Topic: N152-123

Metamagnetics

Ferrite-Based Frequency Selective Limiter and Signal-to-Noise Enhancer for Interference Protection and Prevention in UHF SATCOM
RF environments are increasingly more complex causing distress for system designers across the warfighter to create a robust RF interference mitigation solution. Metamagnetics' Auto-tune Filter has created a small chip that can mitigate any number of interferers quickly and effectively without the need of complex processing systems. This enables a variety of platforms to easily install a robust, low SWAP solution for cosite and jamming problems. Potential systems include radios, GPS, EW and radars. Metamagnetics, an advance magnetic material design firm, has enhanced the device's baseline material and performed higher level testing in systems along with transitioning another version of the technology to a Navy EW system. Metamagnetics is looking to partner with primes for system transition along with government entities to help fund development.

Technology Category Alignment:

None
None
None

Contact:
Michael Hunnewell
mhunnewell@mtmgx.com
(781) 562-0756
http://www.mtmgx.com
SYSCOM: NAVWAR
Contract: N68335-17-C-0252
Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-17-C-0252

Department of the Navy SBIR/STTR Transition Program

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

SPAWAR SR-2018-317

Topic # N152-123

Ferrite-Based Frequency Selective Limiter and Signal-to-Noise Enhancer for Interference Protection and Prevention in UHF SATCOM

Metamagnetics, Inc.

WHO

SYSCOM: SPAWAR

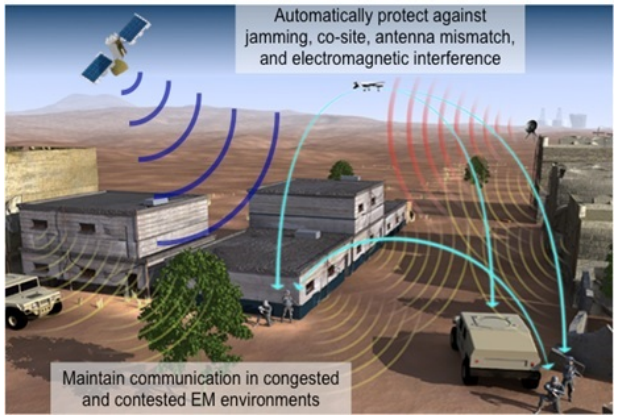
Sponsoring Program: Navy Communications Satellite Programs, PEO Space Systems, PMW 146

Transition Target: Next-generation Mobile User Objective System (MUOS)

TPOC:
(619)972-3963

Other transition opportunities: Unmanned Aerial Vehicles (UAVs), tactical radios, MIDS, Link 16, EA-18G Growler, F/A-18 Super Hornet

Notes: This FSL technology enables a canceller technology that strongly rejects interferes (>60 dB) while minimally affecting signals of interest.



*adapted from www.shadowspear.com

WHAT

Operational Need and Improvement: SATCOM links are subject to electromagnetic interference from both friendly and foe sources, such as co-located transmitters, enemy jamming, and electronic attack. Robust SATCOM links are required for maintaining communications and situational awareness in theater for both ground-based users and space-based platforms.

Specifications Required: SPAWAR is seeking technologies that improve a satellites resiliency to electromagnetic interference and improve the purity of signals beamed back to earth.

Technology Developed: Metamagnetics has developed frequency selective limiter (FSL) and signal-to-noise enhancer (SNE) technologies at UHF-band that automatically discriminate signals based on power level and only apply either limiting or enhancement to signals above threshold. The unique analog signal processing ability of these component technologies enable enhanced receiver functionality with improved dynamic range and resiliency.

Warfighter Value: Enable continuous reception of signals-of-interest and maintain communications links in electromagnetically congested and contested environments.

WHEN

Contract Number: N68335-17-C-0252 **Ending on:** November 23, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Demonstrate UHF-band FSL	Med	Measure FSL functionality at UHF-band	TRL 4	May 2018
Demonstrate UHF-band SNE	Med	Measure SNE functionality at UHF-band	TRL 4	September 2018
Deliver FSL and SNE to SPAWAR	Med	Deliver functional components to SPAWAR	TRL 4	October 2018

HOW

Projected Business Model: Metamagnetics will manufacture the Auto-tune Filter internally but will look to sell into channels via
1) The primes and their systems through a direct salesforce and manufacturer's reps
2) A distribution model through RF subsystem manufacturers

Company Objectives: Immediate goals are to establish a list of potential military systems. MUOS receivers and Link 16 communications would be the nearest term opportunities. Next would be to identified the primes making these systems. Long term, Metamagnetics will work with the primes and the PEOs to identify and solve gaps where the technology needs aid to transition.

Potential Commercial Applications: 5G macro cell stations, personal and commercial drone datalinks, satellite communications, hand held radios, and marine radar

Contact: Michael Hunnewell, Director of Business Development
mhunnewell@mtmgx.com 7815620756