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SRI International S-band Land Based and Airborne Radar Experiment

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

Experiment Description

SRI is planning to test an experimental S-band radar system starting in February 2018. 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. The radar system will be tested and operated in stationary ground configurations, on ground vehicles, and on aircraft. SRI is seeking a license to operate the radar in the vicinity of Ann Arbor MI, Muskegon MI, Menlo Park CA, Crow's Landing CA, Tracy CA, Baltic SD, and Elko NV.

Ground-based outdoor, airborne, and land based testing of the radar system will begin in March 2018 and continue through February 2020. Radiative testing of the system will be infrequent: less than one week of outdoor and flight testing per month at 4 hr intervals or less.

Radar Description

As discussed above, the radar consists of a custom S-band transmitter and receiver unit designed and built by SRI International. The radar transmits a linear FM chirp signal over 2.9 to 3.1 GHz. The waveform has a 200 MHz bandwidth. The transmitter outputs the waveform with an average power of 60 W. A 21 dBi gain antenna is used with the transmitter, resulting in an EIRP of 7500 W average.

During ground-based outdoor testing, the antenna will be placed on the roof of an approved facility or other raised platform and pointed down to the ground. Additional ground based testing would include operation from a truck, car, man-lift, or other ground based moving platform. The antenna could be oriented in any azimuth direction during testing. 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.

Figure 1 below shows a schematic of the SRI S-band radar system.

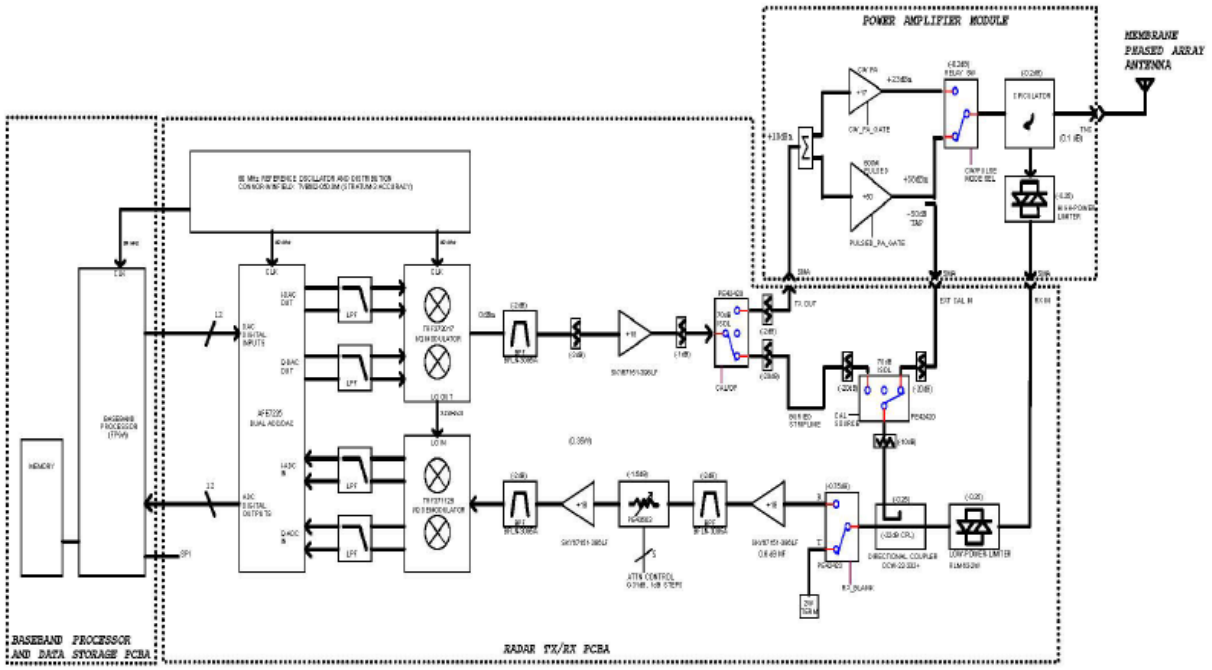

Figure 1. SRI International Experimental S-band Radar System

Key Details from FCC Temporary Experimental License Application

- FCC file number: 0142-EX-CN-2018
- Frequency band: 2.9 to 3.1 GHz
- Bandwidth: 200 MHz
- Emission designation: 200M0M3N
- Waveform type: linear FM chirp
- Antenna beamwidth: 31 deg
- Avg transmit power: 60 W
- Avg transmit EIRP: 7500 W
- Locations of operation: Ann Arbor, MI; Muskegon, MI; Menlo Park, CA; Crows Landing, CA; Tracy, CA; Baltic, SD; Elko, NV
- Radius of operation at each location: 100 km