

SRI International S-band Radar Experiment

This document describes SRI International's S-band land based and airborne radar experiment which is the subject of this FCC Special Temporary Authority application.

Experiment Description

SRI has been testing an experimental S-band radar system, the most pertinent of which file number 0166-EX-CM-20198. SRI is seeking a STA to facilitate operations of airborne flights to test its S-Band radar system. These flights are scheduled for November and December 2019 and are centered around Butlerville, IN. Flights are expected to take place up to 20,000 ft AGL. The radar system is designed to generate synthetic aperture radar (SAR) and interferometric synthetic aperture radar (InSAR) imagery for the purpose of measuring land deformation. The radar system is built by SRI International and consists of a custom transmitter and receiver unit and utilizes an antenna with up to 21 dB gain. SRI is seeking to operate in a 40 mi radius centered on 39.05°N, 85.53°W, as depicted in Figure 1.

Radar Description

SRI is using the same radar system and auxiliary equipment granted under Call sign WJ2XNG. The pertinent details of which are summarized in Table 1, below. Additionally, a block diagram of the system is included for reference Figure 2, below.

Flight

SRI is requesting the STA license to operate the radar and comm link at any location within a 40-mile radius of 39.05°N, 85.53°W. During airborne testing, the antenna will be mounted to the aircraft in a fixed orientation. As the aircraft flies, the antenna's azimuth pointing direction will change with respect to the aircraft flight pattern, thus the antenna could be pointed in any azimuth direction. The antenna will be pointing at a fixed location on the ground corresponding to a 1.1 km x 1.8 km footprint (2 km²). The airplane may fly up to a maximum altitude of 20,000 ft AGL.

During the experiment, SRI operators will be able to disable the radar and/or radio transmitter at any time. Transmission of the radar and/or radio can be stopped by contacting either of the following SRI personnel:

- Lauren Wye: 650-678-9184
- Simon Lee: 805-801-9223

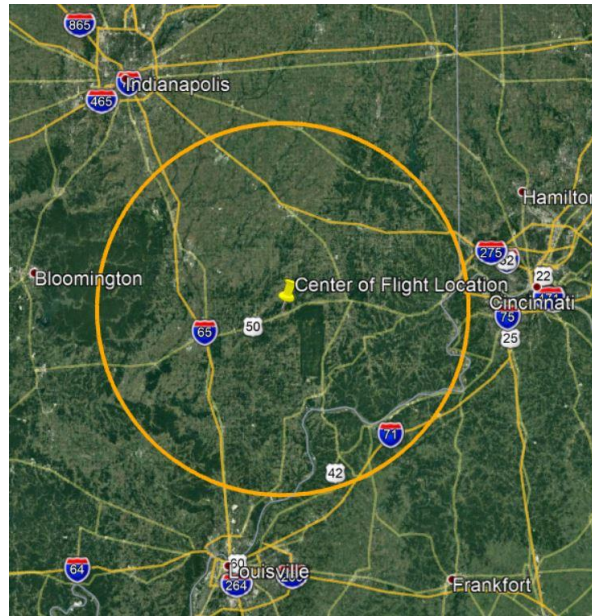


Figure 1. Desired area of operation, 50 mi radius centered at 39.05°N, 85.53°W.

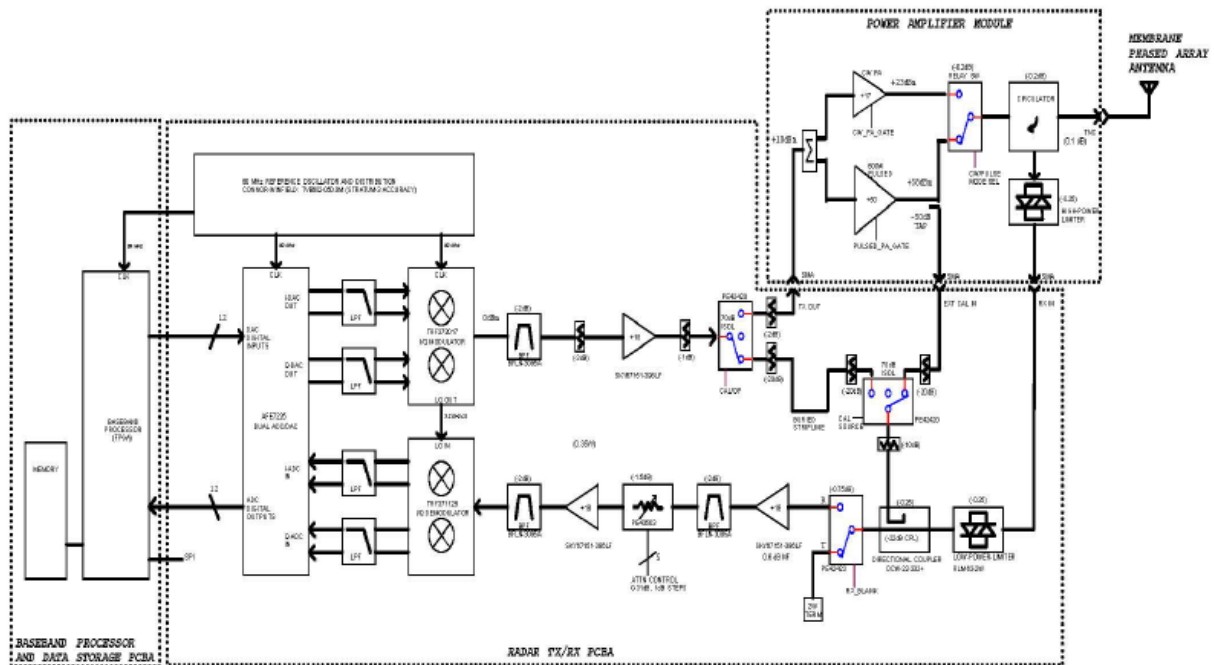


Figure 2. SRI International Experimental S-band Radar System

Table 1. Radar and Comm Link Transmitter Parameters

	Radar Payload Transmitter	UHF Radar Payload Comm Link Transmitter	UHF Ground Station Comm Link Transmitter
Frequency Range	2.93625 to 3.35 GHz	910 to 920 MHz	910 to 920 MHz
Bandwidth	200.0 MHz	10 MHz	10 MHz
Emission Designation	200MM3N	10M0F3D	10M0F3D
Waveform Type	Pulsed linear FM chirp	Chirp Spread Spectrum	Chirp Spread Spectrum
Transmit Power, Avg	60 W	1 W	1 W
Transmit Antenna Gain	21 dBi	3 dBi	13.5 dBi
EIRP, Avg	7500 W	2 W	22 W
Transmitter Part Number	SRI custom	Digi XLR Pro	Digi XLR Pro
Antenna Part Number	SRI custom	L-Com HG903RD-SM	KP Performance KPPA-900DP-FP

Key Changes from FCC Experimental Licenses already Granted

- Area of operation: 40-mile radius centered on 39.05°N, 85.53°W