

WHO

SYSCOM: ONR

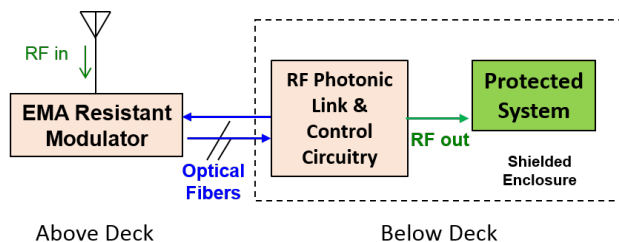
Sponsoring Program: ONR Code 31 - Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)

Transition Target: Surface Electronic Warfare Improvement Program (SEWIP)

TPOC:

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Other transition opportunities: NAVSEA Naval Undersea Warfare Center (NUWC) Integrated Topside (InTop) Innovative Naval Prototype Program Electromagnetic Maneuver Command and Control (EMC²) Program



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WHAT

Operational Need and Improvement: Electronic systems connected to radio frequency (RF) and microwave antenna require improved protection from advances in high-powered Electromagnetic Attack (EMA) capabilities. Typical metallic based antenna connections cannot fully shield an electronic system from the damaging effects of High Power Microwave (HPM) or Electromagnetic Pulse (EMP) signals. Current electronic protection devices and circuits provide limited security and limit the overall performance of the protected system.

Specifications Required: There are many different forms of EMAs so the exact amount of protection required varies. The exact power and time profile of the attack signal is highly dependent upon the type of antenna and the type of attack. The EMA-Resistant Modulator will withstand the specified power and time profile of an electromagnetic attack.

Technology Developed: PSI is developing a high-performance RF/microwave photonic link incorporating an EMA-Resistant Modulator device to protect a sensitive electronic system from damaging high energy signals while still providing a low-noise connection from the antenna to the receiver.

Warfighter Value: The EMA-Resistant Modulator incorporated in a low noise figure, high-dynamic range EMA-resistant RF/microwave photonic link protects highly sensitive electronic equipment from damage or destruction, saving extremely expensive government assets while enabling critical warfighter missions to continue without interruption.

WHEN

Contract Number: N00014-14-C-0177 **Ending on:** September 2, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Proof-of concept test, modified COTS modulator	N/A	Withstood pulsed power >500x higher than standard COTS modulator rated level	3	December 2013
EMA-resistant Modulator performance validation	Med	Successful test of modulator at peak power attack profile	4	August 2016
RF link with EMA-resistant modulator performance validation	Low	Successful test of RF link after exposure to peak power attack profile	5	August 2016
EMA-resistant link demonstrated in operational system	Low	System survives simulated EMA attack	6	September 2016

HOW

Projected Business Model: PSI intends to develop, market, manufacture and sell the EMA-Resistant Modulator and a variety of high performance EMA-Resistant RF Photonic Link products to RF/microwave system original equipment manufacturers (OEMs), prime contractors, and Department of Defense (DoD) agencies requiring high performance EMA system protection.

Company Objectives: PSI is seeking relationships with DoD program offices and their prime contractors to introduce this new capability, develop application specific performance requirements, and integrate the EMA-Resistant RF Photonic Link into systems for testing in relevant and operational environments.

Potential Commercial Applications: Any Navy/DoD or civil system using an antenna for RF or microwave signal reception is susceptible to an EMA attack and should have some protection to maintain operability. Therefore, critical defense and civil systems such cellular base stations, broadcast radio, broadcast television, and line-of-site microwave telecommunications equipment are possible applications requiring an EMA-Resistant RF Photonic Link.

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