Department of the Navy SBIR/STTR Transition Program

Statement A: Approved for Release. Distribution is unlimited.

Topic # N131-042 Multi-Function Mid-Wave/Long Wave Infrared Laser TeraDiode, Inc.

WHO

SYSCOM: NAVSEA

Sponsoring Program: PEO IWS 2.0

Transition Target: Surface Electronic Warfare Improvement Program (SEWIP) Block 4 (Planned for FY19, Q3, Starts FY19, Q1)

TPOC: (202)404-7683

Other transition opportunities: ONR FNC Combined EO/IR Surveillance and Response System (CESARS) (Planned transition for FY16, Q4; FNC Starts FY16, Q1)

Notes: Image Description -TeraDiode's high-power Mid-Wave Infrared (MWIR) Laser Module with nearly diffraction limited output beam. TeraDiode Inc. was established in 2009 as a spin-off from MIT's Lincoln Laboratory and



Copyright 2015, TeraDiode, Inc.

manufactures high brightness diode and semiconductor lasers for industrial and defense applications using its patented Wavelength Beam Combining (WBC) technology.

WHAT

Operational Need and Improvement: Low Size, Weight, and Power (SWaP) laser module also having wavelength range, brightness, pulsing and co-boresight capabilities supporting counter threat requirements. Higher power and brightness laser sources for emerging threats from electronic warfare (EW) systems.

Specifications Required: Multi-band, high brightness Infrared semiconductor laser for infrared countermeasure (IRCM) applications.

Technology Developed: State of the Art (SOA) semiconductor lasers are ideal to meet counter EW needs, except for lack of high beam quality; TeraDiode's WBC approach produces the high beam quality needed for these applications.

Warfighter Value: Next generation laser sources having sufficient output power over wavelength ranges needed for IRCM systems

WHEN Contract Number: N00024-15-C-4047 Ending on: April 30, 2017				
Milestone	Risk Level	Measure of Success	Ending TRL	Date
Achieve Required Wavelength Ranges (per Phase II Option)	Med	Demonstrate high power infrared QCLs and laser arrays.	6	October 2017
Achieve Beam Quality and Continuous Wave (CW) Output Power (per Phase II Option)	Med	Demonstrate a laser module with M2 < 2 Brightness (Nearly Diffraction Limited Output Beam)	6	October 2017
Complete Electronics Development	Low	Demonstrate multiple pulsed modes	6	March 2017
Co-boresight of multiple wavelength bands	Low	Demonstrate < 50 micron-radians	6	March 2017

HOW

Projected Business Model: TeraDiode plans to manufacture infrared laser modules in high volume for DoD programs, as well as dual-use commercial applications. Transition can be directly to the DoD and/or to the Prime and/or Sub-component Supplier.

Company Objectives: TeraDiode, Inc. is the leading high brightness direct diode laser company in the United States, producing 4 kW industrial lasers for metal cutting and welding applications. We are also introducing a high brightness line of MWIR lasers for both defense and commercial applications.

Potential Commercial Applications: The product will be a low SWaP-C multi-band laser module customized for Navy applications. This technology has many EW applications throughout the DoD. The technology of multi-band infrared laser modules developed under this SBIR program is intended to be dual-use for commercial and military applications including target illumination and detection, EW, terrain/object/building mapping, surveillance, construction, chemical and biological sensing, LADAR, free space optical communications, and noninvasive medical diagnostic applications.