

Flat Panel Array ○  
 Solid State Amplifier ○  
 Receiver & Processor ○

# NEMESIS

TAILOR-MADE MECHANICALLY  
 SCANNED ARRAY (MESA) RADAR

*F-5E Tiger II Photo by Chen Peng*

The Nemesis is a custom-tailored airborne RADAR designed to conform to your aircraft's space and power requirements. With budget constraints in mind, DSI can integrate the Nemesis radar without costly aircraft modifications, all while providing a very capable radar solution.

Nemesis RADAR was designed by taking the best and most current technology available and pairing it with the knowledge of U.S. Navy Top Gun and U.S. Air Force Weapons School instructors. By leveraging the knowledge gained by thousands of hours of tactical flight operations by these pilots, the Nemesis RADAR has captured the lessons learned of pilot behavior and interface to provide performance comparable to 4th and 5th Generation Aircraft.

#### THE NEMESIS ADVANTAGE IS MEANT TO SUPPLY A RADAR SOLUTION WHICH:

1. Gives pilots the best and most capable solution via cutting edge signals processing techniques
2. Very high mean time between failure
3. Highly sustainable by utilizing COTS and standards based tools
4. Can be integrated with existing and new install mission systems
5. Cost of procurement is fractional compared to other RADAR solutions

- » NEMESIS is a tailor-made Mechanically Scanned Array (MESA) RADAR designed for aircraft that cannot accommodate DSI's full size DELTA RADAR
- » NEMESIS can conform to current aircraft avionics bays, standard rack structure, and can utilize existing power and cooling
- » NEMESIS can employ an array aperture optimized for the current aircraft radome, thus eliminating any costly structural modifications
- » Utilizes a proven X Band Solid State Power Amplifier technology, which provides a higher mean time between failure, higher clutter improvement factor, and lower out of band emissions compared to tube-based amplifiers
- » DSI's Receiver / Processor LRU, also installed in the DELTA and ARES RADAR products, utilizes modern processing technology to optimize RADAR performance
- » NEMESIS upgrades and retrofits eliminate any obsolescence or supportability issues
- » Fully supportable with DSI's ARTES ATE and our proven depot-level repair expertise spanning four decades



Mechanically Scanned Antenna

## MECHANICALLY SCANNED ANTENNA

- » Custom designed antenna solutions in 12-16 weeks (27 dBi-38 dBi)
- » Scalable arrays to maximize or limit radar performance
- » Scalable array architecture in X Band
- » Wide bandwidth and high power handling
- » Beam steerable options available
- » Rapid prototyping and final solution builds
- » Fully digital feedback motion control system



SSPA Options

## SOLID STATE POWER AMPLIFIER

- » Gallium Nitride (GaN) solid-state transmitter: available at multiple power levels to meet desired results and price point
- » Solid State Transmitter provide graceful degradation: no single point of failure so radar can continue to operate.
- » Multiple power options available
- » High reliability (MTBCF up to 10X). Mean Time Between Critical Failure increases by magnitudes over a tube-based transmitter.
- » Lower sustainment cost due to less frequent failures and modular design. Up to 90% Reduction in Operation & Sustainment costs versus comparable 4th generation fighter aircraft radar systems.
- » High reliability, high-efficiency transmitter leads to greater operational readiness
- » Lower Out of Band Emission to reduce interference from adjacent radar and other transmitters.



Receiver/Processor

## RECEIVER / PROCESSOR

- » Adaptive processing and channel analysis
- » Open architecture hardware design (e.g. VPX VITA, AXIe, 802.3, and other standards)
- » Standards-based tools and languages (VHDL, C#, Java, Matlab Coder)
- » Modern processing techniques for legacy platforms
- » Integrated master display and user interface when central computer unavailable
- » User installable application
- » Feature extensions



Receiver & Antenna Driver

## RECEIVER / ANTENNA DRIVER

- » Solid-state motor drivers for Antenna LRU
- » Dehydrator to remove moisture form air system
- » System temperature monitoring
- » Up / Down signal conversion

## TECHNICAL SPECIFICATION

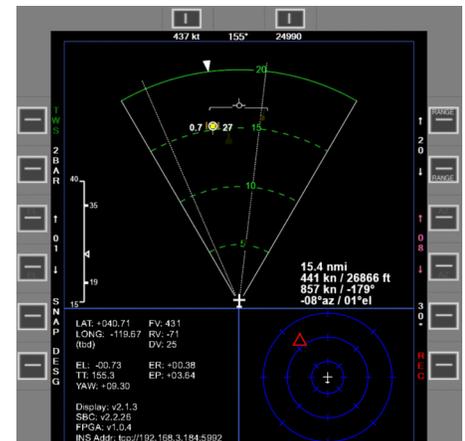
Nemesis High Power	PN 3600500, 4.0kVA, 59kg
Nemesis Low Power	PN 3601300, 1.8kVA, 40kg
Frequency	X Band
Cooling	Air
Key Interface	Ethernet

## MODES AVAILABLE

<b>Air-to-Air Modes</b>	Track While Scan Single Target Track
<b>Air Combat</b>	HUDACQ Boresight Helmet Mounted Cueing VERTACQ
<b>Air-to-Surface Modes</b>	Real Beam Doppler Beam Sharpening Sea Surface Search and Track GMTI (Optional)
<b>Interleaved Modes</b>	Customer Configurable Interleaved Air & Surface Modes
<b>Extended Functionality</b>	Helmet mounted cueing Tactical data link EW system (jamming) IRST position handoff Weather Awareness Mode

## RADAR DISPLAY AND INTEGRATION

Nemesis RADAR has been integrated with modern mission system software and cockpit in the Tactical Air Support F-5 Advanced Tiger™ bringing a 5th generation cockpit to a 3rd generation aircraft. The Nemesis tactical radar interface gives operators a vast array of control, display, and configuration options.



Ask Us About Our  
**RADAR WARNING RECEIVER**

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