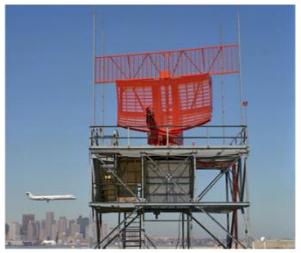
FLEX-HYBRID ELECTRONIC X-BAND ANTENNA ARRAYS FOR NEXT GENERATION OF DEPLOYABLE ANTENNAS

SI2 Technologies, Inc. (SI2) has teamed with Raytheon and the University of Massachusetts – Lowell (UML) to develop a Flex-Hybrid Electronic (FHE) X-band antenna array Technology Platform Demonstration (TPD). As shown in the figure, the array TPD leverages three key technologies needed for an affordable phased array system: 1) SI2's printed phased array elements, 2) UML's printed electronic components, and 3) Raytheon's low-cost T/R modules. A flexible FHE array will be manufactured which will represent a subsection of the full FHE array. This flexible array can be mounted on a rigid frame for testing. The proposed TPD will open new market applications for phased arrays. Increasing the number of applications will help drive growth in the FHE ecosystem. In addition, the FHE manufacturing technologies demonstrated here are applicable to other FHE applications such as wireless human and asset monitoring.

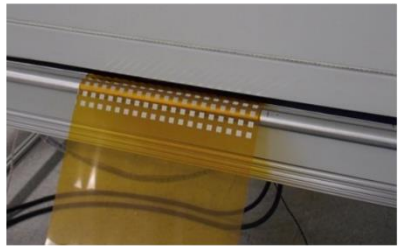
PLANNED DEMONSTRATION

Conventional Antenna



Rotating Dish Antenna
- Mechanical dish = Maintenance issues
- Slow scanning
- Low cost

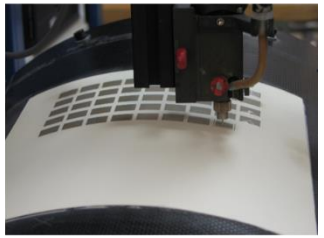
FHE Phased Array



Phased Array Antenna
- No moving parts
- Fast scan
- Reduced cost

Phased array printed onto flexible substrate
- Printed elements *(SI2)*
- Printed electronics *(UML)*
- Flex-mounted T/R modules *(Raytheon)*

Flexible array mounted on support



SI2 Printed X-Band Array

Team

Lead: SI2 Technologies

Partners: Raytheon and UMass Lowell

Objective / Deliverables

- **Objective - Demonstrate FHE X-band array:**
  - **Flexible and conformal vs. planar and rigid**
  - **Lower costs vs. conventional phased arrays**