

## **SEE THROUGH THE WALL RADAR SYSTEM Experimental License Request**

### **Purpose of Operation:**

Raytheon Network Centric Systems (NCS) shall design, integrate test and demonstrate the capabilities of a (SEE THROUGH WALL RADAR system).

## **Through The Wall Detection**

The files below show results of recent experiments to explore the capability of our second generation imaging radar to detect stationary individuals through interior walls. At the right is a figure that shows the geometry for the tests. The imaging radar is at zero range in the figure with an 8' x 8' stud wall faced with a single sheet of drywall at a distance of 2.5 meters (8.2') from the radar. In the test, a person walks from behind the radar around the left side of the wall, circles around the chair at 5.8 meters (19') and then sits down attempting to stay as motionless as possible. After a period of time, the person gets up out of the chair and walks back toward the radar and around the left side of the wall. The two video clips shown use different motion detection algorithms - one designed for detecting large motions and the other for small motions. Note that with the large motion detection algorithm, the person disappears from the image when stationary.

Here are some images of our most recent hardware and experiments.

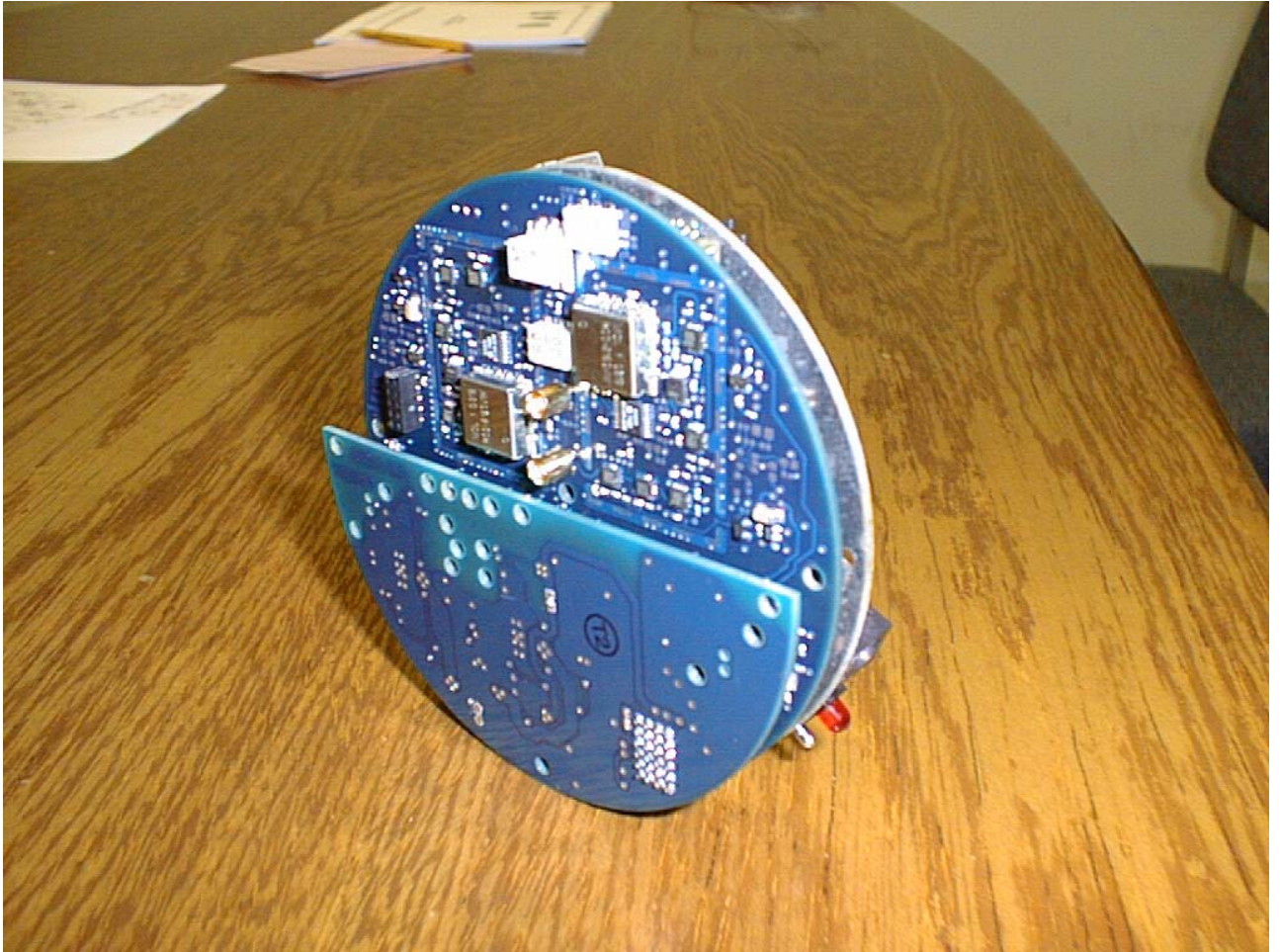


Looking through a concrete wall.



Is anybody home downstairs?





Our radar.



Field test enclosure.





Roof top mounted array for synthetic aperture imaging.

**STA Explanation:**

To enhance Raytheon's capabilities in the area of enemy detection and soldier protection, Raytheon Company needs to perform system integration and test on various design solutions using off the shelf commercial components. The current radar under evaluation (STTW System) is a commercially available see through the wall surveillance radar and it is proposed that this radar will operate at the McKinney facility and provide track data for integration with the command and control systems under development. Transmission from the radar is necessary to provide realistic track information to validate the system specifications.