular and fast charger, dual slot and dual rate "smart" charger, and pedestal charger

Physical Parameters

Size 5.6 in x 2.3 in x 1.7 in (with battery)

Weight 16.4 oz (with battery)

Power Requirements 7.5 V dc

External Power No

Available Accessories

Speaker-Microphones	Speaker microphone with locking connector
Carrying Cases	Leather case with swivel and nylon case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Die cast chassis, polycarbonate case, and tough industrial radio
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	> 8 h
Rapid Charge Battery Cycle Life	6–unit gang rapid charger, dual slot /dual rate "smart" charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified for use in USA and its possessions, and IC approved for sale in Canada
Support Equipment	1350 mAh Ni-MH battery pack, UHF antenna, VHF antenna, rapid rate charger speaker microphone, and cord
Warranty	2 yr
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Maxon UHF Transceiver, Portable; SP-150U***

ID# 145

Model Number(s)	SP-150U
Technology	Portable, conventional and trunked
Manufacturer	Topaz 3, LLC 10828 NW Air World Drive Kansas City, Missouri 64153 816–891–6320 ext. 699 (Tel) 816–891–8815 (Fax) POC: Liz Hawkins Maxon America 800–821–7848, ext 611 (Tel) liz.hawkins@topaz3.com
Secure Communication Capability	No
Availability	Available
Frequency Range	440 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Topaz 3, LLC

Operational Parameters

Number of Channels	16 conventional channels
Transmitter Power Output Levels	1 W to 5 W ± 10 %
Battery Options	NiCad battery Ni-MH battery
Battery Recharging Options	4–station conditioning charger, dual slot/dual rate "smart" desktop charger, and pedestal charger

Physical Parameters

Size	5.6 in x 2.3 in x 1.7 in
Weight	16.4 oz (with battery)
Power Requirements	7.5 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker/microphone
Carrying Cases	Leather case, nylon case, and spring loaded belt clip
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician)
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Industrial use
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	8 h at 5/5/90 cycle
Rapid Charge Battery Cycle Life	Dual slot/dual rate "smart" desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC Certified for use in USA and its possessions, and IC approved for sale in Canada
Support Equipment	Battery pack, UHF antenna, battery chargers, speaker and microphone, leather case, and nylon case
Warranty	2 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex Dual Band (VHF & UHF) Transceiver, Portable; FTH-2070***

ID# 146

Model Number(s) FTH-2070A

Technology Portable, conventional

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability Yes with optional encryption module

Availability Available

Frequency Range VHF: 150 MHz to174 MHz; UHF: 409 MHz to 450 MHz, 450 MHz to 480 MHz, or 470 MHz to 490 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 50+ with repeater; 3 mi line of sight

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 32 channels

Transmitter Power Output Levels Hi: 5 W; low: 2 W

Battery Options 12 V NiCad 600 mAH or 1200 mAH (5 W); 12 V NiCad 1000 mAh and NiCad intrinsically safe

Battery Recharging Options Rapid vehicular charger and desktop rapid charger

Physical Parameters

Size 2.6 in x 7.9 in x 1.7 in

Weight	28.8 oz
Power Requirements	12 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes–heavy duty
Carrying Cases	Yes
Battery Eliminators	Yes
Vehicle Adapters	6–unit multi-charger

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$1.3K
Battery Cycle Life	8.1 h/7.0 h (VHF/UHF) 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, DTMF keypad, speaker microphone, belt swival attachment, and cables with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex FTL Series; FTL-1011 (VHF LowBand)***

ID# 147

Model Number(s)	FTL-1011 (VHF LowBand)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Voice inversion encryption available and high security rolling code encryption
Availability	Available
Frequency Range	29.7 MHz to 37 MHz 37 MHz to 50 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels, 24 channels, and 99 channels
Transmitter Power Output Levels	60 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.3 in x 2 in x 7.1 in

Weight	3.3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable chassis construction and heavy-duty heat sink
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Integrated power supply (117 V ac), integrated power supply (220 V ac to 234 V ac), voice inversion encryption, high security rolling code encryption, two-tone sequential decoder, dc line filter, microphones, external speakers, audio output option, PC based dispatch system, VX–Trunk I (II) Trunking Mobile Logic Board, remote mount kit, and radio to computer programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex FTL Series; FTL-1011H (VHF LowBand HiPower)***

ID# 148

Model Number(s)	FTL-1011H (VHF LowBand HiPower)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Voice inversion encryption available and high security rolling code encryption
Availability	Available
Frequency Range	37 MHz to 50 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels, 24 channels, and 99 channels
Transmitter Power Output Levels	110 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.3 in x 2 in x 11.6 in

Weight	7.9 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable chassis construction and heavy-duty heat sink
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Integrated power supply (117 V ac), integrated power supply (220 V ac to 234 V ac), voice inversion encryption, high security rolling code encryption, two-tone sequential decoder, dc line filter, microphones, external speakers, audio output option, PC based dispatch system, VX–Trunk I (II) Trunking Mobile Logic Board, remote mount kit, and radio to computer programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name *Vertex FTL Series; FTL-2011 (VHF HighBand)*

ID# 149

Model Number(s)	FTL-2011 (VHF Highband)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Voice inversion encryption available and high security rolling code encryption
Availability	Available
Frequency Range	134 MHz to 160 MHz 148 MHz to 174 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels, 24 channels, and 99 channels
Transmitter Power Output Levels	40 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.3 in x 2 in x 7.1 in

Weight	3.3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable chassis construction and heavy-duty heat sink
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Integrated power supply (117 V ac), integrated power supply (220 V ac to 234 V ac), voice inversion encryption, high security rolling code encryption, two-tone sequential decoder, dc line filter, microphones, external speakers, audio output option, PC based dispatch system, VX–Trunk I (II) Trunking Mobile Logic Board, remote mount kit, and radio to computer programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex FTL Series; FTL-7011 (UHF)***

ID# 150

Model Number(s)	FTL-7011 (UHF)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Voice inversion encryption available and high security rolling code encryption
Availability	Available
Frequency Range	400 MHz to 440 MHz 450 MHz to 490 MHz 480 MHz to 512 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels, 24 channels, and 99 channels
Transmitter Power Output Levels	25 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.3 in x 2 in x 7.1 in
Weight	3.3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable chassis construction and heavy-duty heat sink
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Integrated power supply (117 V ac), integrated power supply (220 V ac to 234 V ac), voice inversion encryption, high security rolling code encryption, two-tone sequential decoder, dc line filter, microphones, external speakers, audio output option, PC based dispatch system, VX–Trunk I (II) Trunking Mobile Logic Board, remote mount kit, and radio to computer programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex GX4800UT Mobile Transceiver***

ID# 151

Model Number(s) GX4800UT UHF

Technology Mobile and trunked system

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 450 MHz to 480 MHz and 470 MHz to 512 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 20 systems/200 groups

Transmitter Power Output Levels 25 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 1.6 in x 5.5 in x 7.1 in

Weight Not specified

Power Requirements	13.6 ± 20 % V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	Not specified
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	FCC (APV 0946) Industry Canada (363 195 212A)
Support Equipment	7 W extension speaker, consolette base power supply, variety of microphones, data interface cable, programming hardware kit (includes software package), programming module, programming cable, and pin adapter
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-10V (VHF Model)***

ID# 152

Model Number(s)	VX-10V (VHF Model)
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	134 MHz to 160 MHz, 148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	40 channels (102 optional)
Transmitter Power Output Levels	Programmable: 5 W, 2.5 W, 1 W, and 0.1 W
Battery Options	7.2 V NiCad 1100 or 600 mAH (5 W); 7.2 V NiCad 1000 mAh NiCad and intrinsically safe
Battery Recharging Options	Rapid charger, desktop rapid charger, and dual sequential rapid charger

Physical Parameters

Size	2.2 in x 3.9 in x 1.8 in
Weight	13.4 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes - light, medium, and heavy duty
Carrying Cases	Case and clip
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$520
Battery Cycle Life	8.2 h VHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	120 V ac or 240 V ac 1 h rapid chargers
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries, microphones, cases, antennas, cloning cable, and software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes, optional

General

Name ***Vertex VX Series; VX-10U (UHF Model)***

ID# 153

Model Number(s) VX-10U (UHF Model)

Technology Portable, conventional

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability Yes, with optional encryption module

Availability Available

Frequency Range 400 MHz to 430 MHz, 450 MHz to 485 MHz, and 485 MHz to 512 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage 50+ with repeater; 3 mi line of sight

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 40 channels (102 optional)

Transmitter Power Output Levels Programmable: 5 W, 2.5 W, 1 W, and 0.1 W

Battery Options 7.2 V NiCad 1100 or 600 mAH (5 W); .2 V NiCad 1000 mAh NiCad and intrinsically safe

Battery Recharging Options Rapid charger, desktop rapid charger, and dual sequential rapid charger

Physical Parameters

Size 2.2 in x 3.9 in x 1.8 in

Weight	13.4 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes - light, medium, and heavy duty
Carrying Cases	Case and clip
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$550
Battery Cycle Life	7.1 h UHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	120 V ac or 240 V ac 1 h rapid chargers
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Batteries, microphones, cases, antennas, cloning cable, and software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes, optional

General

Name ***Vertex VX Series; VX-300***

ID# 154

Picture Not Available

Model Number(s)	VX-300
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	134 MHz to 155 MHz (A) 150 MHz to 174 MHz (C)
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 5 mi
Current User(s)	U.S. Military
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	90 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1W @ 13.8 V dc
Battery Options	Rechargeable NiCad battery pack and 6 AA dry cell
Battery Recharging Options	Desktop and wall-charger

Physical Parameters

Size	2.2 in x 4.7 in x 1.4 in

Weight	14 oz
Power Requirements	12.0 V dc
External Power	A dc power cable with cigarette lighter plug

Available Accessories

Speaker-Microphones	Yes, earpiece, speaker microphone, earpiece microphone, and VOX Headset
Carrying Cases	Cordura case with clip
Battery Eliminators	Not specified
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Meets Mil Spec 810D and Mil Spec 810E
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$335
Battery Cycle Life	10 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	1 h rapid charger
Maintenance Cost	Not specified
Interface Capability	Programming cable and software

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, cables, batteries, microphones, cases, antennas, programming cable and software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810D and Mil Spec 810E
Intrinsically Safe	Not specified

General

Name ***Vertex HX Series; HX120 UHF Portable***

ID# 155

Model Number(s)	HX120 UHF Portable
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	450 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	2 channels, 4 channels, and 8 channels
Transmitter Power Output Levels	2 W
Battery Options	7.2 V 800 mAh NiCad battery and 7.2 V 1100 mAh NiCad battery
Battery Recharging Options	Desktop trickle charger

Physical Parameters

Size	5.2 in x 2.5 in x 1.5 in
Weight	12.1 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carrying case with clip
Battery Eliminators	Yes
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$337
Battery Cycle Life	10 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Charger, batteries, microphone, case, antenna, programming cable and software
Warranty	1 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX120 VHF Portable***

ID# 156

Model Number(s)	HX120 VHF Portable
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	150 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	2 channels, 4 channels, and 8 channels
Transmitter Power Output Levels	2 W
Battery Options	7.2 V 800 mAh NiCad battery and 7.2 V 1100 mAh NiCad battery
Battery Recharging Options	Desktop trickle charger

Physical Parameters

Size	5.2 in x 2.5 in x 1.5 in
Weight	12.1 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Carrying case with clip
Battery Eliminators	Yes
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not specified
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$337
Battery Cycle Life	10 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	Not specified
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Charger, batteries, microphone, case, antenna, programming cable and software
Warranty	1 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX140 VHF Portable***

ID# 157

Model Number(s)	HX140 VHF Portable
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes (GE and Motorola type)
Availability	Available
Frequency Range	146 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	8 channels
Transmitter Power Output Levels	5 W
Battery Options	7.2 V 950 mAh NiCad battery and 7.2 V 1400 mAh NiCad battery
Battery Recharging Options	Desktop trickle charger and desktop rapid charger

Physical Parameters

Size	6.7 in x 2.4 in x 1.5 in
Weight	Not specified

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Nylon case; D-Ring swivel clip, swivel belt loop, and pager style spring action belt clip
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Heavy duty construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$389
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop rapid charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, antennas, and programming hardware kit and software
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX381 VHF Portable***

ID# 158

Model Number(s)	HX381 VHF Portable
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	138 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	5 W, 4 W, and 2 W (programmable)
Battery Options	950 mAh NiCad battery, intrinsically safe and 1500 mAh NiCad battery
Battery Recharging Options	Mobile trickle charger, desktop rapid charger (120 V ac and 220 V ac/50 Hz) and 6–unit rapid charger

Physical Parameters

Size	5.5 in x 2.4 in x 1.7 in

Weight	Not specified
Power Requirements	9.6 V dc
External Power	A dc power cable with cigarette lighter plug

Available Accessories

Speaker-Microphones	Lapel speaker microphone; cable w/molded connector, and nonterminated (OEM)
Carrying Cases	Leather or Durus soft carrying case; D-ring swivel clip, swivel belt loop, pager belt clip, and slim line metal pager clip
Battery Eliminators	Yes
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Industrial and rugged use
Environmental Conditions	Unlimited
Unit Cost	$515
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, antennas, programming hardware kit and software
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex HX Series; HX381 UHF Portable***

ID# 159

Model Number(s) HX381 UHF Portable

Technology Portable, conventional

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability Yes

Availability Available

Frequency Range 400 MHz to 512 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 16 channels

Transmitter Power Output Levels 5 W, 4 W, and 2 W (programmable)

Battery Options 950 mAh NiCad battery, intrinsically safe, and 1500 mAh NiCad battery

Battery Recharging Options Mobile trickle charger; desktop rapid charger (120 V ac and 220 V ac/50 Hz), and 6–unit rapid charger

Physical Parameters

Size 5.5 in x 2.4 in x 1.7 in

Weight Not specified

Power Requirements	9.6 V dc
External Power	A dc power cable with cigarette lighter plug

Available Accessories

Speaker-Microphones	Lapel speaker microphone, cable with molded connector, and nonterminated (OEM)
Carrying Cases	Leather or Durus soft carrying case, D-ring swivel clip, swivel belt loop, pager belt clip, and slim line metal pager clip
Battery Eliminators	Yes
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Industrial and rugged use
Environmental Conditions	Unlimited
Unit Cost	$515
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, and keypad
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex HX Series; HX240 VHF Portable***

ID# 160

Model Number(s) HX240 VHF Portable

Technology Portable, conventional

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability Yes

Availability Available

Frequency Range 150 MHz to 174 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 16 channels

Transmitter Power Output Levels 4 W

Battery Options Alkaline battery tray (holds six AA batteries, not included); 7.2 V 700 mAh NiCad battery, (1.5 W); 12 V 600 mAh NiCad battery (4 W); 7.2 V 1100 mAh NiCad battery (1.5 W); and 12 V 900 mAh NiCad battery (4 W)

Battery Recharging Options Mobile trickle charger; desktop rapid charger (120 V ac and 220 V ac/50 Hz); desktop trickle charger; and mobile adapter

Physical Parameters

Size	6.5 in x 2.5 in x 1.4 in
Weight	16 oz
Power Requirements	12 V dc
External Power	A dc power cable with cigarette lighter plug

Available Accessories

Speaker-Microphones	Heavy duty speaker microphone, speaker microphone, miniature speaker microphone, tie pin microphone with earphone, and headset with boom microphone
Carrying Cases	Leather carrying case with swivel belt loop, and mobile bracket
Battery Eliminators	Yes
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged Ability
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$435
Battery Cycle Life	8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, keypad, antennas, programming cable and hardware kit, software, and 9 pin to 25 pin adapter
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX240 UHF Portable***

ID# 161

Model Number(s)	HX240 UHF Portable
Technology	Portable, conventional
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	450 MHz to 470 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	4 W
Battery Options	Alkaline battery tray (holds six AA batteries, not included); 7.2 V 700 mAh NiCad battery, (1.5 W); 12 V 600 mAh NiCad battery (4 W); 7.2 V 1100 mAh NiCad battery (1.5 W); and 12 V 900 mAh NiCad battery (4 W)
Battery Recharging Options	Mobile trickle charger; desktop rapid charger (120 V ac and 220 V ac/50 Hz); desktop trickle charger; and mobile adapter

Physical Parameters

Size	6.5 in x 2.5 in x 1.4 in
Weight	16 oz
Power Requirements	12 V dc
External Power	A dc power cable with cigarette lighter plug

Available Accessories

Speaker-Microphones	Heavy duty speaker microphone, speaker microphone, miniature speaker microphone, tie pin microphone with earphone, and headset with boom microphone
Carrying Cases	Leather carrying case with swivel belt loop, and mobile bracket
Battery Eliminators	Yes
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged ability
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$435
Battery Cycle Life	8 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, keypad, antennas, programming cable and hardware kit, software, and 9 pin to 25 pin adapter
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX482UT UHF Portable***

ID# 162

Model Number(s) HX482UT UHF Portable

Technology Portable, conventional and trunked

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 450 MHz to 480 MHz and 470 MHz to 512 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not specified

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 10 groups/109 groups

Transmitter Power Output Levels 4 W

Battery Options 950 mAh NiCad battery and 1500 mAh NiMH battery

Battery Recharging Options Mobile adapter, mobile trickle charger, and desk top rapid charger (120 V ac and 220 V ac/50 Hz)

Physical Parameters

Size 3.6 in x 2.3 in x 1.3 in

Weight Not specified

Power Requirements	9.6 V dc
External Power	No

Available Accessories

Speaker-Microphones	Earphone adapter, lapel speaker microphone, cable with molded connector, and nonterminated (OEM)
Carrying Cases	Leather carrying case, swivel belt loop, pager belt clip, slim line metal pager clip, and swivel belt loop
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	Not specified
Unit Cost	$675
Battery Cycle Life	At least 6 h with 5/5/90 cycle
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, keypad, and antennas
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	No
Intrinsically Safe	No

General

Name ***Vertex HX Series; HX580 Dual Protocol Hand Held***

ID# 163

Picture Not Available

Model Number(s)	HX582 Dual Protocol Hand Held
Technology	Portable, conventional and trunked
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	No
Availability	Available
Frequency Range	851 MHz to 869 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	10 groups/109 groups
Transmitter Power Output Levels	2 W
Battery Options	950 mAh NiCad battery and 1500 mAh NiMH battery
Battery Recharging Options	Mobile adapter, mobile trickle charger, and desk top rapid charger (120 V ac and 220 V ac/50 Hz)

Physical Parameters

Size	3.6 in x 2.3 in x 1.3 in
Weight	Not specified
Power Requirements	9.6 V dc

External Power	In-line charger/adapter, dual mode, and to operate off car battery while charging radio

Available Accessories

Speaker-Microphones	Earphone adapter, lapel speaker microphone, cable with molded connector, and nonterminated (OEM)
Carrying Cases	Leather carrying case, swivel belt loop, pager belt clip, slim line metal pager clip, and swivel belt loop
Battery Eliminators	No
Vehicle Adapters	No

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Standard use
Environmental Conditions	Not specified
Unit Cost	$675
Battery Cycle Life	Not specified
Rapid Charge Battery Cycle Life	Desktop rapid charger (120 V ac and 220 V ac/50 Hz)
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, keypad, antennas, programming cable and hardware kit, software, and 9 pin to 25 pin adapter
Warranty	3 yr parts and labor
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-210V (VHF Model)***

ID# 164

Picture Not Available

Model Number(s)	VX-210V (VHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1100 mAh NiCad; 7.2 V 1100 mAh NiCad and intrinsically safe
Battery Recharging Options	120 V ac 1 h and 12 h desktop; 240 V ac 1 h and 12 h desktop; and wall charger

Physical Parameters

Size	2.3 in x 4.3 in x 1 in

Weight	12 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone and earpiece microphone
Carrying Cases	Leather case with belt loop and leather case with swivel
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Super rugged construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$340
Battery Cycle Life	8.2 h VHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	13.8 V dc and 120 V ac rapid desktop charger and 230 V ac to 240 V ac rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, and cases
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, 810D, and 810E
Intrinsically Safe	Yes

General

Name ***Vertex VX Series; VX-210U (UHF Model)***

ID# 165

Picture Not Available

Model Number(s)	VX-210U (UHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	450 MHz to 485 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1100 mAh NiCad; 7.2 V 1100 mAh NiCad and intrinsically safe
Battery Recharging Options	20 V ac 1 h and 12 h desktop; 240 V ac 1hr and 12 h desktop; and wall charger

Physical Parameters

Size	2.3 in x 4.3 in x 1 in
Weight	12 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone and earpiece microphone
Carrying Cases	Leather case with belt loop and leather case with swivel
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Super rugged construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$390
Battery Cycle Life	7.1 h UHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	13.8 V dc and 120 V ac rapid desktop charger; and 230 V ac to 240 V ac rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, and cases
Warranty	3 yr on transceivers and1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex VX Series; VX-400V (VHF Model)***

ID# 166

Picture Not Available

Model Number(s)	VX-400V (VHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	134 MHz to 160 MHz, or 148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	Programmable: 5 W, 2.5 W, 1 W, and 0.1 W
Battery Options	Alkaline (AA); 7.2 V 1100 mAh NiCad; 7.2 V 1100 mAh NiCad and intrinsically safe
Battery Recharging Options	20 V ac 1 h and 12 h desktop; 240 V ac 1hr and 12 h desktop; and wall charger

Physical Parameters

Size	2.3 in x 4 in x 1 in
Weight	11.3 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes, earpiece, speaker microphone, earpiece microphone, and VOX Headset
Carrying Cases	Leather case with belt loop and leather case with swivel
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Super rugged construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$507
Battery Cycle Life	8.2 h VHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	120 V ac and 240 V ac rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, and cases
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex VX Series; VX-400U (UHF Model)***

ID# 167

Picture Not Available

Model Number(s)	VX-400U (UHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	400 MHz to 430 MHz, 450 MHz to 485 MHz or 485 MHz to 512 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	Programmable: 5 W, 2.5 W, 1 W, and 0.1 W
Battery Options	Alkaline (AA); 7.2 V 1100 mAh NiCad; 7.2 V 1100 mAh NiCad and intrinsically safe
Battery Recharging Options	20 V ac 1 h and 12 h desktop; 240 V ac 1 and 12 h desktop; and wall charger

Physical Parameters

Size	2.3 in x 4 in x 1 in

Weight	11.3 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Yes, earpiece, speaker microphone, earpiece microphone, and VOX Headset
Carrying Cases	Leather case with belt loop and leather case with swivel
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Super rugged construction
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$537
Battery Cycle Life	7.1 h UHF 5/5/90 cycle
Rapid Charge Battery Cycle Life	120 V ac and 240 V ac rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, and cases
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Yes

General

Name ***Vertex VX Series; VX-500***

ID# 168

Picture Not Available

Model Number(s)	VX-500LX (Low Band VHF)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	29.7 MHz to 38 MHz or 38 MHz to 50 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 5 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1200 mAh NiCad; 7.2 V 1200 mAh NiCad and intrinsically safe
Battery Recharging Options	Rapid desktop charger (117 V ac and 220 V ac to 234 V ac), rapid vehicular charger, and overnight desktop charger (117 V ac and 220 V ac to 234 V ac)

Physical Parameters

Size	2.3 in x 5.9 in x 1.5 in

Weight	19 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone
Carrying Cases	Leather or Cordura case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged cast metal housing
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	7.8 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	120 V ac and 240 V ac 1h rapid desktop charger, and rapid vehicular adapter
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, cables, batteries, microphones, cases, antennas, programming cable and software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe model available

General

Name ***Vertex VX Series; VX-510LX (Low Band VHF)***

ID# 169

Picture Not Available

Model Number(s)	VX-510LX (Low Band VHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	29.7 MHz to 38 MHz or 38 MHz to 50 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 5 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1700 mAh NiCad; 7.2 V 1700 mAh NiCad and intrinsically safe
Battery Recharging Options	120 V ac and 240 V ac overnight desktop charger, 120 V ac and 240 V ac 1 h rapid desktop charger, and rapid 6–unit charger

Physical Parameters

Size	2.3 in x 5.9 in x 1.5 in
Weight	20.1 oz
Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone, medium duty and heavy duty with volume control
Carrying Cases	Leather case with belt loop, nylon case with clip, belt clip, and swivel attachment for leather case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged cast metal housing
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$737
Battery Cycle Life	11 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid 6–unit multi charger; 120 V ac and 240 V ac 1 h rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, belt clip, keypad, and programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe model available

General

Name ***Vertex VX Series; VX-510V (VHF Model)***

ID# 170

Picture Not Available

Model Number(s)	VX-510V (VHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	148 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1700 mAh NiCad; 7.2 V 1700 mAh NiCad and intrinsically safe
Battery Recharging Options	Multiple options

Physical Parameters

Size	2.3 in x 5.9 in x 1.5 in
Weight	20.1 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone, medium duty and heavy duty with volume control
Carrying Cases	Leather case with belt loop, nylon case with clip, belt clip, and swivel attachment for leather case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged cast metal housing
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$590
Battery Cycle Life	11 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid 6–unit multi charger; 120 V ac and 240 V ac 1 h rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, belt clip, keypad, and programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe model available

General

Name ***Vertex VX Series; VX-510U (UHF Model)***

ID# 171

Picture Not Available

Model Number(s)	VX-510U (UHF Model)
Technology	Portable, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes with optional encryption module
Availability	Available
Frequency Range	450 MHz to 488 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	50+ with repeater; 3 mi line of sight
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	32 channels
Transmitter Power Output Levels	Hi: 5 W; low: 1 W
Battery Options	Alkaline (AA); 7.2 V 1700 mAh NiCad; 7.2 V 1700 mAh NiCad and intrinsically safe
Battery Recharging Options	Multiple options

Physical Parameters

Size	2.3 in x 5.9 in x 1.5 in
Weight	20.1 oz

Power Requirements	7.2 V dc
External Power	No

Available Accessories

Speaker-Microphones	Speaker microphone, medium duty and heavy duty with volume control
Carrying Cases	Leather case with belt loop, nylon case with clip, belt clip, and swivel attachment for leather case
Battery Eliminators	Not specified
Vehicle Adapters	Not specified

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Rugged cast metal housing
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$590
Battery Cycle Life	11 h 5/5/90 cycle
Rapid Charge Battery Cycle Life	Rapid 6–unit multi charger; 120 V ac and 240 V ac 1 h rapid desktop charger
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Minimal
Operator Training Requirements	Minimal
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Chargers, batteries, microphones, cases, belt clip, keypad, and programming cable with software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	Intrinsically safe model available

General

Name ***Vertex VX Series; VX-2000V Mobile Radio (VHF)***

ID# 172

Model Number(s)	VX-2000v Mobile Radio (VHF)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	134 MHz to 160 MHz 148 MHz to 174 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels and 40 channels
Transmitter Power Output Levels	Hi: 25 W; low: 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.25 in x 1.5 in x 4.25 in
Weight	30.4 oz
Power Requirements	10.8 V dc to 15.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable –PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	2–Tone Decoder Unit, 12 A power supply (117 V ac to 220 V ac), ANI unit, external speaker, plug-in dc line filter, variety of microphones, VX–Trunk II Trunking Mobile Logic Board, radio to computer programming cable, programming software, and radio to radio cloning cable
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-2000U Mobile Radio (UHF)***

ID# 173

Model Number(s)	VX-2000v Mobile Radio (UHF)
Technology	Mobile, conventional and trunking capable with optional accessory board
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	400 MHz to 430 MHz, 450 MHz to 480 MHz and 480 MHz to 512 MHz
Number of Personnel Supported by System	Multiple
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	4 channels and 40 channels
Transmitter Power Output Levels	Hi: 25 W; low: 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	6.25 in x 1.5 in x 4.25 in
Weight	30.4 oz
Power Requirements	10.8 V dc to15.6 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	2–Tone Decoder Unit, 12 A power supply (117 V ac to 220 V ac), ANI unit, external speaker, plug-in dc line filter, variety of microphones, VX–Trunk II Trunking Mobile Logic Board, radio to computer programming cable, programming software, and radio to radio cloning cable
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-3000L (VHF Lowband)***

ID# 174

Model Number(s) VX-3000L (VHF Lowband)

Technology Mobile, conventional and trunking capable with optional accessory board

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 29.7 MHz to 37 MHz
37 MHz to 50 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Public Works

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 4 channels, 48 channels, (120 optional) channels

Transmitter Power Output Levels Hi: 70 W; low: 10 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 6.3 in x 1.6 in x 6.3 in

Weight	3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	25 A power supply (117 V ac to 220 V ac), external speaker, plug-in dc line filter, microphones, VX–Trunk II Trunking Mobile Logic Board, radio to computer programming cable, and programming software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-3000V (VHF)***

ID# 175

Model Number(s) VX-3000V (VHF)

Technology Mobile, conventional and trunking capable with optional accessory board

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 134 MHz to 150 MHz
146 MHz to 174 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Public Works

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 4 channels, 48 channels, (120 optional) channels

Transmitter Power Output Levels Hi: 50 W; low: 5 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 6.3 in x 1.6 in x 6.3 in

Weight	3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	25 A power supply (117 V ac to 220 V ac), external speaker, plug-in dc line filter, microphones, VX–Trunk II Trunking Mobile Logic Board, radio to computer programming cable, and programming software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex VX Series; VX-3000U (UHF)***

ID# 176

Model Number(s) VX-3000U (UHF)

Technology Mobile, conventional and trunking capable with optional accessory board

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 400 MHz to 460 MHz, 450 MHz to 490 MHz and 480 MHz to 512 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Public Works

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 4 channels, 48 channels, (120 optional) channels

Transmitter Power Output Levels Hi: 40 W; low: 5 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 6.3 in x 1.6 in x 6.3 in

Weight	3 lb
Power Requirements	13.8 V dc
External Power	Not applicable

Available Accessories

Speaker-Microphones	Not applicable
Carrying Cases	Not applicable
Battery Eliminators	Not applicable
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Mounted radio (mobile-car)
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Yes

Special Requirements

Operator Skills Required	Average
Operator Training Requirements	Average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	25 A power supply (117 V ac to 220 V ac), external speaker, plug-in dc line filter, microphones, VX–Trunk II Trunking Mobile Logic Board, radio to computer programming cable, and programming software
Warranty	3 yr on transceivers and 1 yr on accessories
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex Repeaters; VXR-1000 (VHF)***

ID# 177

Picture Not Available

Model Number(s)	VXR-1000 (VHF)
Technology	Repeater, conventional Vertex mobile repeaters
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	150 MHz to 174 MHz
Number of Personnel Supported by System	One
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	0 W to 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1 in x 4.4 in x 5.4 in
Weight	14.4 oz
Power Requirements	13.8 V dc

External Power	No

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No
Vehicle Adapters	Multiple options

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable repeater
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$599
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Above average
Operator Training Requirements	Above average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	3 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex Repeaters; VXR-1000 (UHF)***

ID# 178

Picture Not Available

Model Number(s)	VXR-1000 (UHF)
Technology	Repeater, conventional Vertex mobile repeaters
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	450 MHz to 470 MHz
Number of Personnel Supported by System	One
Geographic Coverage	Not specified
Current User(s)	Not specified
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	0 W to 5 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	1 in x 4.4 in x 5.4 in
Weight	14.4 oz
Power Requirements	13.8 V dc

External Power	No

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No
Vehicle Adapters	Multiple Options

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable Repeater
Environmental Conditions	-22 °F to 140 °F
Unit Cost	$599
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Above average
Operator Training Requirements	Above average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	3 yr
Mil Spec/Mil-Std Ratings	Meets Mil Spec 810C, Mil Spec 810D, and Mil Spec 810E
Intrinsically Safe	No

General

Name ***Vertex Repeaters; VXR-5000 (VHF)***

ID# 179

Model Number(s) VXR-5000 (VHF)

Technology Repeater, and trunking Vertex mobile repeaters

Manufacturer

Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability No

Availability Available

Frequency Range 134 MHz to 147 MHz, 146 MHz to 160 MHz, 156 MHz to 168 MHz, and 164 MHz to174 MHz

Number of Personnel Supported by System Multiple

Geographic Coverage Not specified

Current User(s) Not specified

Source

Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 8 channels

Transmitter Power Output Levels 25 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 14.8 in x 10.8 in x 4.3 in

Weight 26.4 lb

Power Requirements	100 V ac/117 V ac/220 V ac/235 V ac, 13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No
Vehicle Adapters	Multiple Options

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Durable repeater
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Above average
Operator Training Requirements	Above average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	3 yr
Mil Spec/Mil-Std Ratings	None
Intrinsically Safe	No

General

Name ***Vertex Repeaters or Base Station; VXR-5000 (UHF)***

ID# 180

Model Number(s) VXR-5000 (UHF)

Technology Conventional and trunking capable with optional accessory board

Manufacturer Yaesu/Vertex-Standard
17210 Edwards Rd.
Cerritos, California 90703
562–404–2700 (Tel)

POC: Kirk Waddell
720–344–9645 (Tel)
720–344–9647 (Fax)

Secure Communication Capability Yes

Availability Available

Frequency Range 400 MHz to 420 MHz, 430 MHz to 450 MHz, 450 MHz to 470 MHz, 470 MHz to 490, and 490 MHz to 215 MHz

Number of Personnel Supported by System Unlimited

Geographic Coverage Not applicable

Current User(s) Not specified

Source Mills' Communications Inc.
210 Pennsylvania Ave.
Westminster, MD 21157
410–876–8600 (Tel)
410–848–8600 (Tel)
410–857–8600 (Fax)

POC: Jeff Myers
millscom@cct.infi.net

Operational Parameters

Number of Channels 8 channels

Transmitter Power Output Levels 25 W

Battery Options Not applicable

Battery Recharging Options Not applicable

Physical Parameters

Size 14.8 in x 10.8 in x 4.3 in

Weight	26.4 lb
Power Requirements	100 V ac,/117 V ac/220 V ac/235 V ac, 13.8 V dc
External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not applicable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	No

Special Requirements

Operator Skills Required	Above average
Operator Training Requirements	Above average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	3 yr
Mil Spec/Mil-Std Ratings	None
Intrinsically Safe	No

General

Name ***Vertex Repeater or Base Station; VXR-7000 (VHF)***

ID# 181

Picture Not Available

Model Number(s)	VXR-7000 (VHF)
Technology	Conventional, Vertex mobile base station or repeater, and optional VX–Trunk operation
Manufacturer	Yaesu/Vertex-Standard 17210 Edwards Rd. Cerritos, California 90703 562–404–2700 (Tel) POC: Kirk Waddell 720–344–9645 (Tel) 720–344–9647 (Fax)
Secure Communication Capability	Yes
Availability	Available
Frequency Range	136 MHz to 150 MHz and 150 MHz to 174 MHz
Number of Personnel Supported by System	Unlimited
Geographic Coverage	Not applicable
Current User(s)	Public Safety
Source	Mills' Communications Inc. 210 Pennsylvania Ave. Westminster, MD 21157 410–876–8600 (Tel) 410–848–8600 (Tel) 410–857–8600 (Fax) POC: Jeff Myers millscom@cct.infi.net

Operational Parameters

Number of Channels	16 channels
Transmitter Power Output Levels	50 W
Battery Options	Not applicable
Battery Recharging Options	Not applicable

Physical Parameters

Size	4.5 in x 12.8 in x 15.4 in
Weight	22 lb
Power Requirements	13.8 V dc

External Power	Yes

Available Accessories

Speaker-Microphones	Yes
Carrying Cases	No
Battery Eliminators	No
Vehicle Adapters	Not applicable

Logistical Parameters

Programming	Dealer/User (authorized technician) programmable - PC friendly
Repairs	Dealer
Decontamination	Not specified
Durability/Ruggedness	Not applicable
Environmental Conditions	-22 °F to 140 °F
Unit Cost	Not specified
Battery Cycle Life	Not applicable
Rapid Charge Battery Cycle Life	Not applicable
Maintenance Cost	Not specified
Interface Capability	Not specified

Special Requirements

Operator Skills Required	Above average
Operator Training Requirements	Above average
Training Available	Yes
Manuals Available	Yes
applicable Regulations	Not specified
Support Equipment	Available
Warranty	3 yr
Mil Spec/Mil-Std Ratings	None
Intrinsically Safe	No

ABOUT THE LAW ENFORCEMENT AND CORRECTIONS STANDARDS AND TESTING PROGRAM

The Law Enforcement and Corrections Standards and Testing Program is sponsored by the Office of Science and Technology of the National Institute of Justice (NIJ), U.S. Department of Justice. The program responds to the mandate of the Justice System Improvement Act of 1979, directed NIJ to encourage research and development to improve the criminal justice system and to disseminate the results to Federal, State, and local agencies.

The Law Enforcement and Corrections Standards and Testing Program is an applied research effort that determines the technological needs of justice system agencies, sets minimum performance standards for specific devices, tests commercially available equipment against those standards, and disseminates the standards and the test results to criminal justice agencies nationally and internationally.

The program operates through:

The *Law Enforcement and Corrections Technology Advisory Council* (LECTAC), consisting of nationally recognized criminal justice practitioners from Federal, State, and local agencies, which assesses technological needs and sets priorities for research programs and items to be evaluated and tested.

The *Office of Law Enforcement Standards* (OLES) at the National Institute of Standards and Technology, which develops voluntary national performance standards for compliance testing to ensure that individual items of equipment are suitable for use by criminal justice agencies. The standards are based upon laboratory testing and evaluation of representative samples of each item of equipment to determine the key attributes, develop test methods, and establish minimum performance requirements for each essential attribute. In addition to the highly technical standards, OLES also produces technical reports and user guidelines that explain in nontechnical terms the capabilities of available equipment.

The *National Law Enforcement and Corrections Technology Center* (NLECTC), operated by a grantee, which supervises a national compliance testing program conducted by independent laboratories. The standards developed by OLES serve as performance benchmarks against which commercial equipment is measured. The facilities, personnel, and testing capabilities of the independent laboratories are evaluated by OLES prior to testing each item of equipment, and OLES helps the NLECTC staff review and analyze data. Test results are published in Equipment Performance Reports designed to help justice system procurement officials make informed purchasing decisions.

Publications are available at no charge through the National Law Enforcement and Corrections Technology Center. Some documents are also available online through the Internet/World Wide Web. To request a document or additional information, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center
P.O. Box 1160
Rockville, MD 20849–1160
E-Mail: *asknlectc@nlectc.org*
World Wide Web address: *http://www.nlectc.org*

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