

Department of the Navy SBIR/STTR Transition Program

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MCSC-PRR-1349

Topic # N132-087

Compact Radar Antenna
RadiaBeam Technologies, LLC

WHO

SYSCOM: MARCOR

Sponsoring Program: JNLW Program

Transition Target: JNLW Program

TPOC:

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Other transition opportunities:

Other RF antenna/systems operating in similar bands.

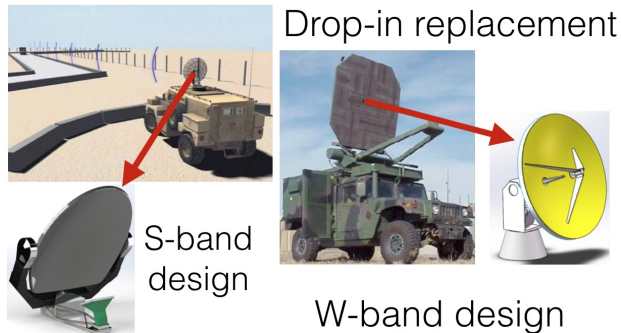
Notes:

JNLW: Joint Non-Lethal Weapons

Warfighter Value:

- Reduce size, < 1 m length
- S-band: 0.6 m2 aperture
- W-band: 0.45 m2 aperture
- Reduce weight, < 50 pounds
- Increase range and/or reduce power consumption
- Increase maneuverability, steerability
- Reduce injuries in Non-Lethal Weapons environment

Lightweight carbon fiber reflectors



Vehicle photos courtesy JNLWP.defense.gov; all others Copyright 2016, RadiaBeam Technologies

WHAT

Operational Need and Improvement:

Develop a compact, highly efficient antennas for 2 separate mobile high-power radar systems

- * One operating in S-Band frequency range (2.5-3.5 GHz)
 - Radio Frequency vehicle stopping and non-lethal counter-electronics missions
- * Second one operating in W-Band frequency range (95 GHz)
 - Non-Lethal counter-personnel Active Denial missions

Specifications Required:

S-Band system handling up to 20 megawatts peak power:

- > 25 dB gain; > 50% efficiency
- < 1 m length; < 0.6 m2 aperture
- +/- 5° x 15° steerability
- voltage standing wave ratio (VSWR) < 1.5

W-Band system handling up to 30 kilowatts peak power:

- < 1 m length; < 0.6 m2 aperture
- +/- 5° x 15° steerability
- VSWR < 1.5

Technology Developed:

- Superradiant, ultra-compact design
- Ultra-light and strong composite construction
- High peak and average power handling capability
- Multi-band capability

WHEN

Contract Number: M67854-15-C-6505 **Ending on:** September 28, 2017

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Develop Antenna Concept Designs	N/A	Successful validation and verification of individual models	3	1st QTR FY16
S-band full power demonstration	Low	Verify high power performance	5	2nd QTR FY17
W-band full power demonstration	Med	Verify high power performance	5	4th QTR FY17
Complete Phase II Extension	Med	Achieve required specifications	6	4th QTR FY17
Partner with Prime	High	System integration and operation	8	2nd QTR FY20

HOW

Projected Business Model:

- Develop prototype and partner with prime contractor
- License or sale technology to prime contractor

Company Objectives:

- RadiaBeam will continue to be industry leader in RF technologies
- Develop technology for Non-Lethal Weapon applications
- Sell technology to US Marine Corps and/or prime manufacturers

Potential Commercial Applications:

- Non Lethal Weapons for police
- Agricultural: plant defoliation, chemical-free weed control
- Power beaming from ground to air and space
- Radar antennas for remote environmental monitoring, traffic control, ground penetration, shipborne radars

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