

Conventional Experimental License File Technical Exhibit

Purpose Note

SRI is submitting this conventional experimental license request to continue support testing of an experimental marine radar system. This is a follow-on application from Experimental License File number 0151-EX-CN-2026 call sign WQ2XEZ. The antenna and transmitter are updated from the Experimental License grant. Testing will continue over a two-year period at the following locations:

- Menlo Park, CA (37.45° N, 122.18° W), operational radius of 80 km
- Boulder, CO (40.02° N, 105.27° W), operational radius of 80 km
- Ann Arbor, MI (42.28° N, 83.74° W), operational radius of 80 km
- Virginia Beach, VA (36.84° N, 75.80° W), operational radius of 25 km
- Gulfport, MS (30.35° N, 89.09° W), operational radius of 80 km
- San Diego, CA (32.70° N, 117.08° W), operational radius of 80 km
- Monterey, CA (36.60° N, 121.88° W), operational radius of 80 km
- Baltimore, MD (39.18° N, 76.47° W), operational radius of 25 km
- Dahlgren and Quantico, VA (38.44° N, 77.18° W), operational radius of 25 km
- **NEW LOCATION: Boise, ID (43.42° N, 116.20° W), operational radius of 80 km**

SRI requests the window of operations to start September 1, 2026 and continue until May 1, 2028. Expected usage during this period is 8 hours a day approximately for up to 10 days per month. SRI International is a non-profit scientific research institute, more information about SRI may be found at <https://www.sri.com/about-us/>.

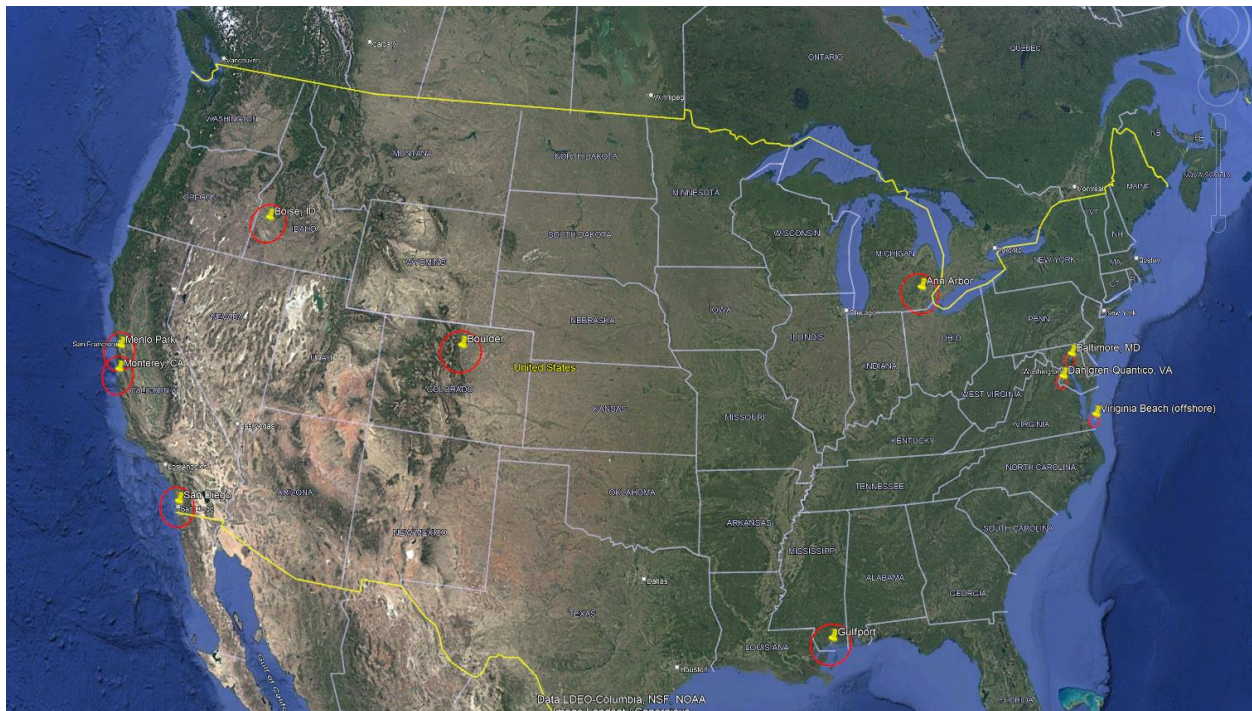


Figure 1. SRI's requested testing areas for the experimental marine radar system

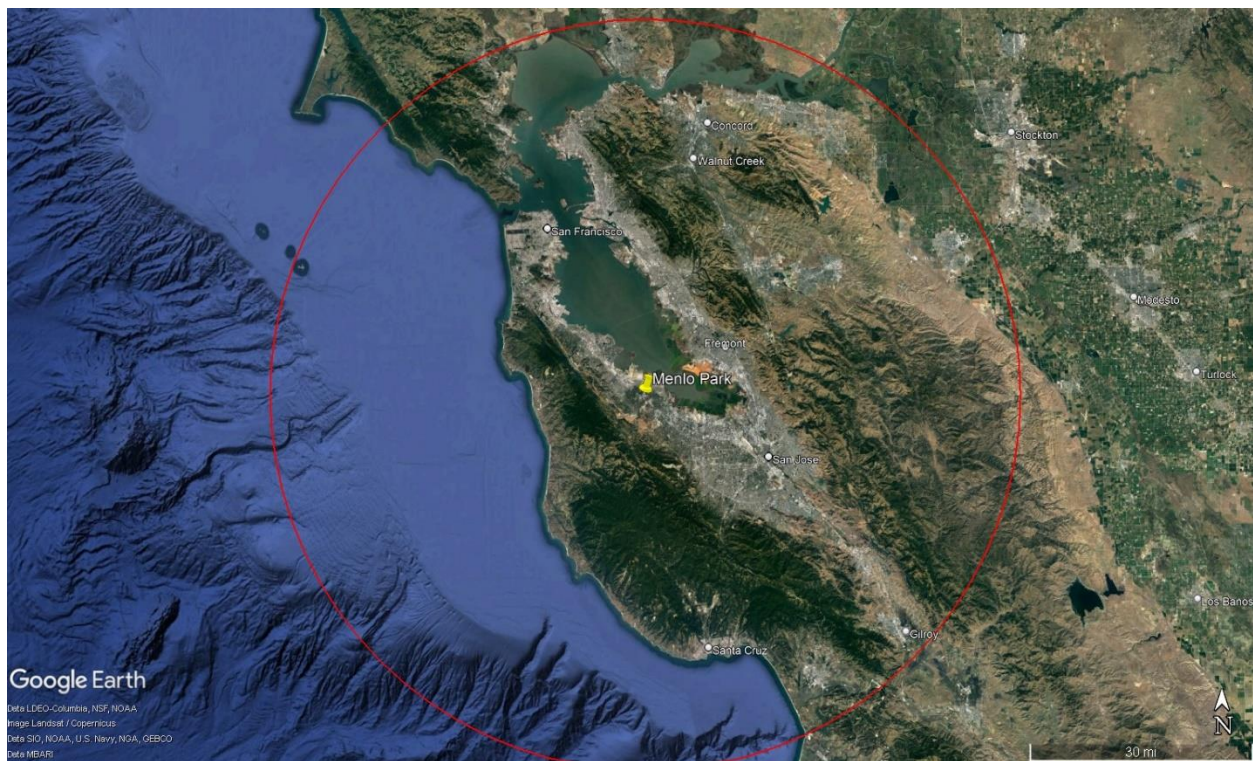


Figure 2. Requested testing area within 80 km of Menlo Park, CA

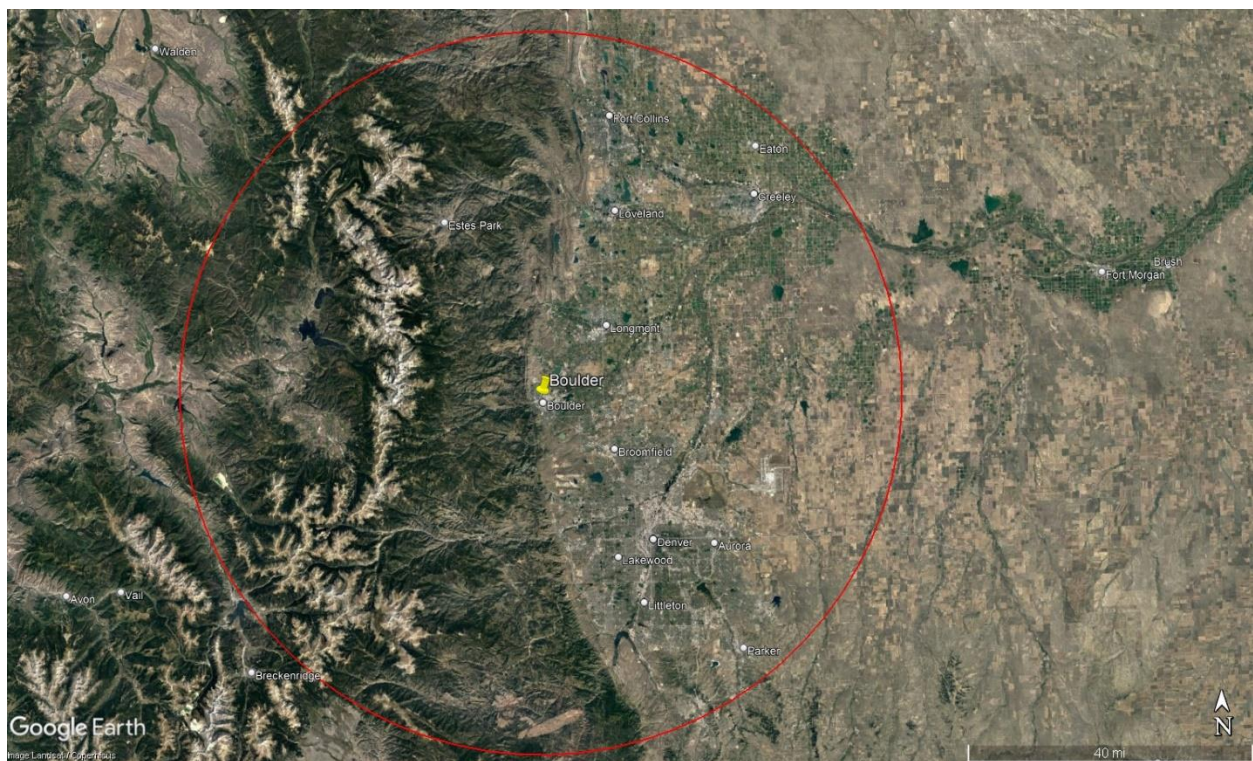


Figure 3. Requested testing area within 80 km of Boulder, CO

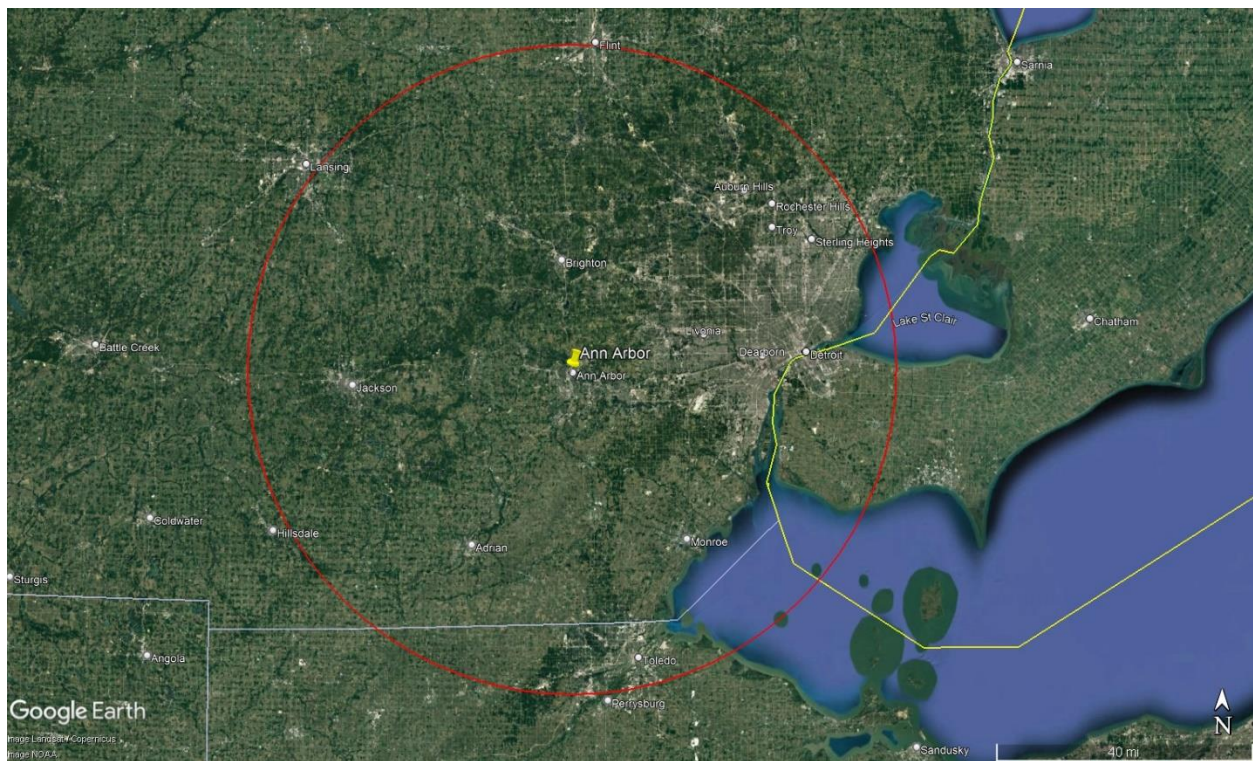


Figure 4. Requested testing area within 80 km of Ann Arbor, MI

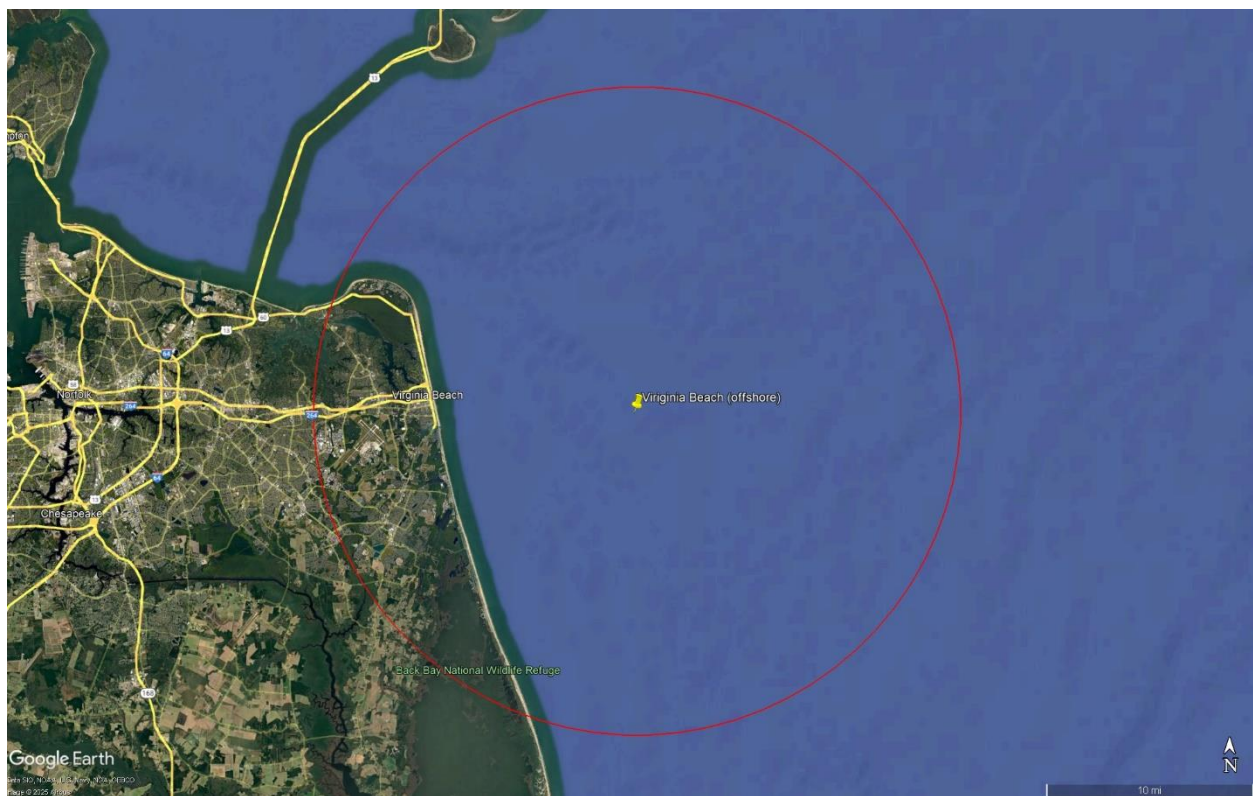


Figure 5. Requested testing area within 25 km of Virginia Beach, VA

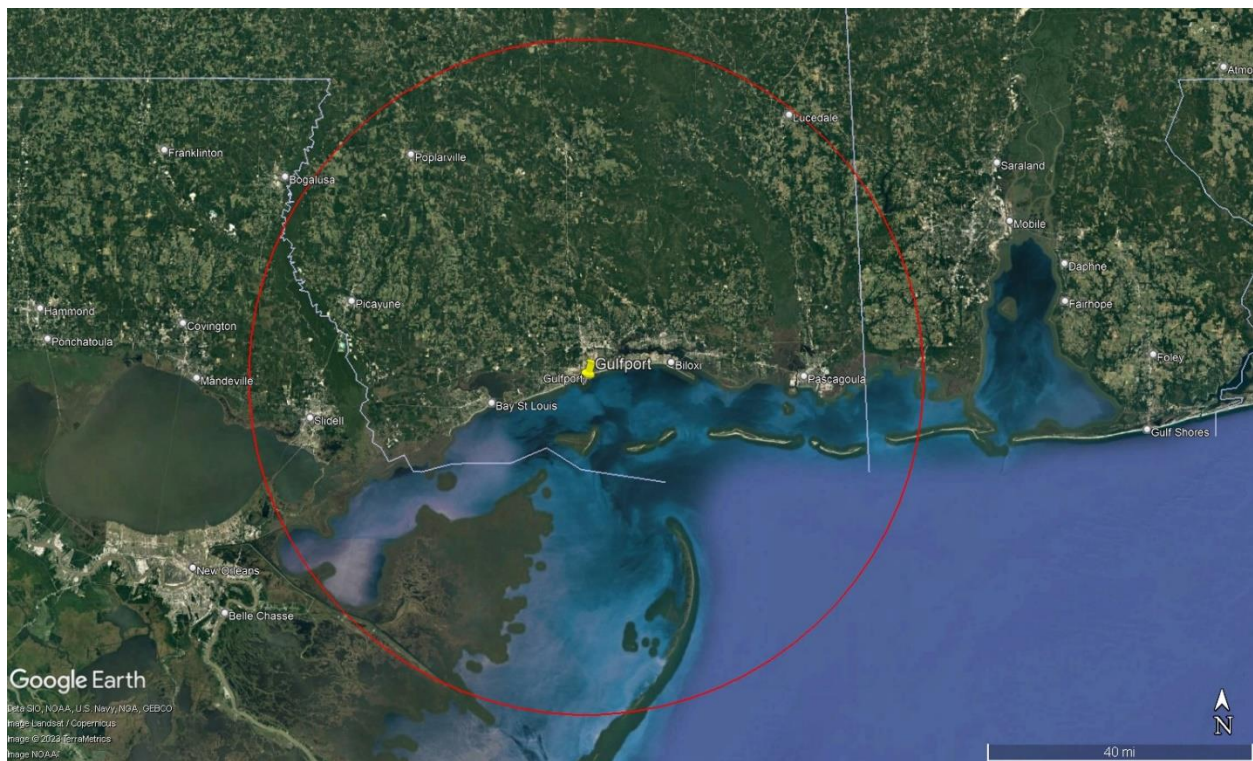


Figure 6. Requested testing area within 80 km of Gulfport, MS

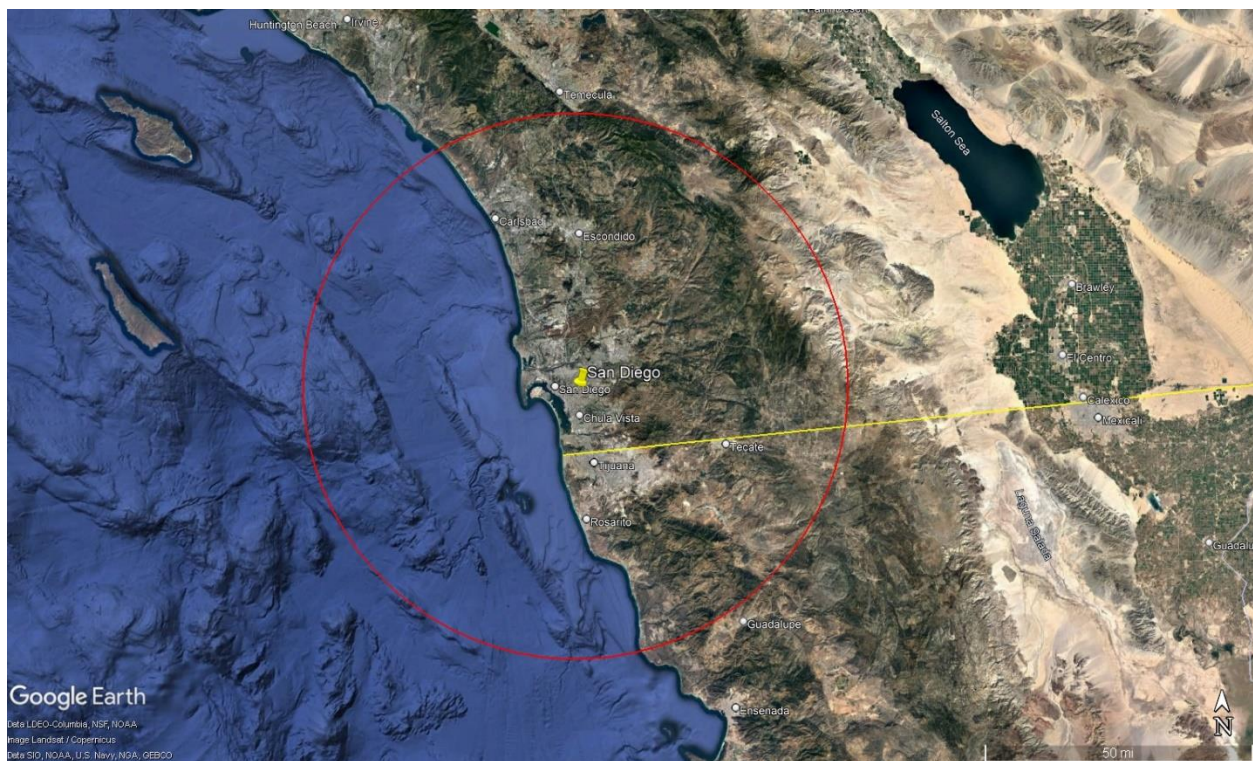


Figure 7. Requested testing area within 80 km of San Diego, CA

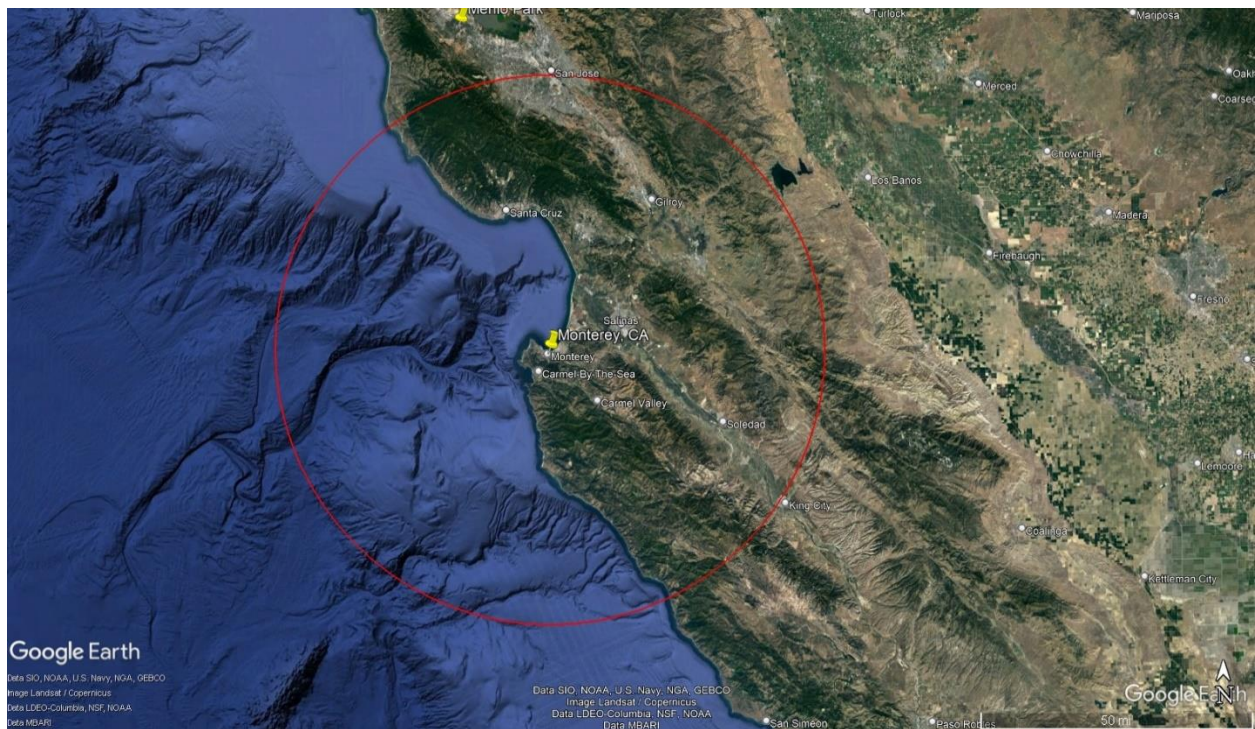


Figure 8. Requested testing area within 80 km of Monterey, CA

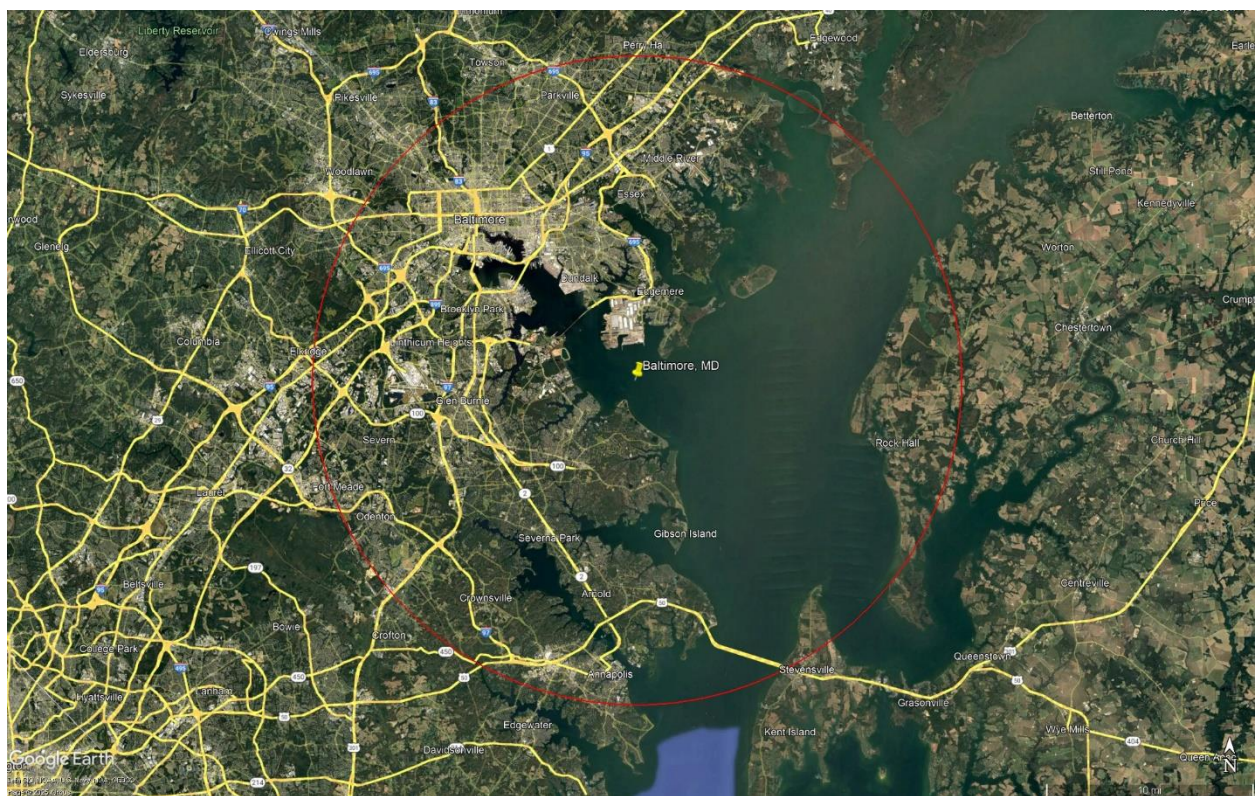


Figure 9. Requested testing area within 25 km of Baltimore, MD

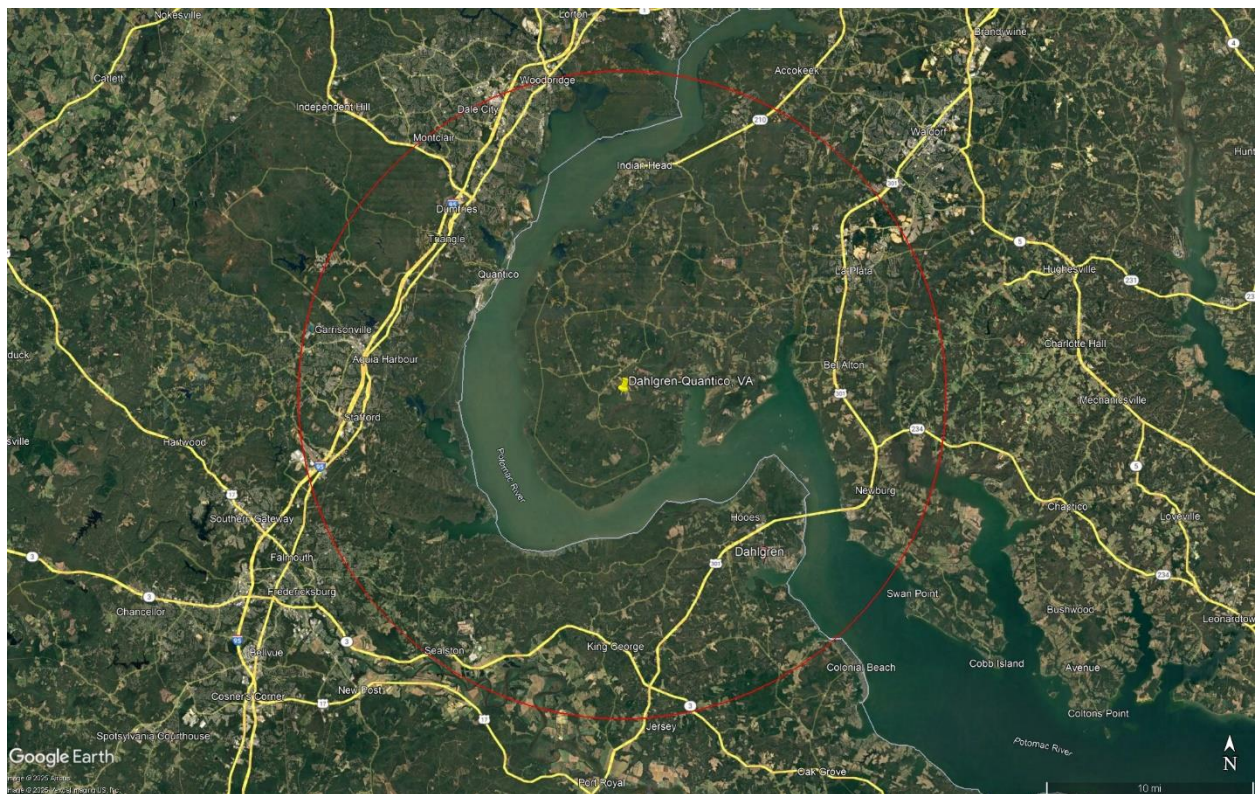


Figure 10. Requested testing area within 25 km of Dahlgren and Quantico, VA

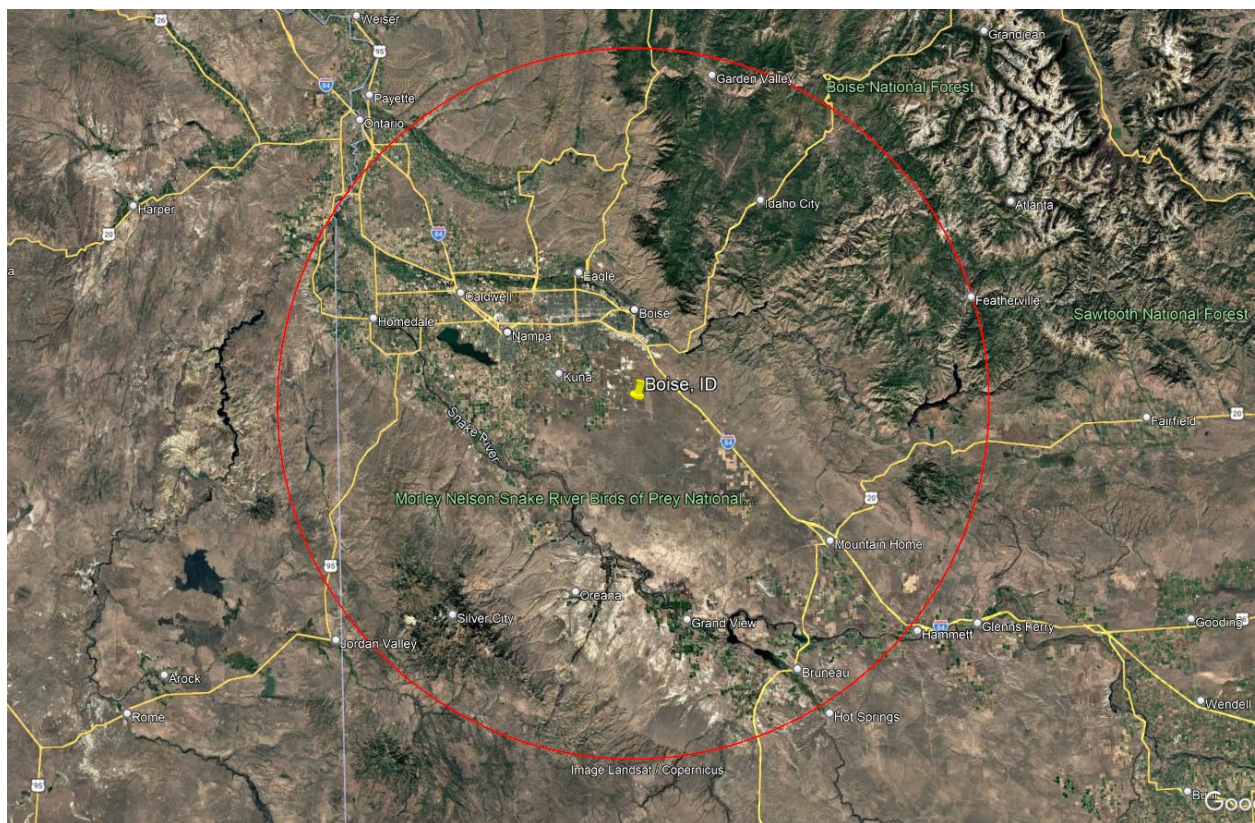


Figure 11. Requested testing area within 80 km of Boise, ID

During testing, SRI engineers will be directly operating the radar and will have the ability to immediately turn off the radar should the need arise:

Persons of Contact:

- Justin Landrum: 415-519-2979
- Ryan Peterson: 734-255-3151

Marine Radar Description

The radar is a custom system developed by SRI International intended for marine navigation. It is comprised of four software defined radios, followed by an Intermediate Frequency (IF) to Radio Frequency (RF) frequency converter for each radio, followed by four active, electronically steered phased array (AESA). The AESAs are arranged in a square configuration, which each antenna covering a 90-degree sector of the horizon. The AESA is custom hardware manufactured by EMAG Technologies. The system will be tested on land using a tripod less than 2 m tall or on a small marine vessel where the antenna will be mounted less than 5 m above the water line. The transmit beam is steerable elevation and azimuth directions. In elevation, the beam will be directed between -30 and +60 degrees of the horizon, with a half-power, full-width of 13 degrees. The transmitter may be pointed in any azimuth direction, and the azimuth beamwidth is 4.2 degrees. The transmitter output power envelope will be pulsed with a duty factor not to exceed 30%, and pulse duration will not exceed 100 μ s. The mean ERP will not exceed 18 kW, and the peak ERP will not exceed 60 kW.

Signal Descriptions

Emissions will be confined to the 8,500 – 9000 MHz and 9,200 – 10,000 MHz bands at all testing locations. SRI can control where the signal emission falls within these two bands and associated sub-bands. This allows SRI's transmitter system to be used in allowed frequency bands without interfering with nearby transmitters and receivers that may also operate in those bands. Overall pulse amplitude will be Tukey window shaped with sharpness varying between rectangular and raised-cosine. Within the windowed pulse, un-modulated, frequency modulated, and phase modulated emissions will be generated at different times. Since our system's waveform generator is a software defined radio, we can modify some parameters, including notching frequencies in some modes, if required. Below are further details on each emission defined in the application.

100KP1N, on/off modulation

- The signal within the pulse envelope will be CW. The bandwidth is stated as 100 kHz due to spreading from the not-to-exceed 50 kHz pulse rate.
- This emission is limited to frequencies of 8,500 – 9,000 MHz and 9,200 – 10,000 MHz

500MQ1N, pulsed frequency hop

- The signal within the pulse envelope will frequency hop in an unspecified order over a bandwidth of up to 500 MHz
- This emission is limited to frequencies of 8,500 – 9,000 MHz

800MQ1N, pulsed frequency hop

- The signal within the pulse envelope will frequency hop in an unspecified order over a bandwidth of up to 800 MHz
- This emission is limited to frequencies of 9,200 – 10,000 MHz

Request for Detailed Problem Description if Conventional Experimental License cannot be approved

If the FCC cannot approve this Conventional Experimental License, SRI requests a description of the issues involved, so that we can efficiently modify the Conventional Experimental License to make it acceptable. If operating bands, bandwidth, or power is unacceptable, we request feedback on parameters that would make these acceptable. Since SRI's system's waveform generator is a software defined radio, we can modify these parameters, including notching specific frequency bands, if required.

Responses to Questions

14-Apr-2026: Response to question: "At antenna 4, the geographical coordinates 36-50-24 N / 75-48-00 W indicate that the antenna is pointing toward the ocean near Virginia Beach, VA, approximately 15 km from the city. NTIA is asking you to verify this location. Are you planning to conduct testing over the ocean or in the vicinity of Virginia Beach, VA? If the testing will occur within Virginia Beach, please correct your coordinates accordingly"

Antenna 4 testing area is in the ocean offshore from Virginia Beach, VA. The antenna is mobile and will be tested in the area centered at 36-50-24 N / 75-48-00 W offshore.

14-Apr-2026: Response to question: "For the request frequency 9200-10000 Mhz at location Baltimore , MD and Dahlgren, VA, FAA wants to have emission mask and antenna height. Please provide these information to: Hibner, Walter CTR (FAA) walter.ctr.hibner@faa.gov Pigg, Timothy J (FAA) timothy.j.pigg@faa.gov And CC : Navid Golshahi Navid.Golshahi@fcc.gov"

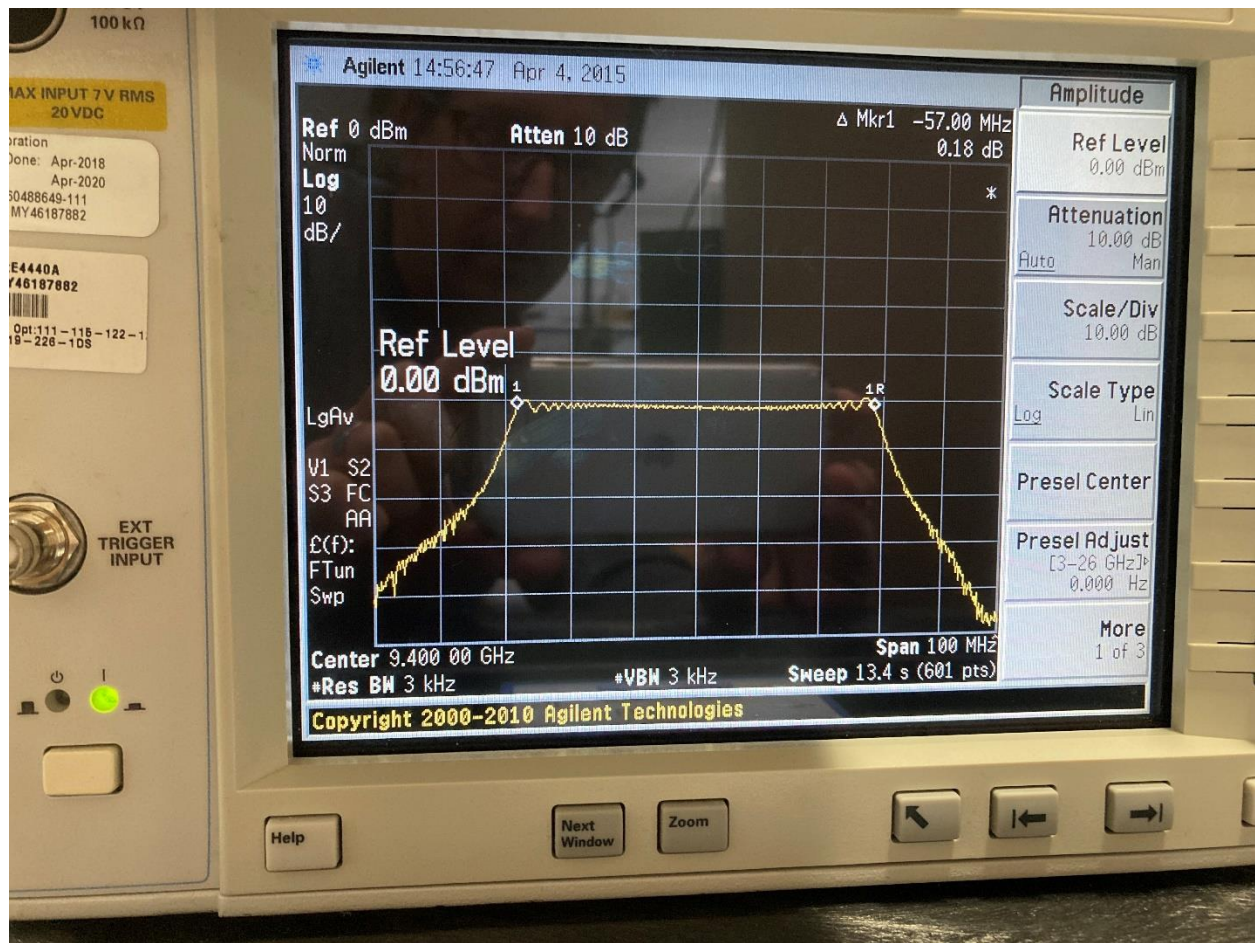
Hello,

This email is in response to a question regarding FCC experimental license file number 0151-EX-CN-2026 submitted by SRI International.

The FCC responded to SRI with the following question: "For the request frequency 9200-10000 Mhz at location Baltimore , MD and Dahlgren, VA, FAA wants to have emission mask and antenna height. Please provide these information to: Hibner, Walter CTR (FAA) walter.ctr.hibner@faa.gov Pigg, Timothy J (FAA) timothy.j.pigg@faa.gov And CC : Navid Golshahi Navid.Golshahi@fcc.gov"

The following is SRI's response to the FAA question:

The Breckenridge radar system is a custom AESA-based software-defined radar built by SRI for advanced marine navigation. Over the 9,200 to 10,000 MHz frequency band, the mean ERP is 18 kW with a peak ERP of 60 kW. The Breckenridge radar emission mask is 40 dB below mean/peak ERP 20 MHz outside of operating band. Operating band is software-controlled. Emissions are controlled through analog and digital filtering of transmitted waveform. A guard-band can be programmed to limit radar operating range to 9220-9980 MHz to ensure emissions are -40 dBc relative to mean/peak ERP outside of the operating band. The figure below shows the emission mask of the Breckenridge radar waveform when tuned to a 9400 MHz center frequency.



The Breckenridge radar is planned for testing in the Baltimore, MD and Dahlgren, VA locations on a marine craft or land vehicle with an antenna height not exceed 5 m above the ground or water line.