

WHO

**SYSCOM:** ONR

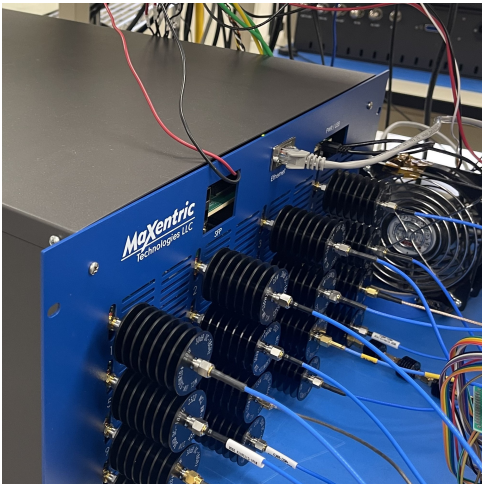
**Sponsoring Program:** Office of Naval Research

**Transition Target:** Ultimately, any communication node (ship to ship, air vehicle to ship, air to air, and ship to shore) will benefit from this technology.

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**Other Transition Opportunities:** Potential commercial applications include multi-carrier base station power amplifiers for 5G communication systems and 5G phased array communications; global market for multi-functional radio platforms; distributed antenna systems (DAS); multiple device smart home systems.

**Notes:** Prototype has been developed - currently looking to ruggedize the technology.



LEOPARD Technology Prototype

WHAT

**Operational Need and Improvement:** MaXentric's LEOPARD technology responds to the U.S. Navy's and the Department of Defense's interest in improving performance of phased array systems with digital signal processing for linearization to extend the dynamic range of constant supply power amplifiers. LEOPARD also provides a path forward to support digital beamforming with simultaneous multi-beam outputs to improve the fleet's warfighting capability.

**Specifications Required:** PA Peak Efficiency at 50%-65% per element  
C-Band Frequency Range with RF Bandwidth of 500 MHz across 20 Channels  
Fast Frequency Hopping and High Linearity

**Technology Developed:** A flexible and scalable, wide bandwidth power amplifier with high efficiency and linearity for phased array operation. To maintain size restraints while maximizing efficiency, MaXentric uses MaXPAL (Linearizer) to push the high-power amplifiers (HPAs) harder with higher efficiency while meeting linearity requirements.

**Warfighter Value:** Supports compact antenna system designs; upgradeable to support multiple simultaneous beams; simplified array control; suitable for ships, aircraft, vehicles, manpacks, and ground stations; reduced thermal profile; integrated and compact size; efficient transmissions; ability to support more sensors; increased communication range.

WHEN

**Contract Number:** N68335-23-F-0126      **Ending on:** Aug 28, 2024

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Phase II Start	N/A	Successful	1	2nd QTR FY23
Preliminary Design Review	Low	Successful	3	4th QTR FY23
Phase II System Demonstration	Low	Successful	4	4th QTR FY24
EDM Development	Low	N/A	5	4th QTR FY26

HOW

**Projected Business Model:** MaXentric will invite interested military and commercial parties to review LEOPARD prototype performance at the end of Phase II. Based on customer and partner feedback, MaXentric will adapt the prototype system specifications to satisfy the target application. Primary potential customers include agencies within the Department of Defense.

**Company Objectives:** MaXentric is an industry leader in radio frequency technology and high-speed wireless communication devices and works to provide modern and efficient solutions for commercial and government customers. MaXentric's current goal for LEOPARD is to transition the technology into current and future communications platforms.

**Potential Commercial Applications:** Potential commercial applications include multi-carrier base station power amplifiers for 5G communication systems and 5G phased array communications; global market for multi-functional radio platforms; distributed antenna systems (DAS); multiple device smart home systems.