SOCOM221-001: Low SWaP Tactical Ultra-Secure Communications System

MODERNIZATION PRIORITIES:

Control and Communications, Network Command

TECHNOLOGY AREA(S):

Electronics, Sensors

OBJECTIVE:

In the face of a rising near-peer threat to electronic communications, USSOCOM is looking for advances in ultra-secure communications systems, including Low Probability of Detection (LPD) / Low Probability of Intercept (LPI) features at the tactical level. Tactical teams are increasingly burden with large Size, Weight, and Power (SWaP) footprints but still require secure communications. The objective of this topic is to develop applied research toward an innovative capability to develop low SWaP Tactical Ultra-secure Communication Systems to allow operators to communicate safely in modern contested environments.

ITAR:

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with section 3.5 of the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

DESCRIPTION:

As a part of this feasibility study, the proposers shall address all viable overall system design options with a focus on developing a means of ultra-secure communications for the purpose of providing operators a low SWaP system to communicate safely in modern contested environments. The resultant solution must consider that the prime purpose of the system is to provide high bandwidth (>1Gbps) and reliable communications at the secure level while on the move. The communications system shall include at a minimum point to point terrestrial communication at a range of 3 miles and SATCOM communications. The feasibility study should consider various methods and techniques of LPD and LPI (including frequency agility, frequency aggregation; simultaneous bands; wide band, etc.) or features to accomplish secure communication while maintaining low SWaP. Low SWaP is considered < 500 grams with battery and antennas included. Proposers shall consider frequency coverage in the microwave and millimeter bands. If other bands are determined to be advantageous by the proposers, they should provide supporting information and will be assessed for their potential capability to enhance operator communication versatility while maintaining LPI/LPD.

PHASE I:

Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description." The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II:

Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a Low Size, Weight, and Power (SWaP) Tactical Ultra-Secure Communications System.

PHASE III DUAL USE APPLICATIONS:
This system could be used in a broad range of military applications where secure communications are required.

REFERENCES:
1) Department of Defense Instruction (DoDI) 8523.01Communications Security (COMSEC)

2) DoD Information Security Program: Protection of Classified Information 5200.01, Volume 3, https://www.dodig.mil/Portals/48/Documents/Policy/520001_vol3.pdf

KEYWORDS:
Low Probability of Intercept; Low Probability of Detection; SATCOM; satellite communications; ultra-secure communications

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