

# Detect, Deny, Disrupt, Degrade and Evade Lethal Threats

Advanced Survivability Suite Solutions for Mission Success





## Enabling Mission Success

The ALQ-211 Family of Systems goes beyond the critical role of identifying and responding to RF threats. It provides aircrews multi-spectral (RF, IR and laser) situation awareness. Its highly accurate threat warning, sensor fusion, and countermeasures capabilities contribute to an aircrew's most important task: Mission Success

## Countering Smart and Adaptive Threats

Military pilots and aircrews must be prepared to face hostile environments, densely populated with highly mobile and lethal air defense threats. These modern emerging threats can operate in all weather, day and night, hiding in terrain, employing adaptive tactics and mass at a time and place of their choosing.

The integration of command and control into battlefield threats also poses significant challenges to aviators. Networked air-defense systems using complex layered RF signals and distributed operations complicate situation awareness and survivability. Threat systems with integrated acquisition and tracking subsystems and fast processing and communications place increasing demands on survivability suite solutions.



## Advanced Survivability Suite Solutions

- > Priority–Mission Success
- > Pre-Flight–Download the electronic order of battle, gain a preview of the potential threats in the battlespace
- > Ingress–Passive sensors update the threat situation in real time.
- > On Target–Integrated sensors provide an alternate route to stay undetected.
- > Pop-Up Threat–Immediately identified, countermeasures applied automatically, mission completed.
- > Post-Mission Analysis–Download important battlefield threat data for analysis and dissemination.















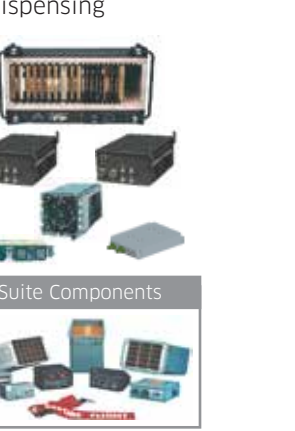


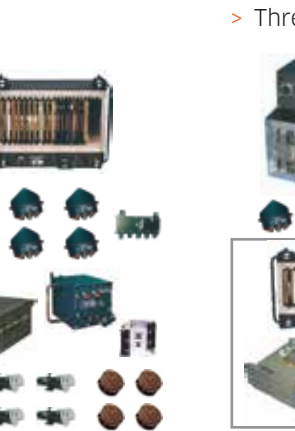


# Broad Mission Range – Broad Customer Base

The role of the ALQ-211 is to provide advanced survivability solutions tailored to unique mission needs including reconnaissance, mobile strike, air support/battlefield area interdiction, strike, defense/intercept, close combat, vertical envelopment, search and rescue, and troop transport.

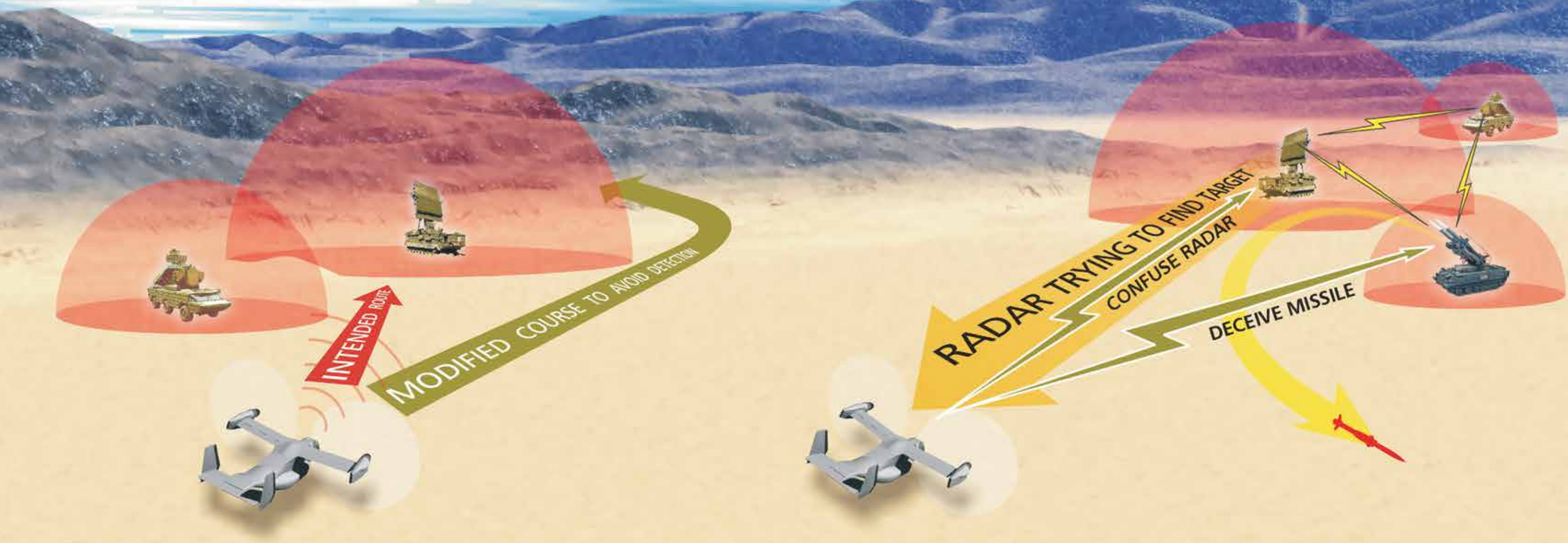
The extensive customer base of the ALQ-211 Family of Systems ensures long-term technology insertion and affordable life cycle costs/support.

## Modular, Scalable, And Affordable

- > Based on a set of common modules and functional building blocks.
- > Tailored to a customer's unique needs based on platform and mission requirements.
- > Offers solutions that are scalable in performance and cost.
- > Allows the user to easily add functionality and increase capability to meet changing mission needs and take advantage of technology growth

 <b>V1</b> AH-64D	 <b>V2</b> CV-22	 <b>V3</b> SCOUT	 <b>V4</b> F-16	 <b>V5</b> NH-90	 <b>V6</b> MH-47E/G	 <b>V7</b> MH-60K/L/M	 <b>V8</b> BUSINESS JET	 <b>V9</b> ECM POD
<ul style="list-style-type: none"><li>&gt; Precision Radar Warning</li><li>&gt; Threat Geolocation</li><li>&gt; Advanced Jamming</li></ul>	<ul style="list-style-type: none"><li>&gt; Precision Radar Warning</li><li>&gt; Threat Geolocation</li><li>&gt; Advanced Jamming</li><li>&gt; Advanced Situation Awareness</li><li>&gt; EW Suite Integration</li></ul>	<ul style="list-style-type: none"><li>&gt; Precision Digital Radar Warning</li><li>&gt; Advanced Situation Awareness</li><li>&gt; Target Cueing</li><li>&gt; Laser Warning</li><li>&gt; Point Chemical Detection</li></ul>	<ul style="list-style-type: none"><li>&gt; Digital Radar Warning</li><li>&gt; Advanced Situation Awareness</li><li>&gt; Advanced High/Low Band Jamming Enhanced for Air-to-Air Missions</li><li>&gt; Countermeasures Dispensing</li></ul>	<ul style="list-style-type: none"><li>&gt; Precision Digital Radar Warning</li><li>&gt; Advanced Situation Awareness</li><li>&gt; Electronic Support Measures</li><li>&gt; Growth to Jamming</li><li>&gt; Platform Avionics Integration</li></ul>	<ul style="list-style-type: none"><li>&gt; Precision Radar Warning</li><li>&gt; Threat Geolocation</li><li>&gt; Advanced High Power Jamming</li><li>&gt; Advanced Situation Awareness</li><li>&gt; EW Suite Integration</li></ul>	<ul style="list-style-type: none"><li>&gt; Precision Radar Warning</li><li>&gt; Threat Geolocation</li><li>&gt; Advanced High Power Jamming</li><li>&gt; Advanced Situation Awareness</li><li>&gt; EW Suite Integration</li></ul>	<ul style="list-style-type: none"><li>&gt; Digital Radar Warning</li><li>&gt; Growth to Advanced High Power Jamming</li><li>&gt; Advanced Situation Awareness</li><li>&gt; EW Suite Integration</li><li>&gt; Threat Geolocation</li></ul>	<ul style="list-style-type: none"><li>&gt; Digital Radar Warning</li><li>&gt; High Power Jamming</li><li>&gt; Threat Geolocation</li><li>&gt; Situational Awareness</li><li>&gt; Modular and Scalable</li></ul>
								





# There and Back with the ALQ-211

## PRE-MISSION PLANNING

Pre-flight, the ALQ-211 allows aircrews to download local order of battle threat information for effective mission execution. This mission planning capability is matched with on-board, real-time links to other intelligence systems. This allows the aircrew accesses to an up-to-date threat lay-down, providing unparalleled situational awareness.

## THREAT ID AND WARNING

Maneuvering through the threat environment the ALQ-211's high-sensitivity receiver and advanced threat identification processing provides the aircrew with accurate threat assessment, ID, mode and location beyond lethal range. This is accomplished through passive sensing of the entire external RF environment. The ALQ-211 integrates all RF, IR and Laser threat data—providing the aircrew with a complete consolidated picture of the threat environment.

## SITUATION AWARENESS

When the aircrew encounters a threat emission, the ALQ-211 establishes the threat range from the mission aircraft. This is accomplished through on board analysis of the threat ID, lethality, mode of operation, and its changing angle of arrival to the aircraft. This allows aircrews to execute real time mission replanning. With this situational awareness, aircrews can exploit terrain masking, avoid detection, and navigate away from the threat kill area. This data can be used for on and off-board for threat targeting.

## COORDINATED COUNTERMEASURES

If an aircraft is in lethal range of the threat, the ALQ-211 initiates an integrated instantaneous response. The ALQ-211 provides protection by breaking missile lock through RF countermeasures and cues the use of chaff and flares. As the aircraft's survivability suite controller, the ALQ-211 coordinates the response for laser and IR threats, providing a truly integrated, multi-spectral approach to aircraft self-protection.

## RETURN HOME SAFELY

Mission threat data can be updated through the ALQ-211 for use in future engagements, in-flight via the data link function.





# ALQ-211 Family of Systems

V1	V2	V3	V4	V5	V6/7
AH-64D	CV-22	SCOUT	F-16	NH-90	MH-47E/G / MH-60K/L/M
<ul style="list-style-type: none"> <li>&gt; Precision Radar Warning</li> <li>&gt; Threat Geolocation</li> <li>&gt; Advanced Jamming</li> </ul> <p>The AH-64D Apache Longbow is a multi-mission attack helicopter. It is designed as a day/night airborne weapon system that can fight close and deep to destroy, disrupt, or delay enemy forces.</p> <p>The U.S. Army AH-64D is the original launch platform for the ALQ-211.</p>	<ul style="list-style-type: none"> <li>&gt; Precision Radar Warning</li> <li>&gt; Threat Geolocation</li> <li>&gt; Advanced Jamming</li> <li>&gt; Advanced Situation Awareness</li> <li>&gt; EW Suite Integration</li> </ul> <p>The CV-22 Osprey provides covert insertion and extraction of special operations forces in high threat environments.</p> <p>The CV-22 mission can be compromised by detection. That's why the ALQ-211 is vital to its survivability and mission success.</p> <p>ALQ-211 provides a level of data collection, management, and sensor fusion that enables the CV-22 to perform its demanding missions.</p> <p>Exelis is integrating the entire survivability suite with the CV-22's MATT receiver; multi-mode radar; countermeasures dispensers; missile warning systems; IR countermeasures; display systems, and mission computer.</p>	<ul style="list-style-type: none"> <li>&gt; Precision Digital Radar Warning</li> <li>&gt; Advanced Situation Awareness</li> <li>&gt; Target Cueing</li> <li>&gt; Laser Warning</li> <li>&gt; Point Chemical Detection</li> </ul> <p>As the centerpiece of the U.S. Army's Objective Force, the RAH-66 Comanche was projected to handle missions of armed reconnaissance, light attack, and air combat.</p> <p>The survivability suite for Comanche was designed to be an integrated radar, laser and chemical warning system.</p> <p>The processing element of the laser warning receiver was integrated on one of the ALQ-211's processor modules, eliminating the need for an additional Line Replaceable Unit on the aircraft.</p> <p>The U.S. Army decided to end the Comanche program, but continued development of key technologies past the termination of the airframe which includes the ALQ-211-based Defensive Aids Suite.</p>	<ul style="list-style-type: none"> <li>&gt; Digital Radar Warning</li> <li>&gt; Advanced Situation Awareness</li> <li>&gt; Advanced High/Low Band Jamming Enhanced for Air-to-Air Missions</li> <li>&gt; Countermeasures Dispensing</li> </ul> <p>The F-16 is used in a variety of missions, including close air support/ battlefield area interdiction, strike, suppression of enemy air defenses, and defense/interceptor.</p> <p>The ALQ-211 variant for tactical aircraft – known as AIDEWS (Advanced Integrated Defensive Electronic Warfare Suite) – provides an internal, fully integrated radar warning and RF countermeasures capability.</p> <p>International F-16 air forces have conducted an extensive evaluation of worldwide electronic warfare systems, selecting AIDEWS based on its operational capability, advanced technology and affordability.</p>	<ul style="list-style-type: none"> <li>&gt; Precision Digital Radar Warning</li> <li>&gt; Advanced Situation Awareness</li> <li>&gt; Electronic Support Measures</li> <li>&gt; Growth to Jamming</li> <li>&gt; Platform Avionics Integration</li> </ul> <p>The NH-90 helicopter has a multi-mission role including maritime patrol and surveillance, autonomous anti-submarine warfare, and anti-surface unit warfare missions.</p> <p>The ALQ-211 is under contract to protect the Norwegian NH-90. Exelis serves as the overall suite supplier, responsible for the integration of the ALQ-211 with a missile warning system, laser warning system, and countermeasures dispensing system.</p> <p>In the NH-90 configuration, the ALQ-211 expands its role to include an electronic support measures (ESM) capability – providing a full complement of ESM screens to the pilot and ESM operator in flight.</p>	<ul style="list-style-type: none"> <li>&gt; Precision Radar Warning</li> <li>&gt; Threat Geolocation</li> <li>&gt; Advanced High Power Jamming</li> <li>&gt; Advanced Situation Awareness</li> <li>&gt; EW Suite Integration</li> </ul> <p>The mission of the Special Operations MH-47E and MH-60K include covert infiltration, exfiltration, armed reconnaissance surveillance and resupply.</p> <p>The ALQ-211 system is under contract to provide U.S. Army Special Operations aircraft (SOA) with electronic protection.</p> <p>The ALQ-211 provides Army SOA aircraft with highly accurate radar warning and state-of-the-art countermeasures capabilities.</p> <p>Exelis serves as the systems integration lead for the overall survivability suite on the MH-47 and MH-60, responsible for the integration of the ALQ-211 with missile and laser warning, IR countermeasures, and future 3D audio.</p> <p>The ALQ-211 sensor fusion can serve as the network centric node for survivability.</p>





## ALQ-211 Family of Systems

V8	V9
BUSINESS JET	ECM POD

- > Digital Radar Warning
- > Growth to Advanced High Power Jamming
- > Advanced Situation Awareness
- > EW Suite Integration

The Aerial Common Sensor platform demanded an EW system that would protect the aircraft from sophisticated threats while performing surveillance.

Today, a growing list of commercial jets used for VIP transport require protection against radar-based threats, including modern surface-to-air and air-to-air weapon systems.

This version of the ALQ-211 uses advanced wideband and digital receivers to quickly and accurately detect and identify multiple complex emitters in today's high-density threat environment.

- > Digital Radar Warning
- > High Power Jamming
- > Threat Geolocation
- > Situational Awareness
- > Modular and Scalable

Current battlespace conditions require EW equipment that will protect aircraft from modern threats.

Exelis' pod-based proven solution uses Line Replaceable Units (LRUs) interchangeable with the Advanced Integrated Defensive EW Countermeasures (AIDEWS) now flying in allied F-16 aircraft.

This system provides a fully integrated radar warning and RF countermeasures capability.

The pod-based system can be used to upgrade an existing system or add EW capability to legacy aircraft.

## A Suite Supplier, A Suite Integrator

Customers are increasingly turning to Exelis to provide and integrate multi-spectral suite solutions – RF, IR and laser.

Exelis provides suite solutions for the Norwegian NH-90 helicopter. Serving as the overall suite supplier, Exelis provides and integrates the ALQ-211 with missile warning, laser warning and countermeasures despising systems.

On the CV-22, MH-60, MH-47 and F-16, Exelis is responsible for the entire aircraft survivability suite, integrating the ALQ-211 with complementary systems such as multi-mode radars, countermeasures dispensers, missile warning systems, display systems and mission computers.

Exelis also provides long-term support for the ALQ-211 Family of Systems including electronic warfare (EW) training, EW facilities, software tools and emitter simulators.





## ABOUT EXELIS

On Oct. 31, 2011, Exelis (ek-'sel-ess) became a publicly traded company.

Today, the company trades on the New York Stock Exchange under the symbol of XLS.

Exelis is an energetic name that is derived from the word "excel," which is rooted in "ex," meaning "out in front" or "beyond." The name Exelis signifies the expeditionary spirit, exceptional foresight and strong commitment to proactively anticipating and adapting solutions to our customers' most critical problems.

Exelis is a leader in Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) related products and systems and information and technical services, supplying military, government and commercial customers in the United States and globally.

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