

ARTEMIS, Inc. is testing X-band Synthetic Aperture Radar from stratospheric balloons. Testing occurs about once a month and consists of a balloon launching from Baltic, South Dakota. Once the balloon reaches altitude, between 55,000 and 65,000 feet, the radar begins to operate. The balloon drifts in the stratosphere within the specified geographic area (400 km radius centered in Baltic, SD). After 8 to 10 hours, the balloon flight is terminated and the radar payload parachutes safely back to the ground.

The purpose of the tests is to demonstrate radar functionality, and to test the performance of the radar in comparison with the predicted performance. The radar transmits with 100 Watts of peak power, with a duty cycle of 15% (average transmit power is 15 W). The antenna has a gain of 26 dB, with an azimuth beamwidth of 3.8 deg and an elevation beamwidth of 10 deg. The antenna specifications are included as an exhibit to this application.

We have been operating under an STA with callsign WP9XHV and file number 1636-EX-ST-2019 which was granted in September 2019. The successes we've had in our recent tests have made it clear that this technology has a lot of promise, and a long-term experimental license is needed to facilitate continued testing over the next several years.