

Topic: N08-033

JEM Engineering

Low Profile, Very Wide Bandwidth Aircraft Communications Antenna

JEM presents a low-profile, conformable antenna technology designed for the F-18 E/F/G which can provide UHF SATCOM and MUOS capability to air platforms. Our antenna has been prototyped and undergone basic testing against the platform specifications. In addition to the antenna, a suitable radio and associated electronics are needed for a fully operational system. Also, for the present design, the faring on the F-18G needs to be adapted to the E/F platform. JEM Engineering is a custom antenna development and fabrication company specializing in rapid development and prototyping for military and commercial customers.

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SYSCOM: NAVAIR

Contract: N68335-13-C-0071



Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-13-C-0071

Department of the Navy SBIR/STTR Transition Program

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JEM Engineering, LLC

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-265

Transition Target: F/A-18E/F

TPOC:

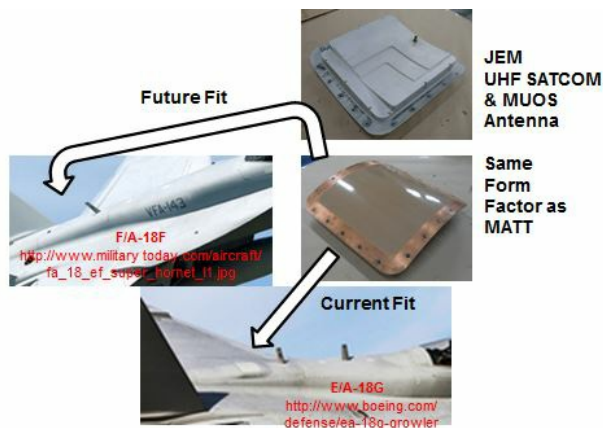
(301)342-9174

Other transition opportunities:

E/A-18G, B-1B

Notes: F/A-18E/F and E/A-18G do not have global FLTSATCOM or MUOS connectivity.

Objective: Develop a single antenna that is conformal and supports both UHF FLTSATCOM & MUOS



WHAT

Operational Need and Improvement: The F/A-18E/F aircraft will benefit from improved Beyond Line of Sight (BLOS) communications when operating in mountainous regions. UHF SATCOM and MUOS will give the aircraft global communications anytime and anywhere.

Specifications Required: Frequency: 244 - 380 MHz

Gain: P50 > 0 dBiC from zenith to 80 deg

Power: 150 W CW (max)

Weight: 7 LB

Form Fact: Identical to E/A-18G MATT Antenna

Flight Qual: NO

Technology Developed: - Artificial Magnetic Conductor Maximizes Efficiency

- New Radome Design Minimizes Antenna Size and Enables Low RCS

- Spiral Radiator Design Maximizes Circular Polarization Performance over Wide Field of View

Warfighter Value: Assures global reach-back.

WHEN

Contract Number: N68335-13-C-0071 **Ending on:** June 5, 2015

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Phase 2 Curved Demo	Med	RF Chamber Gain Meas.	4	October 2011
Phase 2.5 RCS Test	Med	ATK RCS Chamber	5	January 2014
Phase 2.5 FIT Test on E/A-18G	Low	Fit Test by AIR T&E Squadron VX-31 at PAX River, MD	6	December 2014
Vibration Shock Qual	High	Damage Assessment	6	April 2015
Flight Qualification	Low	Retrofit Fix and Re-test	7	April 2016

HOW

Projected Business Model: JEM intends to use the technology to develop and manufacture antennas for DoD and other government and commercial customers. Because we have relationships with the prime DoD contractors, we expect to be successful in marketing our technology to DoD prime contractors.

Company Objectives: To develop, market, and sell specific products using the technology, such as the one developed during the second phase II, to increase JEM's product offerings / portfolio.

Potential Commercial Applications: While useful for communications antennas on commercial aircraft, there is less incentive to replace blade antennas which perform the same function, unless there is a cost benefit from the decrease in drag (i.e., the cost of fuel increases significantly from current prices).

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