Lockheed Martin, Ball And Kratos Team On Advanced Phased Array For Air Force

Multi-band, Multi-mission satellite antenna prototype adds flexibility, lowers per beam cost



Artist illustration

VALLEY FORGE, Pa., Jul. 17, 2019 – Lockheed Martin (NYSE: LMT), Ball Aerospace, and Kratos Defense & Security Solutions, Inc. (NASDAQ: KTOS) were awarded a $7.2 million prototype agreement by the Defense Innovation Unit to develop a new Multi-Band, Multi-Mission (MBMM) prototype phased array as part of a broader initiative to modernize the existing Air Force Satellite Control Network and bring new technology faster to warfighters. MBMM enables multiple satellites to simultaneously connect with a single array antenna over multiple frequencies, a significant performance improvement compared to traditional single contact parabolic dishes.

The Lockheed Martin team is building prototype transmit and receive electronically steerable arrays (ESA). Each array uses Ball's advanced phased array technologies and supports L- and S-band frequencies initially. Signal processing is accomplished with Kratos' digital intermediate frequency (IF) technology and cloud-enabled quantumRadio.

"MBMM is a smarter way to quickly and affordably scale satellite transmission while lowering long-term maintenance costs for the Air Force," said Maria Demaree, vice president and general manager of Lockheed Martin Mission Solutions. "Today, when a parabolic antenna goes down, it can take days to repair; with MBMM, it will take hours and won't take the entire site offline – that's a tremendous advantage."

Extensive industry research comparing the costs of parabolic antennas to phased arrays over time show that while parabolic antennas have a lower upfront cost, they become much more expensive to maintain. Phased arrays avoid the mechanical maintenance and keyhole effects of parabolic antennas while providing graceful degradation and electronic agility in matching aperture performance to constellation demands.

“One electronically steered antenna can replace multiple dishes, enabling better performance, connectivity and affordability,” said Rob Freedman, vice president and general manager, Tactical Solutions, Ball Aerospace.

“Software modems deployed in virtual machines gives MBMM an advantage because it is easy to scale signal processing on a much faster timeline than previously,” said Frank Backes, senior vice president of Kratos Federal Space.

Future operational MBMM systems will offer new cyber resilience while reducing long-term sustainment costs for the Air Force. MBMM may eventually support multiple orbits from LEO to GEO and can perform multiple missions at the same time, including command & control (C2), launch pad and ascent operations, radar and mission data transmission. The Lockheed Martin/Ball team is one of several teams building prototypes for the government.

About Lockheed Martin

Headquartered in Bethesda, Maryland, Lockheed Martin is a global security and aerospace company that employs approximately 105,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

About Ball Aerospace

Powered by endlessly curious people with an unwavering mission focus, **Ball Aerospace** pioneers discoveries that enable customers to perform beyond expectation and protect what matters most. Ball creates innovative space solutions, enables more accurate weather forecasts, drives insightful observations of our planet, delivers actionable data and intelligence, and ensures those who defend our freedom go forward bravely and return home safely.

About Kratos Defense & Security Solutions

Kratos Defense & Security Solutions, Inc. (NASDAQ:KTOS) develops and fields transformative, affordable technology, platforms and systems for United States National Security-related customers, allies and commercial enterprises. Kratos is changing the way breakthrough technology for these industries are rapidly brought to market through proven commercial and venture capital backed approaches, including proactive research and streamlined development processes. Kratos specializes in unmanned systems, satellite communications, cyber security/warfare, microwave electronics, missile defense, hypersonic systems, training, combat systems and next generation turbo jet and turbo fan engine development. For more information go to www.KratosDefense.com.

---

https://news.lockheedmartin.com/news-releases?item=128771&trk=public_profile_project-button