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COYOTE™ MODEM ASSEMBLY

Multi-channel, Multi-band, Ultra-high speed modem

COYOTE is the most powerful production data link modem available today for demanding Line-of-Sight (LOS) communications. Integrating L3Harris ASPEN (Advanced Signal Processing Engine) technology, COYOTE delivers the mission-specific innovations and core functionality required to quickly deploy warfighter solutions to support evolving operational needs.

PRODUCT DESCRIPTION

Initially designed for the Apache and MUMT-X applications, the COYOTE modem is the powerhouse for the most advanced platform data link ever created. Built on proven ASPEN technology core modules, the COYOTE implementation can be adapted to a variety of expanded or specialized applications. COYOTE is the first of a series of interoperable, next-generation data links offering major advancements in resilient networks, high data rates and protected communications.

COYOTE and the ASPEN core provide complete ROVER® interoperability, including legacy ROVER, STD-CDL and BE-CDL waveforms. The unparalleled processing power, leading edge modulation techniques and advanced network functionality within a single system implementation, exceeds expectations in the most demanding environments.

COYOTE's Secure Cryptographic Module (L3Harris SCM 1200) uses NSA certified KIV 701A to support Crypto Modernization initiatives. The Modem Assembly supports two data links operating at different classifications or Multiple Independent Levels of Security (MILS). This secure communications upgrade continues L3Harris' legacy as the leader in certified encryption data links for today's needs, and future endeavors.

The industry standardized VPX modules minimize cost, reduce design and production lead time, maximize configurability, and facilitate a family of precision, ultra-high speed, reliable products. COYOTE is primarily configured for high-bandwidth ISR, video streaming, bidirectional point-to-point, and networked connections in Line-of-Site (LOS) applications.

Flexible and powerful. Built by the leader in secure, high bandwidth CDL communications.

KEY FEATURES

- Supports two, full bidirectional datalinks (optional expansion to four links) in a single modem assembly
- CDL / BE-CDL / ROVER waveform-compatible for maximum interoperability
- VPX/VITA standards based modular family of modems, processors, up/down converters, and crypto options expand flexibility and extend expected life; standards reduce DMS exposure
- Secure Cryptographic Module supports crypto modernization initiatives (uses KIV 701A)
- Provides four encrypted channels (two bi-directional links) at up to 300 Mbps
- Air-Air-Ground and Unmanned Relay networks
- Secure communications with extended data rates and frequencies from L-through Ku-Bands
- RF power and directional antenna control built into core technology

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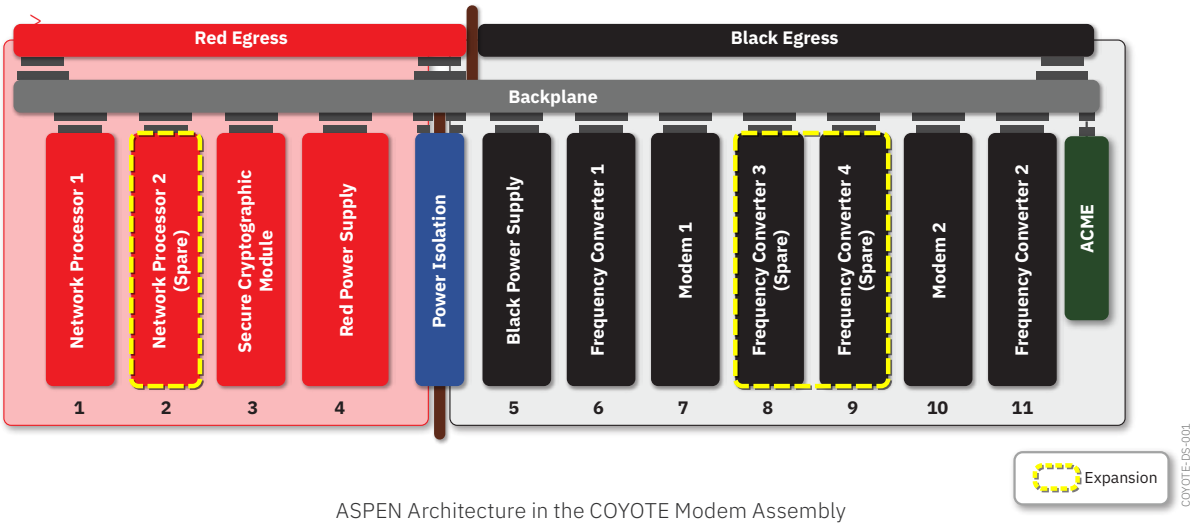
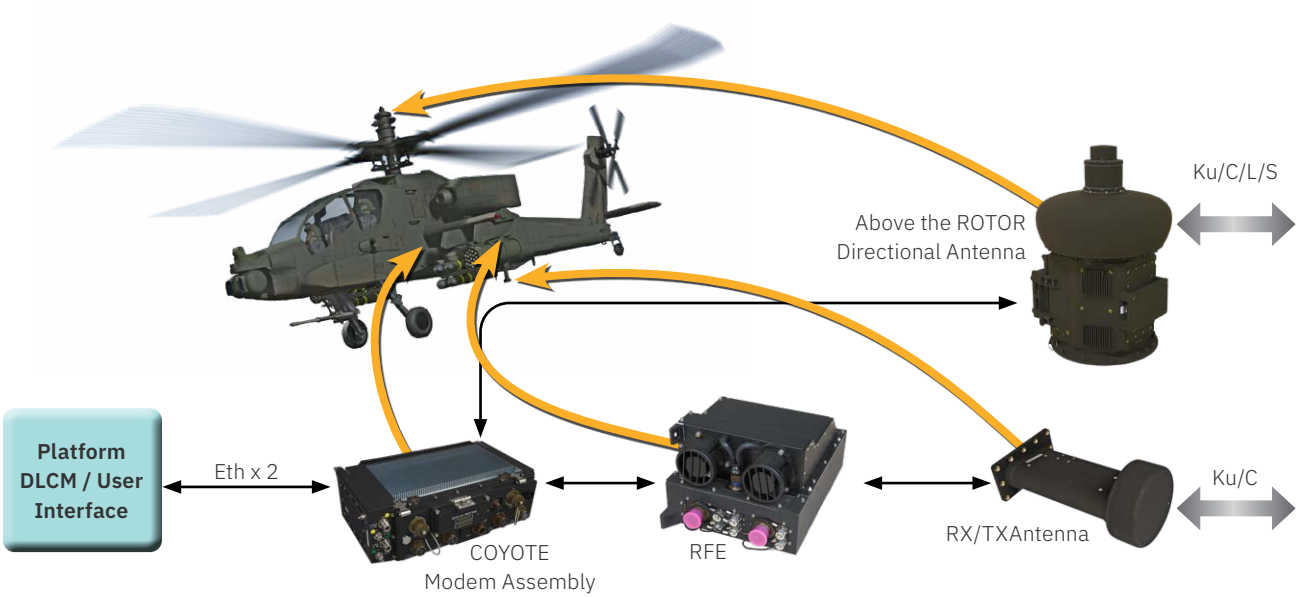
COYOTE™ Modem



ASPEN Architecture in the COYOTE Modem Assembly



COYOTE Modem Assembly and RF implementation on Apache aircraft

CONFIGURATION DATA[1]

COYOTE Capabilities

Waveforms – Networking and Security:

- ROVER legacy tactical waveforms (see table)
- STD-CDL waveforms, Rev G (see table)
- BE-CDL waveforms, Rev A and Rev B (see table)
- Each internal modem module supports two simultaneous independent full-duplex channels
- Designed to accommodate AES and KIV 701A (Mini-CCM) Type 1 encryption
- Supports DHCP server or client, IPv4/IPv6 protocols
- CDL networking Annex B and Annex X
- OSPF and RIP Networking protocols

Interface and Networking:

- 2x to 4x 10/100/1000 Base-T Ethernet data interfaces
- 2x to 4x 10/100 Base-T Ethernet for CMD/STS/maintenance
- 2x RS-232 interface for serial console CMD/STS
- 2x RS-422/485 interface for navigation data, CMD/STS (1x input / 1x output)
- 2x Blanking output interfaces to external equipment
- MIL-38999 data and maintenance connectors
- 1x 100 MHz optional Reference Clock input

Physical Characteristics:

- Nominal +28 VDC (+22 to +29 VDC) prime power as defined in MIL-STD-704F
- Operational temperature: -40 °C to +55 °C (forced air per MIL-STD-1788A)
- Non-operational temperature: -55 °C to 85 °C
- Operational Altitude qualified to 20,000 feet, higher operational altitude depends on environment
- Includes BIT and PBIT for HW and SW detectable faults to increase reliability
- Base configuration includes 9 modules (expandable to 12) in the ruggedized chassis
- Modules are ANSI/VITA 46/48 standard 1" pitch, 3U form factor
- Integrated RED/BLACK isolation IAW NSTISSAM TEMPEST/1-92 and CNSSAM TEMPEST/01-02, and RED/RED Isolation IAW CNSSAM TEMPEST/1-13
- COMSEC key fill, zeroize, bypass, and battery-hold interfaces

SWaP ALLOCATIONS[1]

LRU DESCRIPTION	NOMINAL SIZE	TYPICAL WEIGHT	TYPICAL POWER
COYOTE dual-modem AMA	**Overall dimensions:** 11.5" (h) x 6.50" (w) x 17.0" (d) 1,271 in^3 nominal	35 lb.	430 W at +28 VDC

ROVER 6 LEGACY WAVEFORMS	
VNW (0.05 Mbps to 5 Mbps)	Tactical 455K (Rx only)
NTSC FM analog (Rx only)	Tactical 466ER
Tactical 1.6 Mbps (legacy and networked)	DDL 1.5 (Rx only)
Tactical 3.2 Mbps (legacy and networked)	DDL 4.5 (Rx only)
Tactical 6.4 Mbps (legacy and networked)	

STD-CDL WAVEFORMS	
BR-0.2 (spread, clear)	BR-21.42
BR-0.4 (spread, clear)	BR-44.73
BR-2.0 F (spread, clear)	BR-137 B or D[2]
BR-2.0 R or S	BR-274 B or D[2]
BR-10.71 N, M or S	

BE-CDL WAVEFORMS (BR = MBPS)	
Mode 1 - OQPSK 512K	Mode 15 - 8PSK 45
Mode 2 - OQPSK 1	Mode 16 - 8PSK 52[2]
Mode 3 - OQPSK 2	Mode 17 - OQPSK 100[2]
Mode 4 - OQPSK 4	Mode 18 - OQPSK 137[2]
Mode 5 - OQPSK 8	Mode 19 - 8PSK 155[2]
Mode 6 - OQPSK 10	Mode 20 - 8PSK 200[2]
Mode 7 - OQPSK 16	Mode 21 - 8PSK 274[2]
Mode 8 - OQPSK 20	Mode 101 - QPSK 0.200–44.736[2]
Mode 9 - 8PSK 4	Mode 102 - QPSK 0.200–44.736[2]
Mode 10 - 8PSK 8	Mode 103 - QPSK 1.024–466.560[2]
Mode 11 - 8PSK 10	Mode 104 - QPSK 1.544–622.080[2]
Mode 12 - 8PSK 16	Mode 105 - 8PSK 1.544–622.080[2]
Mode 13 - 8PSK 20	
Mode 14 - 8PSK 32	

SUPPORTED FREQUENCY RANGES

BAND	RF FREQUENCY LOW	RF FREQUENCY HIGH
L	1.6250 GHz	1.8500 GHz
S	2.0250 GHz	2.5000 GHz
C Low	4.4000 GHz	4.9500 GHz
C High	5.2500 GHz	5.8500 GHz
X Low[2]	9.7500 GHz	9.9500 GHz
X High[2]	10.1500 GHz	10.4500 GHz
Ku Low	14.4000 GHz	14.8300 GHz
Ku High	15.1500 GHz	15.3500 GHz

1. Example data, system configuration options may alter these specifications
2. ASPEN core capability that can be licensed as an enhancement. Not enabled in the current COYOTE implementation.

COYOTE INTEROPERABILITY

COYOTE Modems are inherently interoperable with the rest of the family of L3Harris ROVER compatible platforms, data links, handheld devices and ASPEN based systems. L3Harris data links are already the standard in high-bandwidth, long distance LOS and BLOS connectivity. The ASPEN technology and COYOTE implementation provides the next technological breakthrough in performance and mission success capability. Interoperability with thousands of L3Harris systems on platforms and programs like Gray Eagle, Global Hawk, Predator, Apache and Hawklink makes COYOTE the premier choice for migration to the next generation of high performance. The integral design of L3Harris ROVER capabilities into COYOTE provides complete battlespace integration with airborne, surface, and naval platforms, including the widely deployed ROVER® 6, OSRVT™, TACTICAL NETWORK ROVER hand-helds, CMDL™ (LITENING and Sniper pods), BANDIT™ (ScanEagle UAV) and other tactical assets. Proven reliability and certified encryption capabilities are why the U.S. Government and U.S. Allies rely on L3Harris for warfighter communications solutions.

A few examples of interoperable L3Harris data links and the platforms (large and small) that they service.

Contact L3Harris for additional information on the data links, uses, and platforms supported.

COYOTE Modem Assembly

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1025 W. NASA Boulevard
Melbourne, FL 32919
t 833 537 6837
CSW.Products@L3Harris.com