AFRL Awards Contract for Solid-State HPM Technology

By Richard Scott

The US Air Force Research Laboratory (AFRL) is advancing plans to transition novel high-power microwave (HPM) technology into frontline service, awarding Leidos a four-year contract on Dec. 13 to develop and mature solid-state HPM weapon concepts.

The High-Power Electromagnetic Division within AFRL's Directed Energy Directorate has been working for over a decade to determine the feasibility of novel concepts and technologies that enable smaller, lighter and more capable non-lethal HPM weapons able to address multiple types of targets. (See cover story on page 16.) Such weapons use electromagnetic effects to disrupt or disable vehicles, electronics or personnel, but their operational utility has hitherto been limited by operational range, size, weight and cost.

Under its new $8 million cost-plus-fixed-fee contract with AFRL, Leidos has been tasked to investigate, develop and ultimately transition nonlinear transmission line (NLTL) or other solid-state-based high-power electromagnetics weapon concepts. NLTL technologies are seen as a way of achieving low-cost, high-power pulse generation from a low-cost, all solid-state source.

Work will be performed at Kirtland Air Force Base, NM, and is expected to be completed by December 2026. Activity will include developing devices, including suitable user interfaces, embedded controls and diagnostics using an NLTL or alternative solid-state high-power microwave source.

The objective of AFRL's Electromagnetic Weapons Technologies Program is to investigate, develop, and ultimately transition new HPM Weapon concepts, HPM materials and components, and

compact pulsed power topologies. The program is also evaluating advances in prime power technologies to optimize size, weight and power requirements for future weapon systems.

Leidos has a long history of undertaking HPM research with AFRL. The company was in 2017 awarded a five-year indefinite-delivery/indefinite-quantity to provide research and technology development to support the maturation of next generation HPM sources.