

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

NAVAIR Public Release 2021-851

Topic # N181-027

AgileBeam RF Denied Free-Space Optical Communication System

SA Photonics, Inc.

WHO

SYSCOM: NAVAIR

Sponsoring Program:

Transition Target: PMA 265 F/A-18
Hornet/Super Hornet

TPOC:

(301)757-0725

Other transition opportunities: Other DOD components (USAF, Army, Marine Corps, SOCOM, etc.) could benefit from an AgileBeam™ application aboard air and ground assets.



© 2021 SA Photonics, Inc.

WHAT

Operational Need and Improvement: RF Interference (RFI) generated either by adversaries or fratricide (friendly jamming) has significantly degraded aircraft tactical communications. Recent advancements in free space optical (FSO) communications technologies can be used to provide an anti-jam, low probability of interception and detection (LPI/LPD) communication alternative to RF. An airborne FSO communication solution is needed that can operate on airborne platforms, can compensate for atmospheric effects such as absorption, scattering and scintillation, has a conformal aperture, and has low cost/low SWaP.

Specifications Required: A digital data link, operating at EO/IR frequencies, that supports 2-way communications with an effective range >100 nmi and data rates >100 Mbps.

Technology Developed: AgileBeam™ is an FSO communications system that utilizes SA Photonics' innovative closed-loop tracking and signal processing techniques to provide robust and reliable communication through a wide variety of atmospheric conditions, while maintaining a simple and low-cost system architecture. Furthermore, AgileBeam includes internal optical beam stabilization that allows the terminal to be directly attached to an aircraft.

Warfighter Value: The primary advantages of AgileBeam's communication system include its covertness, lack of RFI from any RF sources, immunity to jamming, lack of frequency allocation requirements, and high bandwidth. These benefits serve to provide safer and more reliable communications to Warfighters.

WHEN

Contract Number: N68335-19-C-0569 **Ending on:** September 30, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
System Design Review	Low	Completed review	3	December 2020
Full System Integration	Low	Successful integration of all subsystems	4	July 2021
Lab Validation Tests	Med	Successful tests demonstrating readiness for flight testing	5	December 2021
Outdoor and flight tests	Med	Successful demonstrations during testing	6	September 2022

HOW

Projected Business Model: SA Photonics intends to undergo production of the AgileBeam engineering model, qual units, and flight terminals using our in-house manufacturing capability. The company has a history of successful small-scale production for commercialized SBIR products. For larger quantity manufacturing, we would work with our contract-manufacturing partner currently used for our commercial terrestrial/space FSO system manufacturing.

Company Objectives: The AgileBeam system is positioned to be a cost-saving and performance-improving communication system not just for U.S. Navy combat aircraft fleet, but with military communications across the DOD. As a result, we are excited to present the product to a range of program offices at the FST, as well as a number of prime contractors, specifically those who work with airborne platforms.

Potential Commercial Applications: Outside of military applications there are many potential commercial transition opportunities. These include other Government applications within the Drug Enforcement Agency and the Intelligence Community, where non-RF, covert communication is also a consideration. Private sector use in telecommunication and local, urban communication would benefit from this technology due to its high bandwidth.

Contact: Dave Pechner, Chief Technology Officer
d.pechner@saphotonics.com (408) 376-0989