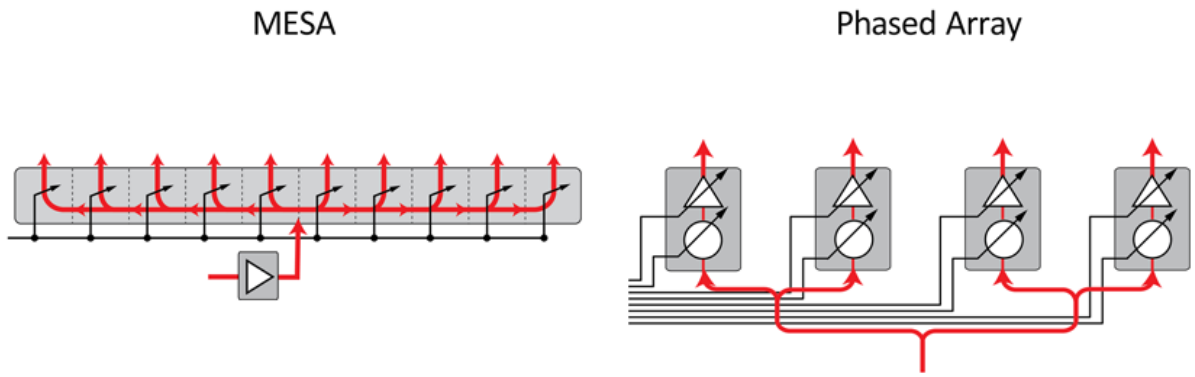
Echodyne uses metamaterials to make drone sized radar system

November 10 2016, by Bob Yirka



Credit: echodyne

(Tech Xplore)—Bellevue, Washington-based Echodyne has announced the successful testing of a new type of radar system that is both smaller and less expensive than other radar systems currently in use. The new system, company rep Erika Shaffer reports, relies on metamaterials to provide services similar to those seen on very expensive military craft at a much lower price. Eben Frankenberg, CEO of the company has also been speaking to the press about the new system.

The device is based on what the company calls a "metamaterial electronically scanning array"—it provides detection and avoidance services for unmanned craft, such as a drone—all in a package slightly

larger than the average smart phone. In practice, such technology would be very similar to the way bats use sound to avoid running into obstacles.

In the test, a drone was flown using the new radar as an object detection device—just after it took off, the radar system was able to detect a nearby barbed wire fence; moments later, it detected trees and other terrain and then another drone that was directed into its airspace after it achieved cruising altitude. Such technology, Frankenberg suggests, will be necessary for drones to be used for out-of-sight autonomous flights—an activity that is currently banned by the FCC.

The metamaterial used in the radar system exists in the form of an antenna that actually changes its physical shape to steer the radar beam that it emits—a necessity for tracking moving objects. The change comes about by heating different parts of the antenna, which is made of multiple layers of copper wiring laid down on a circuit board in a very precise way. Testing has shown the radar system capable of spotting small aircraft as far away as 1.8 miles within a 120-degree field of view.

The startup has already been pledged approximately $15 million by investors, one of which is Bill Gates. Frankenberg believes the new radar system will be ready for sale sometime next year and while initial prices are expected to be approximately $10,000, he suggests strong sales should bring that number down significantly, especially if they wind up in cars (as a possible replacement of LIDAR), which is a major goal for the company.

More information: echodyne.com/

Citation: Echodyne uses metamaterials to make drone sized radar system (2016, November 10)