

Topic: N08-083

Out of the Fog Research LLC

Fast Tuning, Analog Notch Filters Subsequent

Out of the Fog Research LLC has developed technology that improves signal intelligence (SIGINT) systems by mitigating interference blocking the detection of signals-of-interest (SOI). Shipboard testing by SPAWAR has demonstrated improved detection of ranked SOI. The value to the warfighter is increased probability-of-intercept (POI) of very weak SOI. Improved performance is accomplished using advanced cryogenic tunable notch filters and low noise amplifiers (LNAs). Out of the Fog Research has a Phase III contract for production RF distribution units to transition technology into the Navy Cryptological Carry-On Program (CCOP) and Shipboard Signals Exploitation Equipment (SSEE). Out of the Fog Research seeks relationships with other Navy SYSCOMs and DoD hardware contractors to extend this technology to improve performance of airborne, armored vehicle and man-portable SIGINT and communication systems.

Technology Category Alignment:

RF Components for sensing, transmission and communication

Information Collection/Management

Advanced Electronic Protection Techniques and Technology

Sensors, Electronics and Photonics

Radio Frequency (RF) (non-EW)

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SYSCOM: ONR

Contract: N00014-16-C-2038

 Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00014-16-C-2038

Department of the Navy SBIR/STTR Transition Program

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ONR Approval #43-3252-17

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WHO

SYSCOM: ONR

Sponsoring Program: Radio Frequency Antennas and Topside Program Manager, code PMW 180-D4/E2

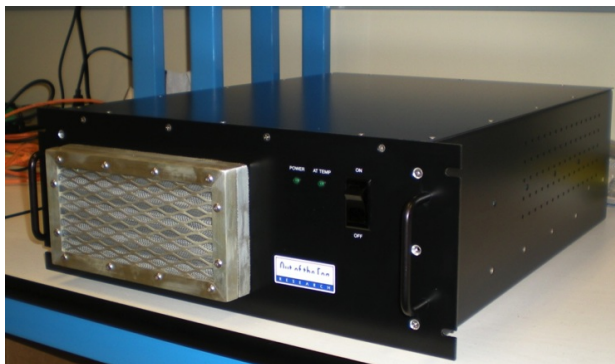
Transition Target: OPNAV N201C's Cryptologic Carry-On Program (CCOP), Advanced Cryptologic Carry-on Exploitation System, and OPNAV N61411's Ship's Signals Exploitation Equipment (SSEE) Program

TPOC:

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Other transition opportunities:



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WHAT

Operational Need and Improvement: Current signal intelligence (SIGINT) systems cannot effectively mitigate interference blocking the detection of signals-of-interest (SOI) in targeted frequency ranges.

Specifications Required: The Battlespace Awareness and Information Operations Program Office, PMW-120, for the CCOP and SSEE Programs delineate requirements for electro-magnetic interference (EMI) filters for SOIs. SOI detection is limited due to insufficient cancellation of EMI.

Technology Developed: Cryogenic radio frequency (RF) technologies eliminate EMI into SIGINT systems. Cryogenic RF technology achieves better EMI rejection without increasing the noise figure or impacting the demodulation of the received signals.

Warfighter Value: Out of the Fog's advanced EMI filtering capability increases probability of intercept (POI), and increases operational detection range; and has the capability to mitigate future EMI sources enhancing future SOI detection opportunities.

WHEN

Contract Number: N00014-16-C-2038 **Ending on:** May 1, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Demonstrate low-loss superconducting tunable notch filters in this frequency range	High	Tunable Filters with loss less than 1 dB	4	May 2018
Develop the electronics to tune superconducting notch filters with high accuracy and repeatability	Med	Achieve accuracy and repeatability goals	4	May 2018
Develop prototype	Med	Delivery of prototype meeting target specifications	5	December 2018
Shipboard demonstration of improved POI using prototype	Med	Increase collection by target amounts	6	May 2019

HOW

Projected Business Model: Develop a fieldable system for CCOP and the SSEE Programs of Record (PORs). PORs plan to procure and field units during the FY20-FY25 time frame. Full Operational Capabilities (FOC) are anticipated within 7 years

Company Objectives: Out of the Fog, LLC is looking for funding to implement/integrate its Phase II prototype, and anticipates receiving matching SBIR funds to support integration. Out of the Fog is looking for additional PORs that require enhanced EMI mitigation technology in all branches of the military to fully realize the market potential of this SBIR.

Potential Commercial Applications: This technology can be used to improve first responder networks. Capacity utilization can be increased in commercial networks limited by co-located services.

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