

ViSAR Program Test Plan
For Radar operation in El Segundo California

1.1 Scope of this document

This document is intended to provide an overview of the proposed testing of the Video Synthetic Aperture Radar (ViSAR) system in El Segundo California.

1.2 Background

The ViSAR Radar System is millimeter wave radar that operates from 231.5 GHz to 235 GHz. The purpose of the ViSAR Program is to develop an all-weather air to ground imaging and Dismount Moving Target Indication (DMTI) millimeter radar system. The objective ViSAR Radar System will operate in an AC-130 gunship and will be used to identify and track vehicles and dismounts through fog, smoke and clouds. Additional goals of the objective ViSAR Radar System are fire control and friend or foe identification, using RF ID. The demonstration ViSAR Radar System is designed to be installed in a DC-3 aircraft, to detect moving dismounts, moving ground vehicles and produce SAR images at an update rate of at least 5 Hz through fog, smoke and clouds. Airborne Imaging Co. will be the flight test vender for the demonstration phase of the ViSAR program. Their airfield is located in Midlothian Texas, approximately 30 miles south of Dallas and 120 miles north of Ft. Hood.

The ViSAR hardware consists of sensor hardware mounted on a Gimbal and back-end processing hardware mounted in racks. The gimbal mounted hardware includes the: Gaussian Optical Antenna (GOA) Array, Up/Down Converter, Medium Power Amplifier (MPA), High Power Amplifier (HPA), Inertial Navigation System (INS) and a Spotting Camera. The back-end rack mounted hardware includes an X-Band Receiver/Exciter (REX) a Common Integrated Signal Processor (CISP), an Annapolis Signal Processor and a Radar Power Supply (RPS). The system transmits 50 Watts through a mechanically scanned GOA. The gimbal, and the Gimbal mounted hardware will observe the ground from the side of the aircraft. The gimbal mounted hardware is shown in Figure 1.

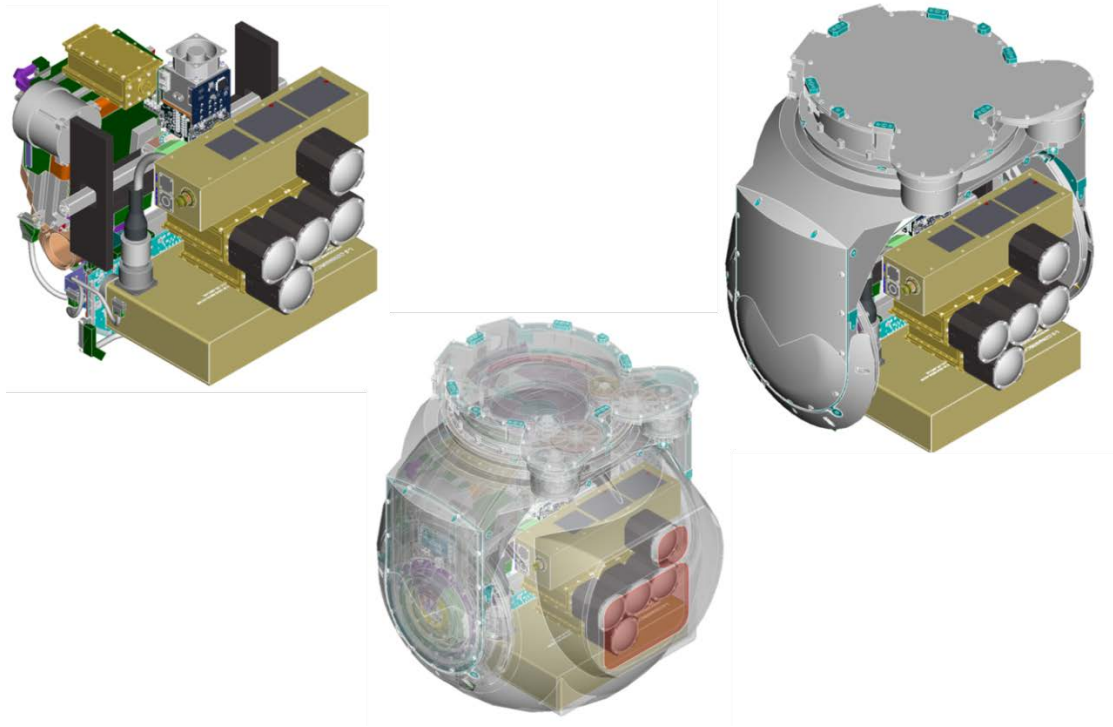


Figure 1 The Gimbal Mounted ViSAR System Hardware

1.3 Facilities Location

ViSAR integration and test activities will be performed primarily within the Radar System Integration Laboratory (RSIL)s located in the E1 building at Raytheon Space and Airborne Systems, El Segundo CA, at 2000 E. El Segundo Blvd

Test targets will be installed on the roof of another nearby Raytheon facility (R9) located approximately 2 kilometers to the north of the RSIL at 2222 E. Imperial Hwy. See Figure 2.

The ViSAR system will also image some of the terrain located within the confines of the Raytheon facility as shown on figure 3.



Figure 2 Location of the Radar and Targets

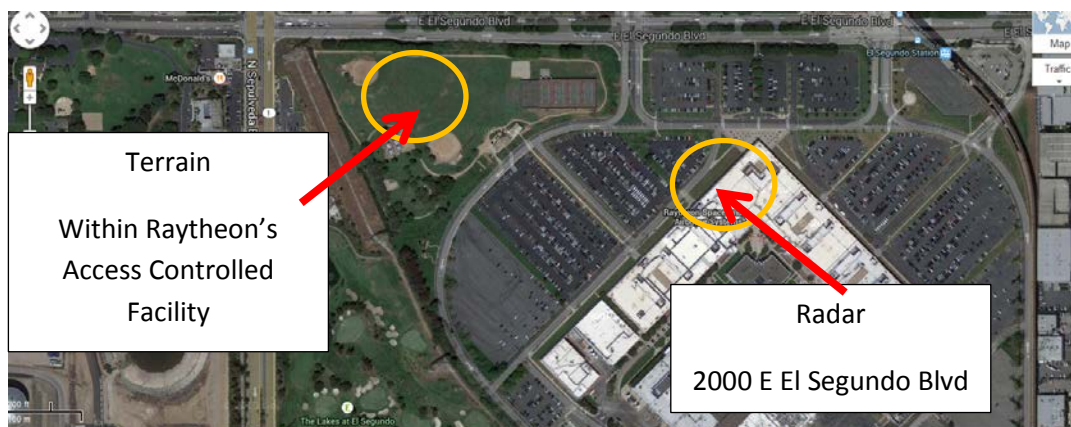


Figure 3 Location of Terrain to be Imaged

1.4 Radar Specifications

Center Frequency:	233.25 GHz
Bandwidth:	3.5 GHz (231.5 to 235.0 GHz)
Modulation type:	Linear Frequency Modulation
Peak Power:	50 Watts
Transmit duty:	45 %
Antenna Azimuth Beamwidth:	1.4 degrees
Antenna Elevation Beamwidth:	1.4 degrees

1.5 Points of Contact

The following personnel are available in the event that the ViSAR system needs to shut down or remain powered off.

Brian Lloyd	310 616 1264 lab phone	800 316 0410 pager
Fred Dominski	310 334 6378 desk	
Tim Dearden	310 647 2756 desk	