

NEXT-GENERATION TDL TERMINAL SUPPORT EQUIPMENT

SUPPORTED PLATFORMS

L3Harris' Next-Generation Tactical Data Link (NGTDL) terminals were developed to specifically meet the needs of users who have Size, Weight, Power and Cost (SWaP-C) constrained requirements. Part of L3Harris' Non-Developmental Item (NDI) portfolio, the NGTDL terminals leverage Link 16 for the U.S. and international defense markets and are continually updated to support customers' evolving mission needs. With NGTDL terminals, SWaP-C constrained platforms that have traditionally lacked access to the Link 16 network can now be active participants and exchange near real-time situational awareness data and secure voice with other Link 16 enabled air, land and sea platforms.

With L3Harris' NDI offering, NGTDL terminals deliver capabilities faster and at lower total lifecycle costs to U.S. and foreign governments, yet are still fully interoperable with traditional Link 16 terminals, including the MIDS-LVT (Multifunctional Information Distribution System-Low Volume Terminal) and MIDS JTRS (Multifunctional Information Distribution System Joint Tactical Radio System).

The Small Tactical Terminal (STT) KOR-24A, is a two-channel radio designed to meet the needs of users who have SWaP-C constraints but need the information available on Link 16 networks and tactical VHF/UHF. Tactical warfighters and SWaP-C constrained platforms, including ground vehicles, helicopters, UAVs, small boats and light ISR aircraft can now have simultaneous access to Link 16 and either wideband UHF or legacy VHF/UHF. This terminal is packaged in an affordable, industry-standard compact form factor and is ruggedized to meet demanding environmental requirements.

The Battlefield Awareness and Targeting System-Dismounted (BATS-D) AN/PRC-161 radio fuses air and ground situational awareness in the palm of your hand. This ruggedized, handheld radio delivers real-time Link 16 communications to dismounted warfighters at the tactical edge. The radio can be used vest-worn, handheld or mounted, and is ideal for bringing full Link 16 network access to ground forces including Joint Terminal Attack Controllers (JTACs), Forward Air Controllers (FACs), and Tactical Air Control Party (TACP) specialists.

STT RUGGEDIZED MOBILE SYSTEM

The L3Harris Small Tactical Terminal (STT) Ruggedized Mobile System is a small, 4U transportable case unit offering a convenient way to operate your Link 16 system. Outfitted with all of the equipment you need for dual-channel operation, this mobile system can be used in any number of venues including operational, training, demonstrations and testing.



SPECIFICATIONS

PERFORMANCE

- > Input Power: 120 VAC 60 Hz, 20 amp (IEC C20) 230/240 VAC 50 Hz, 10 amp (IEC C14)
- > Dimensions: 11.1 x 22.5 x 34.5 in.
- > Weight (Approximate): 130 lb

STANDARD CABLES

- > W1, W2 and W3 Voice/Data/Control
- > W4 and W10 Crypto/Voice
- > W5 DC Power Cable
- > W6 and W7 UHF/VHF
- > W8 and W9 Link 16 RF Cables

STANDARD ACCESSORIES

- > Input Power Cables 120 VAC NEMA 5-20P to IEC C19
- > 230/240 VAC AS/NZ4417 to IEC C13
- > 230/240 VAC CEE 7/7 EURO SCHUKO to IEC C13 (please specify if other international cables are required)
- > BNC to BNC 1PPS Jumper Cable
- > H-250 Handset
- > 2x KDU
- > 4x Ethernet Cables
- > 4x 50W RF Attenuators
- > 2x DB15 to DB15 Cables
- > USB-A to USB-B Cable
- > User Guide

STT not included

MULTI-PLATFORM INTEGRATED CONTROLLER (MIC)

The L3Harris Multi-Platform Integrated Controller (MIC) provides you with all of the control and monitoring functions for the STT terminal. The easy-to-operate web interface allows for more extensive options, including remote operation of the terminal over an IP network.

STT Channel 1

- > Channel Power (On/Off)
- > LT TI (Link 16)
- > IFF Emergency (Link 16)
- > STT-V and Channel Fail Monitoring
- > Channel Crypto Zeroize

STT Channel 2

- > Channel Power (On/Off)
- > Channel Fail Monitoring
- > Channel Crypto Zeroize

The MIC is intended to operate with the integrated AC ruggedized power supply, but also has the flexibility to work with a 9 to 36 VDC source.

The controller includes a standard crypto fill connector interface on the front panel, allowing you to seamlessly connect to the STT.

The L3Harris Multi-Platform Audio Component (MAC) is also available for voice and speaker interface.

FEATURES

- > Designed for TEMPEST Red/Black Separation
- > Standard RJ45 Host Interface Connection
- > Standard Crypto Fill Connector Interface

SPECIFICATIONS

- > Dimensions (W x H x D): 8.5 x 1.72 x 11 in. (½ width of 1U-high 19 in. rack)
- > Power: 9 to 36 VDC (115 to 240 VAC adapter included)
- > Weight (Approximate): 5 lb

PRODUCT DESCRIPTIONS

- > STT Channel 1 Multi-Platform Integrated Controller
- > STT Channel 2 Multi-Platform Integrated Controller
- > STT Channel 1 and 2



Multi-Platform Integrated Controller (MIC)

MULTI-PLATFORM AUDIO COMPONENT (MAC)

The L3Harris Multi-Platform Audio Component (MAC) is a rugged interface unit that provides independent or simultaneous dual-channel Link 16 voice (receive and transmit). It features a custom built 30 W quad-speaker system that has been specifically tuned to enhance audio quality.

The internal adjustable amplifiers can be configured through a web interface to operate any MIDS platform and is compatible with most headsets and handsets.

For the voice interface, the H-250 handset is recommended, which comes standard with the MAC system.

The MAC is intended to operate with the integrated AC ruggedized power supply, but also has the flexibility to work with a 9 to 36 VDC source.

The device offers a Push-to-Talk (PTT) deactivate function that mutes the speakers when the handset.

All web interface functionality for the MAC requires L3Harris' Multi-Platform Integrated Controller (MIC), which is sold separately.

The MAC can either be used as a standalone unit or with L3Harris' MIDS-LVT and MIDS JTRS terminals (multiple configurations available).

SPECIFICATIONS

- > Dimensions (W x H x D): 8.5 x 1.72 x 11 in. (½ width of 1U-high 19 in. rack)
- > Power: 9 to 36 VDC (115 to 240 VAC adapter included)
- > Weight (Approximate): 5 lbs

FEATURES

- > 30 W Speaker System
- > Remote Monitoring and Control (MIC Required)
- > 9 to 36 VDC Input

ACCESSORIES AND INTERFACE CABLES

- > MIC/MAC Interface Cable
- > H-250 Handset
- > Rugged AC Power Supply (AC to 12 VDC)

PRODUCT DESCRIPTIONS

- > Multi-Platform Audio Component (MAC)
- > MAC Standalone for MIDS-LVT(2)/(11) with Cable
- > MAC Standalone for MIDS-LVT(1)/JTRS

Note: STT must be used with MIC



Multi-Platform Integrated Controller (MIC)

STT CONTROL AND INTERFACE UNIT (CIU)

The L3Harris STT Control and Interface Unit (CIU) is a rack-mountable enclosure providing all power, cooling, cabling and control functions needed to operate the STT in a lab environment. Setup is simple, insert the STT directly into the integrated fan tray and lock it in place, connect the CIU cables to the STT, then turn the master power on/off switch on and you're ready to begin operations.



Front Panel



Rear Panel

SPECIFICATIONS

Dimensions:	10.5 x 19 x 17 in. (H x W x D) (size excludes connectors and fasteners)
Weight (Approximate):	18 lb
Electrical Input Power:	100 to 264 VAC, 47 to 63 Hz, 315 W (max)

Front Panel Controls and Interfaces

A L3Harris KDU mounts on the front panel of the CIU. Separate power-on indicators are provided for Channel 1 (UHF/VHF or Link 16) and Channel 2 (UHF/VHF). Link 16 communications health is identified by a dedicated indicator. Front panel connectors and switches include:

- > Ethernet Host (RJ45)
- > Zeroize
- > USB (B)
- > LTTI
- > DTE Waveform (DB 25)
- > IFF Emergency
- > Red Console (DB 9)

Rear Panel Connections

The rear panel provides an EMI-filtered AC Power Input for the embedded 28 V power supplies, an input connector for the 1 pulse per second external time reference, and a 28 VDC auxiliary input for external power. Available maintenance ports and BNC connectors for the Link 16 differential discretes:

- > Message Transmit (output pulse)
- > Pulse Transmit (output pulse)
- > Receiver Suppression (input pulse)
- > IPF Monitor Suppression (input pulse)
- > Transmit Suppression (input pulse)

PRODUCT DESCRIPTION

STT Control and Interface Unit

STT not included

STT CONTROL PLUG, J1/J2/J3

Do you need to control a terminal in the field without a lot of bulky equipment? The L3Harris ruggedized STT Control Plug Set contains 3 control plugs to interface with the STT J1/J2/J3 connectors. The J1 and J2 control plugs allow host interface via Ethernet, Serial or USB using standard RJ-45 and USB Mini-B cables/connectors. The J3 control plug allows Channel 1 and Channel 2 On/Off and LTTI.



STT Control Plug Case

PRODUCT DESCRIPTION

- > Control Plug (Contains 3 Plug Set)



STT Control Plugs

STT CABLES AND ACCESSORIES (Available Separately)



STT Link 16 RF Cable Set



STT Audio/Fill Cable Set



STT Fan Tray Assembly



STT FSE Operations and Test Kit

PRODUCT DESCRIPTIONS

Cables

- > STT Link 16 RF Cable Set 1 meter cables for antenna A and antenna B terminating in SMA(m) connector, suitable for interfacing to other connectors
- > STT Fan Tray Power Cable (6 foot with banana plugs)
- > STT Audio/Fill Cable, W4
- > STT Audio/Fill Cable, W10
- > STT +28 VDC Prime Power Cable Kits
- > STT FSE Operations and Test Kit Cables and signal breakout boxes packaged in a single, portable case
- > STT Mating Connector Kit Set of Mating Connectors for the STT: J1, J2, J3, J4, J5, J6, J7, J10

Other Accessories

- > STT Fan Tray (power cable can be ordered separately as complimentary item)
- > STT Fan Tray Filter
- > STT Fan Tray Power Cable
- > Falcon III Keypad Display Unit (KDU) for controlling the STT UHF/VHF Channels
- > GPS with Network Time Server that provides 1 PPS signal suitable for use as ETR to STT Terminals. GPS Antenna and 100 ft cable included.
- > STT Power Conditioning Unit (PCU)
- > STT Battery
- > STT Bracket, Filter Assembly
- > Terminator, Coaxial N(M), 50W, DC-8.5GHZ, 50-Ohm Transport Cases
- > STT
- > STT with Fan Tray Assembly
- > STT Transit Case
- > STT Transit Case with Fan Tray Assembly

RF NETWORKS

The RF Network Unit permits multiple RF devices to be hubbed together in a network. It is intended for lab usage and operates over a frequency range of 0 to 2 GHz. There are 6 Type N female RF low level (1 W) connectors on the chassis and a variable step attenuator that ranges between 0 and 110 dB in 1 dB steps.

The RF Network has an approximate 14 dB insertion loss between ports, and is perfect for bench-top or field use. Included with the unit are four 50-Ohm terminations for use on unused RF ports. The RF Network is available in a 19-inch rackmount model and a portable model measuring just 7 x 7 x 2 in.; small enough to fit in a field service kit.



Rackmountable Model

SPECIFICATIONS

Rackmountable Model

- > Dimensions: 9 x 3.5 x 8 in.
- > Weight (Approximate): 5.5 lb

Portable Model

- > Dimensions: 7 x 2 x 7 in.
- > Weight (Approximate): 3.5 lb

PRODUCT DESCRIPTIONS

- > Rack-Mountable Model
- > Portable Model



Portable Model

RF ANTENNA CABLES

PRODUCT DESCRIPTIONS

- > RF Antenna Cable, 50 ft RG-214 double-shielded

PORTABLE ANTENNAS

Armed with the 5 lb L3Harris Portable Antenna, a field service engineer, training instructor or test engineer can conduct limited ground-to-air tests in the field. This L-Band blade antenna is delivered with a 52 in. tripod and features a quick-connect mounting shoe that holds the antenna plate. It can be used in testing related to all L-Band applications and is packaged in an expandable, zippered nylon bag.



SPECIFICATIONS

Portable Antenna

- > Dimensions: 11 x 1.3 in.
- > Weight: 2 lb

Portable Antenna (Tripod-Mounted)

- > Dimensions: 24 x 8 in. (in bag)
- > Weight: 5 lb

HIGHLIGHTS

Portable Antenna

- > L-Band: 960 to 1215 MHz
- > 200 W
- > +2dBi nom
- > Type N Female RF Connector

Portable Antenna (Tripod-Mounted)

- > L-Band: 960 to 1200 MHz
- > 250 W at 50,000 ft
- > Lightweight metal tripod

PRODUCT DESCRIPTIONS

- > Portable Antenna
- > Portable Antenna (Tripod-Mounted)

L-BAND GROUND ANTENNA

An L-Band antenna is required to transmit Link 16 over the air. L3Harris recommends the high gain XVO 7-960-1215/1120 omni antenna made by European Antennas. This antenna covers the Link 16 band, 960 to 1215 MHz, and has a 7 dBi gain, nearly doubling the range of a system. Receive sensitivity, usually the limiting factor for communications with distant airborne platforms, is increased significantly. The antenna is lightweight (1.7 kg) and has an alloy base plate with 4 stainless steel bolts, a 1 in. offset spigot, and M16 Stainless Steel bolt and washers. Mounting pole and guy wires are not included.



SPECIFICATIONS

- > Dimensions: 40 x 3 in.; 1029 x 76.2 mm
- > Weight : 3.75 lb

HIGHLIGHTS

- > L-Band: 960 to 1215 MHz
- > Gain: 7 dBi
- > Operating Temperature: -40° to +50°C

PRODUCT DESCRIPTION

- > L-Band Ground Antenna

LINK 16 ENVIRONMENT GATEWAY SIMULATOR (LEGS)

Link 16 Environment Gateway Simulator (LEGS) is an essential terminal support tool. Prime developers use this software in the integration of MIDS terminals, and ground facilities and field service engineers rely on the LEGS application for terminal troubleshooting and maintenance. The tool is also used by test facilities for Link 16 system performance measurement and evaluation, and by instructors for MIDS training.

A low-cost version (LEGS-Lite) that does not include the scenario generation or situation display capabilities is also available. The J LEGS version of the application implements the JTRS Platform A interface and is available to U.S. customers.

L3Harris can tailor LEGS Remote Interface Modules (RIMs) to support your special requirements. We have developed RIMs for GPS testing, ETR testing, OTAR testing, voice testing and navigation testing. And, we have an API to support automated testing using products such as LabView and VEF-Pro. An ICD is available by special request. If you have special needs, let us know.



HIGHLIGHTS

- > Terminal initialization control
- > Terminal status monitoring
- > Detailed recording
- > MIDS re-programmer
- > Scenario generation
- > Situation awareness
- > Gateway to up to 8 client applications
- > Multi-terminal control

SUPPORTED TERMINAL TYPES

- > MIDS-LVT(1) Platform A, B, D, I, Q, R, S and Support Port
- > MIDS-LVT(2) X.25, Platform J, JREAP-C and Support Port
- > MIDS-LVT(1)/(2) Block Upgrade 2 Platform A, D, R and Support Port
- > MIDS on Ship (MOS) Platform M and Support Port
- > MIDS-LVT(3) FDL and Support Port
- > Class 2 Navy Shipboard, Navy Airborne, Army 2M and USAF F-15
- > MIDS JTRS Platform A, I, J, M, V, W, Support Port and Host Interfaces
- > STT Platform J
- > BATS-D Platform J

LEGS-LITE

- > A low-cost version of the LEGS software that does not include the scenario generation or situation display capabilities is available

PRODUCT DESCRIPTIONS

- > LEGS-MIDS
- > LEGS-LITE
- > LEGS MIDS JTRS
- > LIVER Software (Qty 10 Licenses)
- > LIVER Software (Qty 5 Licenses)

Licenses are available for installation on customer-furnished equipment

LINK 16 ENVIRONMENT GATEWAY SIMULATOR (LEGS)

L3Harris' Link 16 Flight-line Tool (LiFT) software is designed to support "go/no-go" testing and troubleshooting of Multifunctional Information Distribution System-Low Volume Terminals (MIDS-LVT) in a field environment. The LiFT application is available installed on a tablet PC or as a software package for customers who want to install the LiFT application on their own equipment.

This software is intended for use by technicians and allows the user to read, reconfigure, update and monitor terminal parameters. Data is provided in dynamic graphical displays.



HIGHLIGHTS

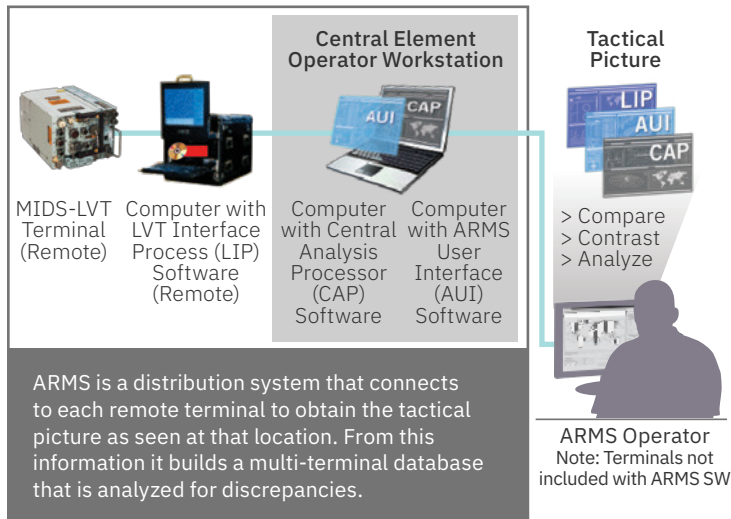
- > Obtain Terminal Status: IPF Fail, TDMA Rcv/Tx Fail, TDMA Degraded, Thermal Overload and Sanitization Confirmation
- > Initiate Built-In Test (IBIT)
- > View SDU alert status
- > View position data
- > View cockpit ID
- > Modify a limited number of settings: Set/Change CCPD, STN, NTR, Time, Tx Mode, Output Power Mode, TACAN Settings and Voice Channel
- > Load an Initialization file
- > Start net entry
- > Participate in a network
- > View 12 sec counters
- > Observe received RF messages by type
- > Exercise TACAN function
- > Sanitize terminal for shipment

PRODUCT DESCRIPTIONS

- > LiFT Handheld Kit
- > Software License and CD

AMALGAMATED REMOTE MANAGEMENT SYSTEM (ARMS)

ARMS integrates multiple views of a network that is maintained over a large geographical area and locked onto GPS time. A delayed synchronization capability on a single terminal is not required to detect unauthorized time slot reuse; the network nodes themselves perform this function for any units within site of more than one ground station. ARMS operates over a widely distributed geographical installation and accepts received data from each terminal node, integrating this data and analyzing it to detect and identify anomalies.



HIGHLIGHTS

- > Enable distributed data collection by implementing a multi-homed monitoring system
- > Allows coordinated network analysis from multiple viewpoints
- > Provides a synthesized analysis of the network architecture
- > Plug-n-Play capability—no changes to the existing system of terminals should be necessary
- > Works with all MIDS and JTRS terminals
- > Scalable with no preset limits for terminal connections
- > Provides up-to-date system-wide status with drill-down capability of terminal BIT
- > Provide detailed IPF causal analysis and fault isolation
- > Functions as an anomaly-event-driven, operator-alert-based interface to facilitate expeditious detection and correction of network problems

ARMS IS BUILT WITH THREE FUNCTIONAL ARCHITECTURAL PIECES

- > Link 16 Interface Processes (LIP)
- > Centralized Analysis Process (CAP)
- > ARMS User Interface (AUI)

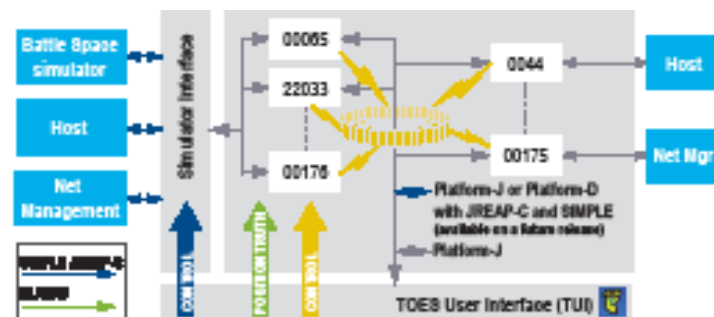
PRODUCT DESCRIPTIONS

- > ARMS master control and two terminals at remote site
- > ARMS annual software update subscription
- > ARMS FLEXOR feature

ELIMINATE THE NEED FOR MULTIPLE LINK 16 TERMINALS

TOES is a multi-terminal network simulator providing a scalable software emulation of a Link 16 network.

TOES leverages current L3Harris Link 16 development efforts including software for the Small Tactical Terminal (STT), the Amalgamated Remote Management System (ARMS) and the Navigation Testing Set.



TERMINAL OPERATIONAL ENVIRONMENT SIMULATOR (TOES)

HIGHLIGHTS

- > Simulates multiple Link 16 terminals
- > Employs actual network designs and platform loads
- > Regulates bandwidth and provides accurate time slot usage
- > Supports stacked nets and contention access
- > Implements paired slot relay
- > Simulates simple RF Line-of-Sight between terminals
- > Provides Platform-J Host Interface for each simulated terminal
- > Simulates terminal latency
- > Simulates TOA (Range) Delay between pairs of hosts

USE TOES TO

- > Test and validate network designs
- > Send tactical data through multiple units from a single Platform-D or Platform-J interface for use with 3rd party battle-space simulator tools
- > Evaluate new data exchanges including those using stacked nets
- > Create a test environment for network monitoring and management systems
- > Create an operational environment for training Link 16 network managers

SOFTWARE ARCHITECTURE

- > TOES User Interface
- > TOES Engine Control
- > Unit Position Truth Data
- > Terminal Host Interfaces

PRODUCT DESCRIPTION

- > TOES

MIDS/LINK 16 TRAINING

PREREQUISITE

Generally, attendees of the course should be familiar with Link 16, Link 16 terminals and functions of a host system when interfacing to a Link 16 terminal.

WHO SHOULD ATTEND

- > Anyone who wants a greater understanding of the capability of a Link 16 terminal, or who tests or analyzes tactical data links employing a Link 16 terminal.
- > Users of L3Harris' Link 16 software tools.

COURSE STRUCTURE

- > Each course employs a combination of dialectic lecture and hands-on laboratory.
- > The typical percentage breakdown of lecture/lab hours is 40/60.
- > Practical lab sessions reinforce all course instruction, providing the student with hands-on experience with L3Harris' Link 16 terminals and software tools.
- > The lab sessions develop the skill and knowledge of each student for safe and efficient operation of L3Harris' Link 16 terminals and software tools.

ADDITIONAL COURSE INFORMATION

SCHEDULE

Training courses are available for as short as 1 day and as long as 2 weeks (depending on the material to be covered). Class size is normally limited to 12 students.

Contact us for individual pricing information.

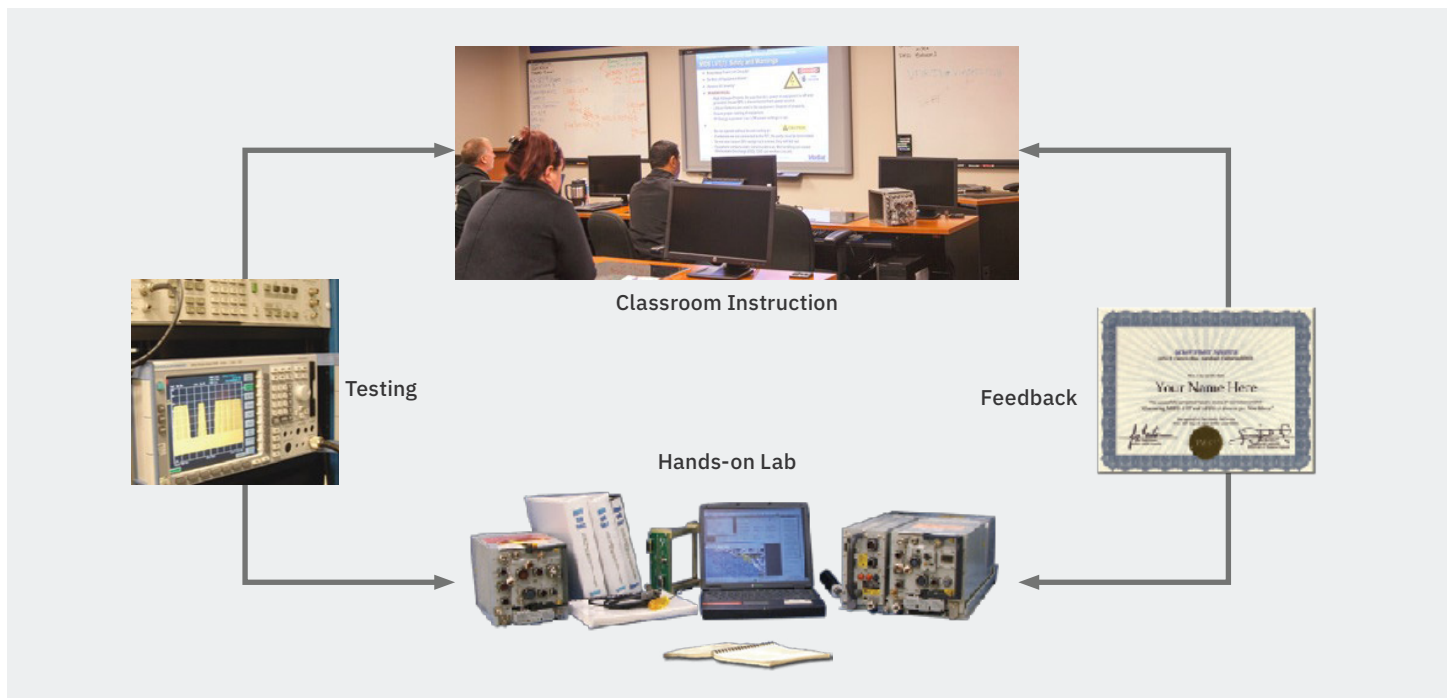
LOCATION

The preferred training location will vary depending on the course and training need. Contact us for flexible arrangements.

NOTE

Training at the customer's facility requires the provision of terminals and support equipment as Customer Furnished Equipment.

Classroom instruction, materials and lab procedures are created from testing data and customer feedback.





COURSE OFFERINGS

L3Harris offers a variety of training courses related to Link 16 and the operation of the STT, BATS-D, MOJO and MOJO Mini products. We also offer training on our software products including LEGS, ARMS and TOES. Course outlines are available upon request. Tailoring of the standard syllabus to meet specific customer needs is possible—let us know your requirements. The training courses listed below are offered at group rates. We also offer courses at individual rates. Contact L3Harris for further information.

- 102 LEGS Familiarization (Short Course)**
1-day training course
- 103 Link 16 Familiarization (Short Course)**
2-day training course on the introduction to Link 16
- 103A Link 16 Familiarization (Short Course Minimum of 3 Students)** 2-day training course (per student)
- 106 Link 16 Flight-line Tool (LiFT)**
2-day training course
- 106A LiFT Training**
2-day training course on LiFT
- 108 LEGS Operation**
2-day training course
- 108A LEGS Operation (Minimum of 3 Students)**
2-day training course (per student)
- 206 ARMS: Link 16 Network Management**
3-day training course
- 206A ARMS Link 16 Network Management with C2 Adjunct Capability Training (Minimum of 3 Students)**
3-day training course (per student)
- 206B ARMS Link 16 Network Management Training**
3-day training course (per student)
- 207 TOES: Terminal Operational Environment System**
2-day training course that focuses on the fundamentals, set-up, and operation of TOES in a simulated environment. Course can be tailored to customer requirements
- 209 STT Operations**
3-day training course focusing on user’s Link 16 knowledge and to prepare them to use the STT for dual channel operations
- 210 VLATS Training (Available to VLATS Users)**
5-day training course
- 211 MOJO Operations & Maintenance Training**
5-day training course introducing the fundamental principles and operations of the MOJO system
- 212 BATS-D Handheld Link 16 Radio**
2-day training course introducing the fundamental principles, procedures, and operations of the BATS-D, including autonomous and tethered mode
- 212A BATS-D Operations Training (Minimum of 3 Students)**
2-day training course (per student)
- 214 MOJO MINI Operation and Maintenance Training**
2-day training course
- 214A MOJO MINI Operation and Maintenance Training (Minimum of 3 Students)** 2-day training course (per student)
- 215 LEGS and TOES Combination Training**
5-day training course
- 215A LEGS and TOES Combination Training (Minimum of 3 Students)**
5-day training course (per student)

