Special Notice 11-SN-0025
Amendment 0002
Special Program Announcement for Office of Naval Research:
DARPA/ONR Field-Reversible Thermal Connector (RevCon) Challenge

I. INTRODUCTION:

This announcement describes a program thrust, entitled "DARPA/ONR Field-Reversible Thermal Connector (RevCon) Challenge," to be launched under ONR FOA12-002, "Fiscal Year 2012 Funding Opportunity Announcement (FOA) for Navy and Marine Corps Science, Technology, Engineering and Mathematics (STEM) Programs", which can be found at http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx. This special notice was previously announced under ONR's previous STEM FOA10-023 in order to allow sufficient time for potential post-secondary students interested in the program to arrange a faculty advisor before the start of the fall semester. However, proposals must be submitted under the new ONR FOA12-002. As a result, the requirements for proposal submission, evaluation, and award of any resulting grants will be subject to that described in ONR FOA12-002.

The purpose of this announcement is to focus the attention of the scientific community on (1) the area to be studied, and (2) the planned timetable for the submission of proposals. Amendment 0002 entirely replaces/supersedes the versions Special Notice 11-SN-0025 previously posted and provides additional information regarding the RevCon Device Testing requirement.

II. TOPIC DESCRIPTION: FIELD-REVERSIBLE THERMAL CONNECTOR CHALLENGE

The proposed topic will explore and exploit field-reversible, low-resistance, thermal connectors. The program will pursue novel design concepts for a field-reversible, low-resistance thermal connector which uses an applied, non-mechanical force to repeatedly assemble and disassemble an electronic module to/from an electronic enclosure, while providing a constant connector thermal resistance.

Background:

Thermal management of high power phased array radar and electronic warfare systems utilizes fluid flow within cold plates that interface with edge-cooled electronic assemblies in order to remove increasing amounts of heat from wide bandgap RF power amplifiers. This interface is typically a mechanical coupling (wedgelock) which results in poor thermal contact between the cold plate and electronic assembly.

Objective:

The Office of Naval Research (ONR) is interested in receiving proposals which demonstrate a novel design concept for a field-reversible, low-resistance thermal connector which uses an applied, non-mechanical force to repeatedly assemble and disassemble an electronic module to/from an electronic enclosure, while providing a constant connector thermal resistance. It is

expected that the resulting thermal resistance will be comparable to or better than that of typical commercial off the shelf (COTS) wedgelocks.

ONR plans to fund no more than fifteen individual awards with a value not to exceed $5,000 each. ONR expects these funds will primarily cover the costs of materials, fabrication, and test of the proposed RevCon concepts. Awards are expected to be primarily in the form of grants to universities with a faculty advisor. However, entities that are eligible to submit proposals are specified in the "Eligibility Information" in the ONR FOA12-002.

The project will culminate in the delivery of a final report documenting the design, assembly, analysis, and test of three RevCon prototypes, along with one working prototype, which will be demonstrated by April 30, 2012. Based on the quality of their submission, up to 5 teams will be invited to travel to Washington DC to present and demonstrate their RevCons to an audience of government and corporate technologists and tour several government facilities.

III. FULL PROPOSAL SUBMISSION AND AWARD INFORMATION

ONR anticipates only **grants** will be issued for this effort. All full proposals must be submitted through www.grants.gov in accordance with the full proposal requirements of ONR FOA12-002. The following information must be completed as follows in the SF 424 to ensure that the application is directed to the correct individual for review: Block 4a, Federal Identifier: Enter N00014; Block 4b, Agency Routing Number, Enter the three (3) digit Program Office Code (331) and the Program Officer's name, last name first, in brackets (Spector, Mark). All attachments to the application should also include this identifier to ensure the proposal and its attachments are received by the appropriate Program Office.

In ONR FOA12-002, Technical Proposals (Volume 1) are limited to 19 pages (not including the cover page, table of contents, resumes and current and pending project and proposal submissions information).

Recommended sections and page limits per section are:
[1 page] Executive Summary
[1 page] Problem Description
[3 pages] RevCon Concepts: Concepts and Strengths, Weaknesses, Opportunities and Threats (SWOT) or other analysis
[8 pages] Detailed description of selected concept: description, physical phenomena, modeling, analysis, thermal prediction, comparison to goals, failure modes
[3 pages] Manufacturing Plan: Engineering drawings, "design for manufacturability," manufacturing processes, cost analysis - 5-10, 1000, 10,000/yr
[2 pages] Preliminary Test Plan

Full Proposals should be submitted by 12:00PM EST on December 8, 2011. Full Proposals received after that date will be considered as time and availability of funding permit.

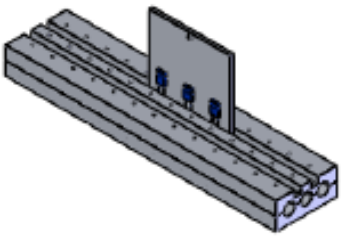
Funding decisions should be made by January 1, 2012**.** Projects will have an estimated grant award date of February 17, 2012, in order to allow student teams to fabricate their prototypes during Spring 2012 semester.

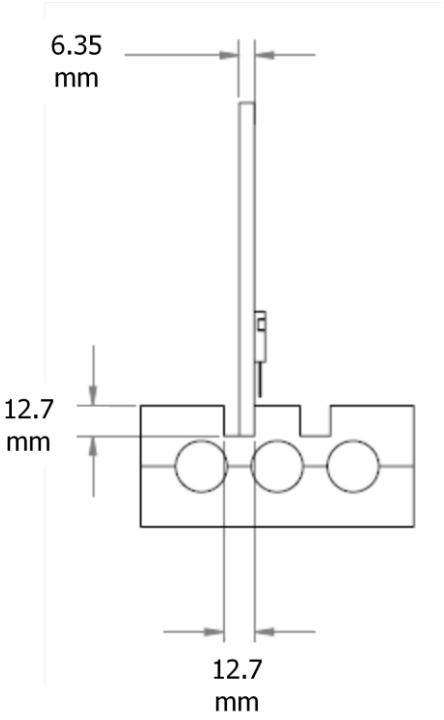
Although ONR expects the above described program plan to be executed, ONR reserves the right to make changes.

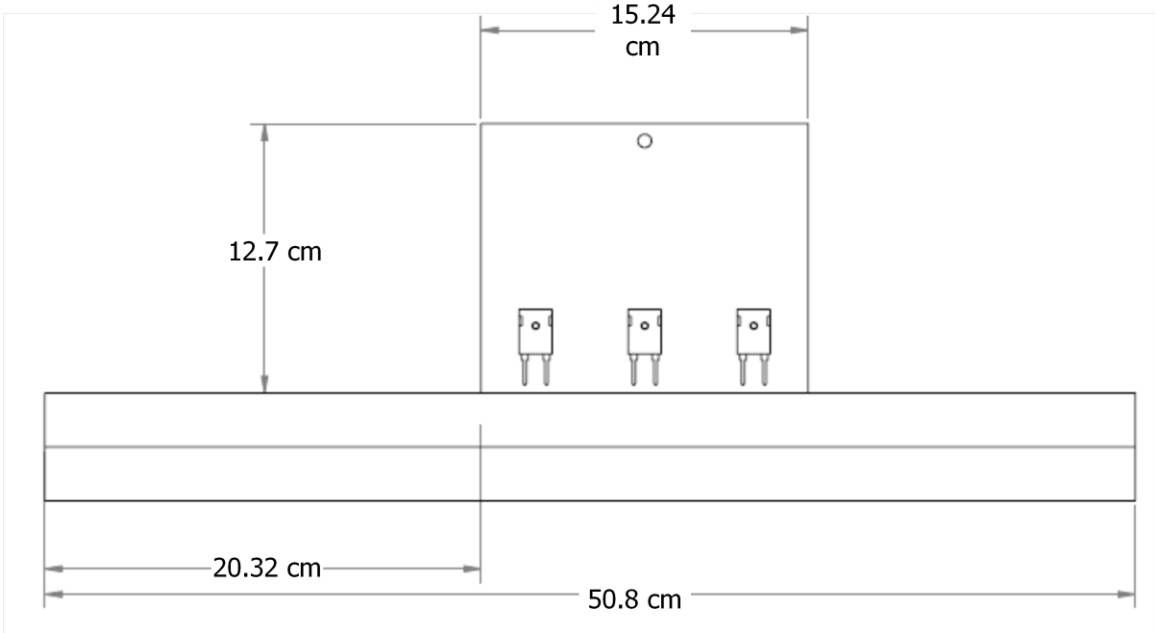
Device Testing:
The demonstration of the chosen teams' RevCons is expected to be carried out at The Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, MD. APL will provide the plate, test rig, cooling system, etc. for the test. Teams will only need to bring their thermal connectors.

Thermal connectors should be 10 cm in length, have a contact area appropriate for the test rig shown in the schematic below, and a thermal resistance comparable to or better than typical COTS numbers. The test rig schematic is shown below. The plate will be made of machined aluminum.

RevCon Test Rig







V. POINTS OF CONTACT

In addition to the points of contact listed in ONR FOA12-002, the specific points of contact for this announcement are listed below:

Technical Points of Contact:
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