

# Joint Tactical Radio System HMS

## AN/PRC-155 Networking Manpack Radios



### *2-channel networking radio with embedded encryption and GPS*

First software-defined 2-ch manpack radio utilizes software waveforms in lieu of hardware

Reconfigurable and interoperable with current-force and future radio platforms

Creates self-forming ad hoc networks in any battlefield scenario

Extends the classified network beyond the path of vehicles

### Overview

The JTRS HMS Manpack radio is the first two-channel, software defined radio capable of network-centric connectivity and legacy interoperability, supporting advanced (SRW, MUOS) and current-force (SINGARS, SATCOM, HF, EPLRS, etc.) waveforms. In addition, the AIM II embedded programmable security allows the dismounted warfighter to seamlessly join any combat net with confidence. Added functionality, like repeating for remote receive and retransmit, makes this the most powerful piece of tactical equipment in the soldier communications arsenal.

### Common Core Radio Approach

Team General Dynamics uses a common core radio architecture, software and hardware design approach for all JTRS HMS products, including the Manpack radio. Special emphasis on SWAP-C (Size, Weight and Power-Cost) lightens the soldier load and maximizes battery life through efficient design and both aggressive and intelligent power management. Our common architecture and use of common core radio modules reduces both development time and cost, enables easy technology upgrades and reduces the logistics trail.

# Joint Tactical Radio System HMS AN/PRC-155 Networking Manpack Radios

## Technical Specifications – JTRS HMS MANPACK

- Frequency range
  - 2 MHz – 2.5 GHz
- Guard
  - 121.5 VHF and 243.0 UHF
- Size
  - 257 cu. in. (438 with battery)
  - 2.875" x 10.5" x 8.5" (without battery bucket)
  - 2.875" x 10.5" x 14.5" (with battery bucket)
- Weight (lbs.)
  - <9 lbs. (<14 lbs. with battery)
- Number of channels
  - 2
- Waveform support
  - SRW, MUOS\*, SINCGARS, EPLRS\*, SATCOM, HF SSB w/ALE
- Presets
  - 50 per channel
- Max. power output
  - 20 Watts
- JTRS compliance
  - Yes
- JTRS JPO-certified waveforms
  - Yes
- Fully programmable COMSEC and TRANSEC (Type 1 & Type 2)
  - Yes
- JTRS API's
  - Yes
- Multiple Independent Levels of Security (MILS)
  - Yes
- Remote control capability
  - Yes
- CIK function, removable
  - Yes
- OTAR
  - Yes
- Retransmission, voice and data
  - Integral (2 channels)
- Start
  - Warm start <90 seconds nominal
  - Cold start <15 minutes
  - Cold start includes initial configuration, waveform loading, crypto keys, channel configuration, and POST/IBIT

\* Software upgradeable based on waveform availability

## GENERAL DYNAMICS C4 Systems

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## Qualified Suppliers

- General Dynamics C4 Systems
- Rockwell Collins, Inc.

## Features and Benefits

- Modular design for ease of technology upgrades
- Scalable from 2 to 4 channels by connecting two units through Ethernet ports
- Removable/Removable, intuitive Human Machine Interface (HMI)
- Common HMI to the JTRS Handheld radio reduces training
- Modular, detachable power amplifiers for ease of field maintenance and reduced repair time
- Separation of RF channels provides superior isolation
- Dual battery configuration for extended mission life
- Sealed battery bucket provides protection from environmental elements
- Ruggedized, lightweight chassis that is EMI/EMC compliant
- Works with legacy key fill devices
- Remote control capable
- Accessories Available: Vehicle mount, power supply/charger, 6-foot tether for HMI in dismounted application



TEAM GENERAL DYNAMICS



*Software-defined. Smaller. Lighter. More capable.*

- Delivers secure networked communications and situational awareness, improving mission effectiveness up to the Type 1 Secret level
- Increased RF range, battery life, and added visual HMI display built on the successful and field proven AN/PRC-154A Program of Record Rifleman Radio
- Enables self-forming, self-healing, ad hoc, simultaneous voice and data networks
- Provides software-defined capability for upgradeability and interoperability
- Streamlines procurement, logistics, maintenance and training, reducing life cycle cost
- Provides low-cost JTRS networking
- Integrates embedded encryption and GPS
- Minimizes soldier carry load

Networked Voice and Data Communications for Dismounted Soldiers



## AN/PRC-154B(V)1 Rifleman Radio



# AN/PRC-154B(V)1 Rifleman Radio



The AN/PRC-154B(V)1 Rifleman Radio is a low-cost, lightweight, body-worn radio that transmits voice and data simultaneously utilizing the Soldier Radio Waveform (SRW). It brings secure Secret and Below (SAB) squad-level communications to the soldier at the tactical edge of the battlefield network. The radio enables team members at the tactical level to track individual soldier position location information (PLI), providing a much-needed situational awareness capability. The AN/PRC-154B(V)1 Enhanced Rifleman Radio builds upon the widely fielded AN/PRC-154A to provide the next generation radio for the U.S. Army's Rifleman and Nett Warrior programs.

## FEATURES AND BENEFITS

- Type 1 Secret and Below (SAB) secure communications
- Continuous transmission of Position Location Information (PLI) enables situational awareness and blue force tracking
- Human Machine Interface (HMI)
  - Provides instant status to the user with a visual OLED display; adjustable brightness to be both readable in direct sunlight and night vision compatible
- Audible Human Machine Interface (HMI).
  - Allows the operator to maintain visual focus on the mission while operating the radio
- Actively participates in one voice talk call group while simultaneously monitoring other talk groups
- Software programmable/upgradeable
- Operates with Talk-Group Select Switch, enabling simultaneous participation in multiple talk groups and use with Type 1 handheld for multiple security level operation
- Small, ruggedized, lightweight chassis that is EMI/EMC compliant
- Operates with standard USB and RS-232 devices for display use and radio control
- Interoperable with all fielded AN/PRC-154A Rifleman Radios and accessories

## TECHNICAL SPECIFICATIONS

### Frequency Range

- UHF band 225 - 450 MHz
- L-Band 1250 -1390 MHz, 1750 - 1850 MHz

### Size

- < 29 cu. in. with battery
- 7.6"h x 2.5"w x 1.6"d

### Weight

- 1.7 lbs. with battery

### Transmit Output Power

- Up to 5 Watt
- User selectable

### Communication Range

- >3 km (depending on environment)

### Environmental Specifications

- Operating Temperature: -40° to +55° C
- Storage Temperature: -51° to +71° C
- Immersion: 2m

### GPS

- Integral GPS and antenna

- External SAASM interface

### Programmable Channels

- 50 presets
- 5 talk groups per preset

### Waveforms/Modes of Operation

- Soldier Radio Waveform (SRW)

### JTRS Compliance

- Yes

### Interfaces Supported

- 6-pin Headset/Speakermic (H-250)
- Key loader (COMSEC key and TRANSEC key)
- USB
- RS-232
- Software reprogramming and upgrades
- TNC (50Ω mission antenna)
- SMA (if external GPS antenna desired)
- DAGR (external SAASM GPS)
- Talk-Group Select Switch

### Data Rate

- SRW data modes supported

### Operational Battery Life

- >12 Hrs

### Programmable COMSEC & TRANSEC

- Non-CCI

## ACCESSORIES

- 1600884-1, 7.2 Ah Li-Ion Rechargeable Battery
- 4102715-501, Rifleman Battery Eliminator
- 85326, Standard USB Cable
- 4102681-502, GPS Antenna
- 1600761-1, Rifleman USB Cable
- 1600761-8, Rifleman Tablet USB Cable
- 1600721-1, Multi-band Antenna
- 1600775-2, Radio Pouch
- 1600701-4, Single Bay Charger
- MA7144, Vehicle Integrated Power Enhanced Rifleman (VIPER), Vehicle Amplifier System
- 1600551-5, Tactical Headset
- 1600469-11, Speakermic
- 1600858-1, Talk Group Selector Switch
- 1600886-1, Nett Warrior Data Adapter
- 1600761-9, SAASM External GPS Cable



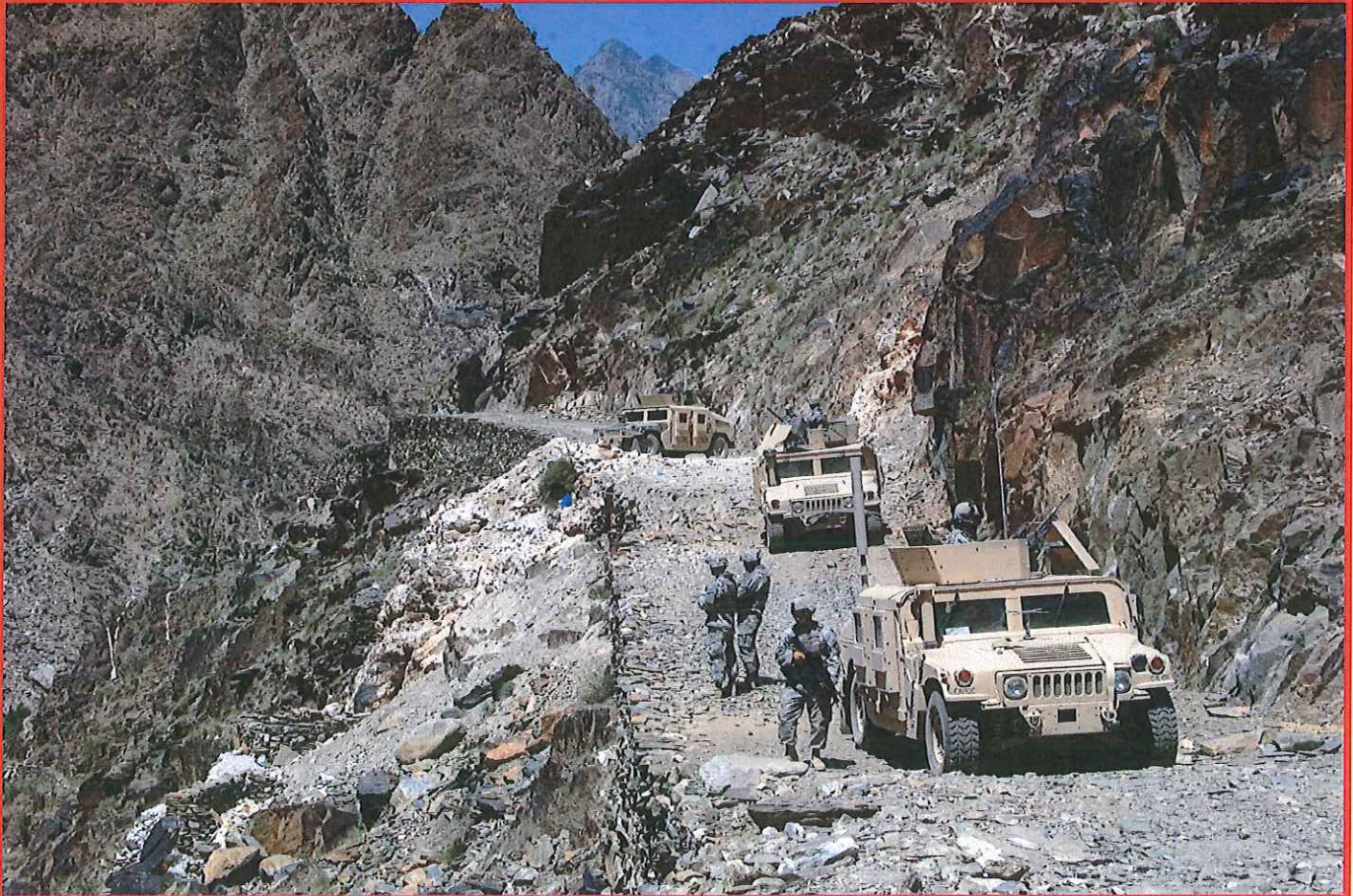
> Non-U.S. Government sales are subject to U.S. Government approval.  
> Specifications are subject to change without notice.

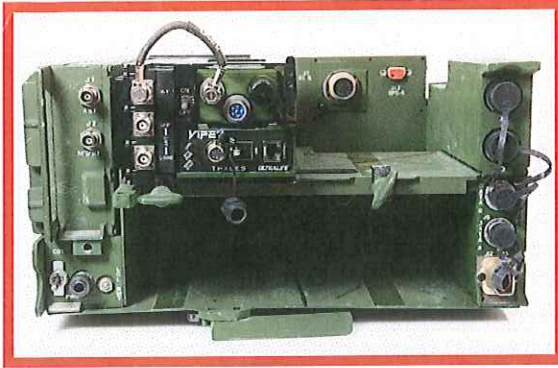
- Cost-effective vehicular mounted Soldier Radio Waveform (SRW) radio system
- Utilizes the operationally proven AN/PRC-154 Rifleman Family of Radios to ensure full interoperability with fielded SRW radios
- 20 Watt power amplifier extends range of SRW network in the UHF and L Bands
- Successful evaluation at the NIE 14.2, 15.1 and Army



## AN/VRC-121(V)1 - VIPER

VEHICLE INTEGRATED POWER ENHANCED RIFLEMAN





# AN/VRC-121(V)1 - VIPER

## VEHICLE INTEGRATED POWER ENHANCED RIFLEMAN

The Vehicle Integrated Power Enhanced Rifleman (VIPER) is a vehicle mounted SRW radio designed to extend the operational range of the SRW network by providing 20 Watts of amplification. VIPER provides “Jerk and Run” access to an installed AN/PRC-154, AN/PRC-154A(V)1, or AN/PRC-154B(V)1 Rifleman Radio Rifleman Radio, providing operators with an instant transition between mounted and dismounted operations. VIPER is jointly developed by Thales and Ultralife.

### FEATURES AND BENEFITS

- Continuous transmission of Position Location Information (PLI) enables situational awareness and blue force tracking
- Supports hands-free display and external computer interface
- User-friendly audible Human Machine Interface (HMI) i.e. audio indicators for preset, GPS position, and battery status
- Actively participates in one talk group while simultaneously monitoring two other talk groups
- Software programmable/upgradeable
- Operates with Talk-Group Select Switch, enabling simultaneous participation in multiple talk groups and use with Type 1 handheld for multiple security level operation
- Operates with standard USB and RS-232 devices for display use and radio control
- Integrated USB and Ethernet connections provide standard interface with a variety of data devices
- Compatible with standard vehicular mounting trays and intercom systems
- Provides significant range extension to the SRW network

### GENERAL INFORMATION

#### Compatible Accessories

- 1600811-1, 5.8 Ah Li-Ion Rechargeable Battery
  - 1600761-1, Rifleman USB Cable
  - 1600761-3, Universal Cable
  - 1600721-1, Multi-band Antenna
  - 1600775-1, Radio Pouch
  - 1600701-1, Single Bay Charger
  - AN/PRC-154 SBUHMS SBU Rifleman Radio
  - AN/PRC-154A(V)1 HMS SAB Rifleman Radio
  - AN/PRC-154B(V)1, Enhanced SAB Rifleman Radio with Display
  - 1600469-4 Speaker Mic
  - SS-90017, H-250 Handset
  - 1600811-1 Battery Rechargeable
  - 1600845-1 Cable, GPS Interface
  - LS/671 Vehicular Speaker
- 1100732-502 HMMWV Installation Kit
- 1100744-503, HMMWV Installation Plate
  - 2100532-501, Ground Strap
  - 3500916-503, HMMWV Power Cable
- 11007533-501 Stand-Alone Installation Kit
- 3500916-501, Power Cable
  - 1100744-501 Mounting Plate Assembly
  - 2100532-501, Ground Strap

### TECHNICAL SPECIFICATIONS

#### Frequency Range

- UHF band 225 - 450 MHz
- L-Band 1250 -1390 MHz, 1750 - 1850 MHz

#### Mounting Options

- SINGGARS VAA: Upper or Lower Shelf
- SINGGARS Base Tray: Single or Double VIPER Installation
- “Mount-anywhere” stand alone mounting plate

#### Transmit Output Power

- 20 Watts in both L and UHF bands
- User selectable

#### Environmental Specifications

- Operating Temperature: -40° to +55° C
- Storage Temperature: -51° to +71° C
- Immersion:
  - VIPER: 1M
  - Handheld Radio: 2M

#### GPS

- Integral GPS and antenna
- External SAASM interface

#### Programmable Channels

- 50 presets
- 3 talk groups per preset

#### Waveforms/Modes of Operation

- Soldier Radio Waveform (SRW)

#### JTRS Compliance

- Yes

#### Interfaces Supported

- USB
- Ethernet
- SAASM (PLGR/DAGR) GPS Interface
- Vehicle Intercom System (VIC)
- Talk Selector Switch (TSS)

#### Data Rate

- SRW data modes supported

#### Programmable COMSEC & TRANSEC

- Type I or II, depending on the installed radio
- Secret and Below communications

#### EMI/EMC Compliance

- MIL-STD-461C



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 ➤ Specifications are subject to change without notice.



## Enhanced Position Location Reporting System EPLRS



A software defined, wireless networking system, the Enhanced Position Location Reporting System (EPLRS) provides fast, reliable tactical data communication.

### Benefits

- Supports a broad range of missions by integrating battlefield communication systems
- Delivers crucial information to the right place at the right time with optimal security and reliability
- Enables position/navigation throughout maneuver brigades and supports U.S. Army Battle Command System
- Low cost makes EPLRS affordable for all combat and combat support units
- Supports U.S. Air Force Situational Awareness Data Link (SADL)

### Broad-Range Mission Support

EPLRS provides robust, high-speed battlefield communications for warfighters on the move. Its contention-free networking architecture integrates current battlefield systems and ensures speedy data exchange in time-critical situations.

EPLRS' data collection and communication capabilities cover a wide variety of missions — from air defense to maneuver control and beyond. In air defense, where distributing command and control information and exchanging air track data are crucial, EPLRS reliably meets the challenge. In fire support missions, it simultaneously distributes artillery fire requests and mission support data to multiple destinations — a major benefit to warfighters.

EPLRS meets the demanding requirements of intelligence and electronic warfare by collecting data from widely dispersed systems in forward battle areas and sending it back to the combat force. Enhancing the system's reliability, the EPLRS network automatically reconfigures itself to overcome the line-of-sight limitations of ultra high-frequency communications and to mitigate jamming threats.

In maneuver control operations, EPLRS' data communication, position-location reporting, and navigation functions play an integral role. Through the Force XXI Battle Command Brigade and Below (FBCB2) system, EPLRS relays unit identification, position location, and operational status data to combined maneuver files. The data is displayed on the FBCB2 platform hosts and other tactical displays.

EPLRS provides e-mail, reports, and other information to assist commanders during force deployments and maneuvers.

## EPLRS

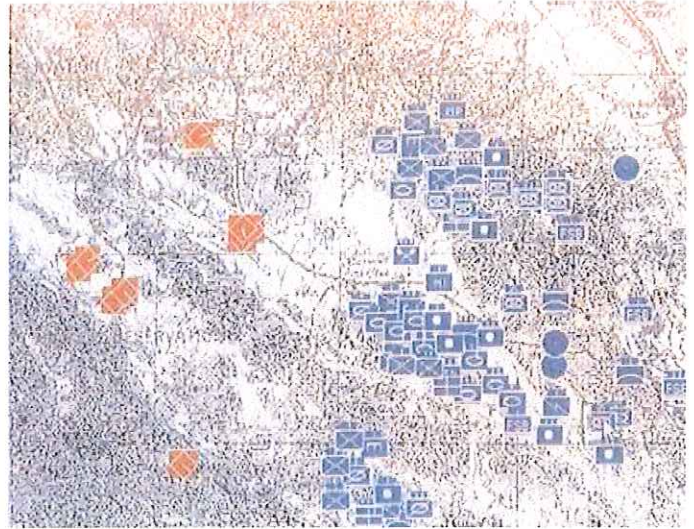
### SADL

The Situation Awareness Data Link (SADL) integrates U.S. Air Force close air support aircraft with the digitized battlefield and with the Link 16 Command and Control Net via the U.S. Army's EPLRS. More than just a radio or a data modem, SADL provides fighter-to-fighter, air-to-ground, and ground-to-air data communications that are robust, secure, jam-resistant, and contention-free.

With its inherent position and status reporting for situation awareness, SADL provides an effective solution to the long-standing air-to-ground combat identification problem.

### The Power of Timely Information

Timely information is a force multiplier. EPLRS delivers critical information to the right place at the right time, enabling commanders at all levels to make the right decision.



EPLRS supports Command & Control and Situational Awareness host applications.

### System Features

- Robust, self-healing network architecture
- Externally programmable firmware and software
- Contention-free access and guaranteed speed of service
- Automatic mesh networking
- Jam-resistant, LPI/LPD, spread spectrum, frequency-hopping waveform
- Re-keys radios over the air
- Provides 8m (CEP) position accuracy with GPS
- Laptop based network monitoring and management

### Key Specifications

- Frequency: UHF 420-450 MHz  
UHF Wideband 225-450 MHz
- Dimensions: 10.5 in x 11 in x 5.1 in (max)
- Weight: Approx. 18 lbs
- Output Power: .4, 3, 20, or 100 W selectable
- Security: Type 1 Crypto
- Radio Links: Up to 30 simultaneous independent data paths per radio. Automatic route establishment, maintenance and reconfiguration
- Data Rates: Variable data rates – up to 1 Mbps
- Configuration: Manpack, vehicular and airborne
- Interfaces: ADDSI (X25), ethernet, PPP



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**Raytheon**

Customer Success Is Our Mission



## AN/PRC-150(C) MANPACK



### AN/PRC-150(C)

The AN/PRC-150(C) is an advanced, nomenclatured HF/VHF manpack radio that provides reliable tactical communications through U.S. government Type-1 encryption for enhanced secure voice and data performance, reduced size/weight, and extended battery life. The removable Keypad Display Unit enables operation on the move with the transceiver stowed in the user's backpack. The AN/PRC-150(C) HF-SSB/VHF-FM transceiver covers 1.6 to 60 MHz at 20 watts PEP/Average for HF and 10 watts for VHF. Modes include USB, LSB, CW, AME, and FM. Two types of encryption are included in this radio, U.S. government Type-1 and coalition encryption.

A simple, menu-driven, man-machine interface makes operation easy. Seventy-five user-defined net presets provide complete radio configuration, including radio operating mode, modem settings, COMSEC and TRANSEC keys. This unit is interoperable with non-Type-1 radios in secure mode with radios that include standard Citadel encryption in both the HF and VHF bands. The unit is also interoperable in non-secure mode in fixed frequency and ALE with other HF and VHF radio systems. Additional standard features include a removable Keypad Display Unit, 24 VDC or self-contained battery operation, and RS-232 ASCII remote control. Finish/Color: CARC Green 383

## Features

### ENCRYPTION

Two types of embedded encryption are included in this radio: U.S. government Type-1 and Coalition. The Type-1 encryption is interoperable with KY-99, KY-100, and KG-84 cryptos for HF systems and KY-57 crypto for VHF systems. Coalition encryption is based on the Harris Citadel encryption and can be used to interoperate with RF-5800H radio systems in secure mode.

### ENHANCED FREQUENCY HOPPING (ECCM)

A proprietary serial tone, ECCM provides digital voice and data performance comparable to single-channel serial tone modem.

### HIGH-SPEED MODEM WAVEFORMS

The embedded modem waveform suite offers the most advanced HF data capability available in the tactical radio marketplace. The supported MIL-STD-188-110B waveforms include the serial tone (2400 bps) modem, high data rate (9600 bps) modem, parallel tone (2400 bps) modem, as well as a set of narrowband FSK waveforms.

Also included are the STANAG 4285 and STANAG 4415 serial tone waveforms. Adaptive excision filtering and equalization improve the data modem performance in fading and noisy channels, and counteract jamming.

### MELP AND LPC-10, 600/2400 BPS DIGITAL VOICE

The digital voice mode utilizes the latest military MELP and LPC-10 algorithms for high-quality secure narrowband voice at 2400 bps. The Harris 600 bps vocoders extend the communication range beyond conventional 2400 bps systems.

### MIL-STD-188-141B, APPENDIX A AUTOMATIC LINK ESTABLISHMENT (ALE)

ALE allows the transceiver to automatically locate the best available channel and link with a desired station or net. The radio also provides AL-1 Linking Protection.

### STANAG 4538 THIRD GENERATION HF LINK AUTOMATION

The latest integrated high-performance Automated Link Establishment (ALE) and data link protocols provide superior linking and error-free data performance. Fast link setup (FLSU) protocol suite is supported.

### TACTICAL INTERNET

Tactical Internet is an embedded wireless networking capability that provides the ability to connect outside IPV4 devices and applications over HF circuits. It utilizes third generation HF Link Automation to efficiently route secure IP-based traffic.

### SOFTWARE OPTIONS

Product Number	Product Name	Qty
10535-8010-0002	LPI/LPD Option	1

### ANCILLARY ITEMS

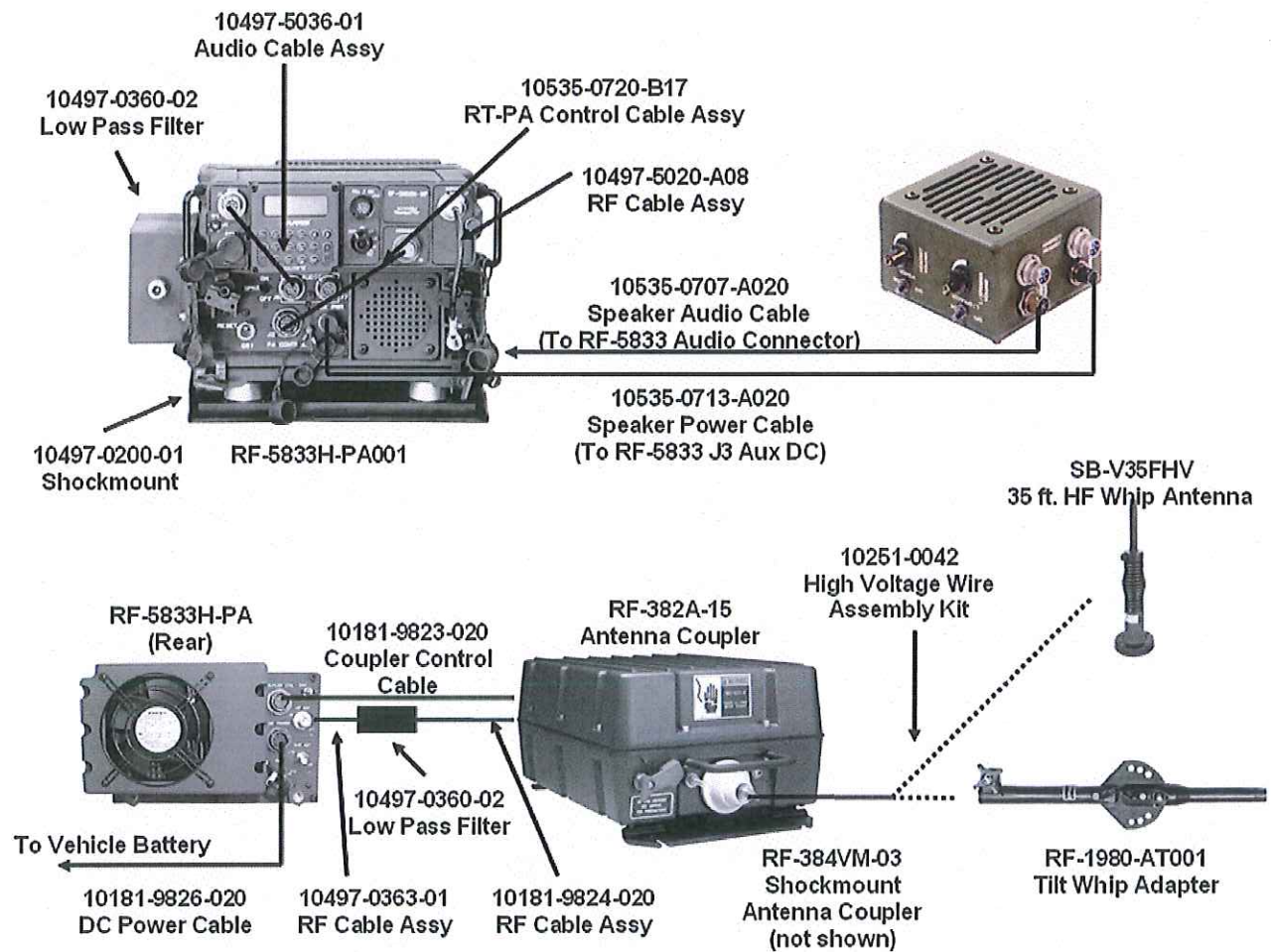
Product Number	Product Name	Qty
10515-0117-4200	Operator Manual	1
10515-0103-4100	Operator Card	1
10372-0240-02	OE-505 Manpack Antenna Kit	1
10372-1260-01	Antenna Assembly Adapter	1
10075-1399	H-250/U Lightweight Handset (Modified)	1
10513-4800-02	Battery Box	1
10511-0704-012	KDU Cable	1
10303-1008-01	Ground Stake Kit	1
RF-6550H	Radio Programming Application	1
10535-0775-A006	Simultaneous Control & Data Cable Assembly	1
RF-6551H	Tactical Chat Comms Software	1
RF-5930-CA002	Falcon II Ranger Bag	1

## R/T SPECIFICATIONS

Function	Specification
<b>GENERAL</b>	
Frequency Range	Single Sideband (SSB): Upper Sideband (USB) and Lower Sideband (LSB), and Amplitude Modulation Equivalent (AME) Modes: 1.6 MHz to 29.99999 megahertz, (MHz) in 100 Hz steps from the front panel and in 10 Hz steps from the REMOTE port. Frequency Modulation (FM) Modes: 20 MHz to 59.99999 MHz in 100 Hz steps from the front panel and in 10 Hz steps from the REMOTE port.
Frequency Stability	1.0 x 10 <sup>-6</sup> for not less than 30 days
Radio Frequency (RF) Input/ Output (I/O) Impedance	50 ohms
Power Input	+26 VDC nominal; normal operations from +23 to +32 VDC, +34.5 VDC LI-ION; when battery voltage reaches 21 VDC, the radio shuts down. Reduced power output by -6 dB of full power 21 VDC to 23 VDC (If power output is set -6 dB of full power.
Receiver Sensitivity	-113 dBm for 10 dB Signal + Noise + Distortion/Noise + Distortion (SINAD) ([SSB], 2.7 kHz IF Bandwidth [BW] -98 dBm for 10 dB SINAD AME, 6.0 kHz BW, 30% modulation -117 dBm for 10 dB SINAD (Continuous Wave [CW], 0.25 kHz BW -107 dBm for 10 dB SINAD (FM, 22 kHz, 8 kHz deviation)
Audio Output	≥15 mW into a 1000-ohm load
Image Rejection	First Intermediate Frequency (IF): >80 dB Second IF Image: >60 dB
Intermediate Frequency (IF) Rejection	First IF: >80 dB Second IF: >70 dB 1.6 to 2.4 MHz, 80 dB 2.4 to 60 MHz
Internally Generated Spurious Signals	Below -112 dBm on 99% of 3 kHz USB/LSB channels over 1.6 to 60 MHz
Transmitter Power Output	High: 20 W Peak Envelope Power (PEP)/Average SSB; 10 W Average FM Medium: 5 W PEP/Average SSB or FM Low: 1 W PEP/Average SSB or FM
Carrier Suppression	>60 dB below PEP
Undesired Sideband Rejection	>60 dB below PEP
Transmit Intermodulation Distortion	1.6 to 29.99999 MHz: -24 dB (3rd order or higher) 30 MHz to 59.99999 MHz: -18 dB (3rd order or higher)
Receiver Spurious Responses	Down at least 55 dB when 2.5% to 30% from center frequency
Audio Input	1.5 mV rms with 150-ohm source impedance
Dimensions (with battery box)	10.43 W x 13.31 D x 3.2 H in (26.5 W x 33.8 D x 8.1 H cm)
Weight (with battery box and two BB-590/U batteries)	17.2 lbs (7.8 kg)

Note: BA-5390/U and BA-5590/U batteries are primary cells.

**AN/VRC-104(V)3  
150W  
Vehicular HF System  
(10540-0720-01)**





## AN/VRC-104(V)3 Parts List:

- **Speaker**  
10181-5180-01
- **Speaker Audio Cable**  
10535-0707-A020
- **Speaker Power Cable**  
10535-0713-A020
- **200W, 25 MHz Low Pass Filter**  
10497-0360-02
- **Shockmount, Antenna Coupler**  
RF-384VM-03
- **Security Locking Kit**  
10497-0870-01
- **20 ft. KDU Extension Cable**  
10511-0704-040
- **Coupler Control Cable**  
10181-9823-020
- **Coupler Coax Cable**  
10181-9824-020
- **HF Whip Antenna, 35 Foot**  
SB-V35FHV
- **Antenna Coupler**  
RF-382A-15
- **Pre/Post Selector, internal to PA**  
RF-5245
- **Tilt Whip Adapter**  
RF-1980-AT001
- **Antenna Mount**  
10181-5178-06
- **150W HF/VHF Vehicular System consisting of:**
  - **PA vehicular shock mount**  
10497-0200-01
  - **150W Power Amplifier**  
RF-5833H-PA001
  - **Coax Cable, RF Input**  
10497-5020-A08
  - **Coax Cable Assembly**  
10497-5015-01
  - **Audio Cable Assembly**  
10497-5036-01
  - **Coax Cable Assembly, Low Pass Filter**  
10497-0363-01
  - **Power Cable Assembly**  
10181-9826-020
  - **150W Installation Manual**  
10515-0122-4200
  - **Control Cable Assembly**  
10535-0720-B17
  - **Ground Strap**  
7147-1167-3
  - **High Voltage Wire Assembly Kit**  
10251-0042
- **Installation Kit, consisting of one of:**
  - **Wheeled Installation Kit**  
11080-4100-03
  - **Tracked Installation Kit**  
11080-4700-01
  - **M1097/M1113 Installation Kit**  
11080-5000-01

EXELIS

# SINGGARS RT-1523 VHF Radio

Battle-proven reliability supporting the digitization of the battlefield.



VRC92 Modulation FM, FSK Digital/Analog

# SINCGARS RT-1523 VHF Radio

The Exelis Single Channel Ground and Airborne Radio System (SINCGARS) RT-1523 provides the U.S. Armed Forces with the quality, durability and reliability of the most widely fielded Combat Net Radio in the world.

At the core of the SINCGARS tactical communications system, RT-1523 provides a robust communications solutions. With flexible frequency selection and security options available from the front panel, it allows the local unit to effectively manage multiple radio net operations.

The RT-1523 is designed to provide network data services in both mounted and dismounted configurations. In the mounted role the radio works with the Exelis internet controller to provide robust mobile ad hoc network data services. As a manpack the radio provides a standard PPP interface allowing a C2 Application to access the Tactical Internet.

The RT-1523 incorporates an NSA approved Secure Software Programmability feature which enables Exelis to

enhance features and functions in response to the needs of our military forces.

When combined with the available embedded SAASM GPS Receiver option the RT-1523 offers the Warfighter secure voice, IP data and GPS position reporting in a single system. External GPS interfaces are also provided to allow effective sharing of GPS data with other tactical systems.

Radio Based Combat Identification (RBCI) capability is also supported by the RT-1523. RBCI is key in preventing fratricide on the battlefield. Software within the radio allows it to perform the RBCI interrogator or responder role on the ground or in the air.

## SPECIFICATIONS

### System Specifications

Frequency Range	30-88 MHz
Channels	2320
Presets	Eight single channel Six Frequency Hopping (FH) presets
Transmit Power	1 mW, 100 mW, 5 W dismounted, 50 W mounted RFPA options
Operating Modes	Single Channel - Clear or Secure (STANAG 4204 compliant) FH - clear or secure (any combination of 2320 available channels) Over-the-Air Remote Fill Retransmit operation (automatically switches between voice and data)
Data	MIL-STD-188-220C operations with Tactical Internet X.21 packet data interface RS-232 Data at 1200, 2400, 4800 and 9600 bps Synchronous Data at 1200, 2400, 4800 and 16000 bps

### Integrated GPS Option

Over the Air	Position Reporting and Reception
C2 applications	Local and receiver positions provided
Optional Control Display Unit (CDU)	Radio Remote Control Display of local position, net member positions Waypoint entry and management

### Environmental

Operating Temperature	-58°F to +160°F (-50°C to +71°C)
Testing	MIL-STD-810 Tracked and wheeled vibration, ballistic and drop shock, humidity, rain, dust, drop, loose cargo, salt fog, immersion to 3' (1m), altitude MIL-STD-461 EMI

## SPECIFICATIONS

### Physical Characteristics

Size 3.4 in high x 5.3 in wide x 10.15 in deep  
(8.7 cm high x 13.4 cm wide x 25.8 cm deep)

Weight 7.8 lbs (3.5 kg) with embedded battery

### Battery Operations

Battery Options BA-5590, BB-2590, and BB-590

Internal holding battery insert for mounted operations using standard alkaline cells

### Features

Fill Single point fill capability

GPS FanOut Provides six GPS formats from a single source

Remote Control Secure remote control capability for up to four km distance

Vehicular Remote Control Unit (VRCU) Allows remote operation of up to two mounted SINCGARS radios

CDU Provides dismounted over the shoulder control of radio

Support Comprehensive Built-in-Test capability  
Complete operator and maintainer training and technical documentation available  
Automated Field Test Set available for standardized Intermediate test functions  
Field service representatives are available to support system integration and installation at user facilities

Mean Time Between Failures Production reliability demonstrated at over 5,000 hours



RT-1523 in a VAA mount



Control Display Unit (CDU)



VRCU



GPS FanOut with RT-1523

Exelis Inc.  
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Fort Wayne, IN 46818-1370  
USA  
Ph #: 260 451 4600  
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## DUAL 50 WATT SINCGARS COMPATIBLE MULTIBAND VEHICULAR SYSTEM

### AN/VRC-110

#### FEATURES

- > Versatile multimission vehicular system for long-range communications reliability and quick-dismount applications
- > SCA v2.2 Compliant (no waivers)
- > Sierra™ II programmable Type-1 crypto
- > Built-in speaker/microphone
- > Full numeric display
- > NVG compatible display
- > MELP
- > Wireless cloning

The AN/VRC-110 is a fully integrated, high-performance multiband vehicular radio system with an advanced architecture that ensures performance comparable to existing SINCGARS systems. With 50 watts output power in the key 30 to 90 MHz band, the radio system also includes multiple power output options for the 90 to 512 MHz band.

Separate VHF and UHF antenna ports and automatic port switching on each amplifier provide the AN/VRC-110 with true multimission capability. The user can switch between ground, ground-to-air, or SATCOM communications by simply selecting the required net on the radio. The VHF antenna port provides a 50 watt output from 30 to 90 MHz, and the UHF antenna port provides up to 20 watts UHF (90-512 MHz) and up to 50 watts SATCOM output.

The system includes the AN/PRC-152(C) Software Communications Architecture-based handheld radio, providing SINCGARS, Havequick II, VHF/UHF AM and FM, DAMA, and MIL-STD-188-181B with Advanced Narrowband Digital Voice Terminal (ANDVT) and up to 56 kbps data. The AN/PRC-152(C) uses the Harris Sierra™ II software programmable encryption module, ensuring support of future waveforms and encryption modes.

To maintain communications in dismount operations, the system's "jerk-and-run" capability allows the AN/PRC-152(C) handheld radio to be quickly removed while remaining powered on. An integrated handheld battery charger provides simultaneous operation and charging of the handheld radio battery.

The AN/VRC-110 also provides VIC-1/3 interface and heat-sinking for an extended-use duty cycle. For vehicular applications, a standard MT-6352 SINCGARS install kit may be used. The multimode, multimission capabilities of the AN/VRC-110 maintain interoperability with legacy radio-equipped forces through the transition to JTRS. The AN/VRC-110 is compatible with the RF-310M-HH Suite B Handheld radio.

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# SPECIFICATIONS FOR: AN/VRC-110

## GENERAL

Frequency Range	30-512 MHz
Transmission Modes	FM, AM (90-512 MHz), PSK, CPM, FSK, ASK
Presets	99 (standard); unlimited using multiple mission plan files
Power Input	20-32 VDC MIL-STD-1275B Protection
Power Consumption	25 Amps single, 50 Amps Dual at 20 VDS
Tuning Resolution	10 Hz

## SPECIFICATIONS

Dimensions	7.5 W x 10.2 H x 13.4 D in. (single channel) 15.2 W x 10.2 H x 13.4 D in. (dual channel)
Weight	23 lbs. (single channel)

## INTERFACES

Data	RS-232
Remote Control	RS-232
VHF Antenna Port	50 Ohm BNC
UHF Antenna Port	50 Ohm BNC
Audio	VIC-1, VIC-3, LS-671 compatible
Battery Charger	Six-hour charge time

## TRANSMITTER

Power Output	30-90 MHz: 5, 20 or 50 watts PEP 90-512 MHz: 20 watts PEP with 50 watts PEP in SATCOM bands
Harmonic Suppression	Greater than 60 dBc (50 watts) Greater than 56 dBc (20 watts) Greater than 50 dBc (5 watts)
Spurious Suppression	VHF: Greater than 80 dBc typical UHF: Greater than 60 dBc (50 watts) Greater than 56 dBc (20 watts) Greater than 50 dBc (5 watts)

## RADIO INTEROPERABILITY

Crypto Fill Devices	AN/CYZ-10 DTD (supports DS-101, DS-102 and MODE 2/3), KYX-15, KYK-13, DTD-2000
Crypto Modes	KY-57, ANDVT/KYV-5, KG-84C, AES, FED-STD-1023, Fascinator
Radios	AN/PRC-117G, AN/PRC-117F, AN/PRC-113, AN/PRC-119A/B, AN/PRC-148, AN/PRC-77, PSC-5, AN/PRC-139, XTS-5000, ARC-210, ARC-164, ARC-231, RF-310M-HH
GPS	PLGR, DAGR

## RECEIVER

Sensitivity	-113 dBm @ 12 dB SINAD (FM)
Image Rejection	Greater than 80 dB
IF Rejection	Greater than 80 dB

## ENVIRONMENTAL

Shock/Vibration	MIL-STD-810F
Sand/Dust	MIL-STD-810F
Temperature	-30°C to +60°C

## KEY RADIO WAVEFORMS

SINCGARS
VHF/UHF AM/FM
HAVEQUICK III
MIL-STD-188-181B
DAMA (option)
HPW (option)
APCO P25 (option)
HPW-IP (option)



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## 50W MULTIBAND VEHICULAR AMPLIFIER ADAPTER (VAA) INCLUDING AN/PRC-117G(V)1(C)

### RF-300M-V150

#### FEATURES

- > A low-profile, high-efficiency VAA for the Falcon III® Manpack AN/PRC-117G(V)1(C) Type-1 multimission radio

The Falcon III® RF-300M-V150 is a 50 watt vehicular amplifier adapter (VAA) that includes the Falcon III AN /PRC-117G(V)1(C) manpack radio. Designed for long-range applications and increased communications reliability, the RF-300M-V150 provides 50 watts from 30 to 450 MHz and 20 watts from 450 MHz to 2 GHz, supporting both narrowband and wideband waveforms up to 5 MHz bandwidth. The single-unit VAA is extremely low-profile and can be deployed in multiple configurations, including as a single unit, alongside a single channel AN/VRC-110, or in a dual-unit configuration mounted in the Universal SINCARS Interface Module (USIM).

The VAA features separate VHF, UHF, SATCOM, and wideband antenna ports with automatic port switching, providing the radio system with true multimission capability. Operators can quickly access SATCOM, wideband networking, ground-to-ground, or ground-to-air nets with a simple preset change.

Other features provided by the RF-300M-V150 include: VHF (30 to 90 MHz) and UHF (200 to 400 MHz) collocation filters, internal LNA, VIC-1 and VIC-3 interface, wideband PA control interface, and external power output to power accessories such as a loudspeaker or battery charger. The VAA provides a mechanism to lock the manpack radio for physical security.



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# SPECIFICATIONS FOR: RF-300M-V150



RF-300M-V150



RF-300M-V250



RF-300M-V255



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## GENERAL

Frequency Range	30 MHz - 2 GHz
Output Power	VHF Low (30-90 MHz): 50 watts PEP VHF High/UHF (90-450 MHz): 50 watts PEP UHF (450-512 MHz): Greater than 20 watts PEP Wideband (225-450 MHz): 50 watts PEP and Average Wideband (450 MHz-2 GHz): 20 watts PEP
Power Input	18-34 VDC
Channel Bandwidth	5 kHz to 5 MHz

## SPECIFICATIONS (including shock tray)

Dimensions	14.5 W x 9.25 H x 10.5 D in. (37.0 W x 23.5 H x 27.0 D cm)
Weight	37 lbs (16.8 kg) (with radio)
Color	Carc Green 383

## ENVIRONMENTAL

Shock/Vibe	MIL-STD-810F, ground mobile
Sand/Dust	MIL-STD-810F
Immersion	1 meter
Temperature	-40° to +70°C
Altitude	Operational to 15,000 ft.

## INTERFACES

Data Ethernet	RS-232, EIA-422, PPP
Remote Control	USB, Ethernet, RS-232
Audio	VIC-1, VIC-3, LS-671 compatible
Accessory Power	28 VDC @ 0.2A, 5.6W
Antenna Ports	VHF Low: 50 Ohm BNC VHF High/UHF: 50 Ohm BNC UHF SATCOM: 50 Ohm BNC Wideband: 50 Ohm N-Type

## ACCESSORIES

RF-3183-AT013	30-512 MHz Vehicular Antenna
RF-3184-AT320	225-450 MHz Vehicular Antenna (Wideband)
RF-3071-AT230	GPS Antenna, L1 and L2 bands
12006-9001-01	SATCOM Antenna
RF-292-01	Antenna Mount

## MODEL NUMBER SYSTEM CONFIG MOUNTING SYSTEM

MODEL NUMBER	SYSTEM CONFIG	MOUNTING SYSTEM
RF-300M-V150	Single VAA system including one AN/PRC-117G(V)1(C)	Vehicular Interface Mount (VIM)
RF-300M-V250	Dual VAA system including two AN/PRC-117G(V)1(C)	Universal SINGARS Interface Module (USIM) and MT-6352 shock mount
RF-300M-V255	Dual VAA system including one AN/PRC-117G(V)1(C) and one AN/PRC-152	Universal SINGARS Interface Module (USIM) and MT-6352 shock mount

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