

This exhibit addresses: ANTENNA REGISTRATION QUESTION 4: DIRECTIONAL ANTENNA INFORMATION

submitted by ARTEMIS, INC.
application file # 0004-EX-PL-2013

In support of the NASA MIZOPEX project, an ARTEMIS SlimSAR system will be placed on the NASA Ikhana unmanned aircraft system. A directional radar antenna will be mounted on the aircraft so that SAR images of sea ice may be collected. This exhibit contains details of the antenna and mounting.

Antenna Properties

The relevant properties of the SlimSAR antenna are listed below.

SlimSAR Antenna Parameters

Physical Size: 12x4" (includes ground plane)

3-dB Beamwidth: 5° az. – 10° el.

Peak Gain: 23 dB

Antenna Mounting

The SlimSAR antenna is mounted on the aircraft in such a way that a line extending from the antenna boresight forms an angle of nominally 45° with a line that is normal to the ground. The antenna is mounted to a gimbal with a limited range of motion. The purpose of the gimbal is to keep the antenna pointed perpendicular to a straight path even if the aircraft rolls or crabs.

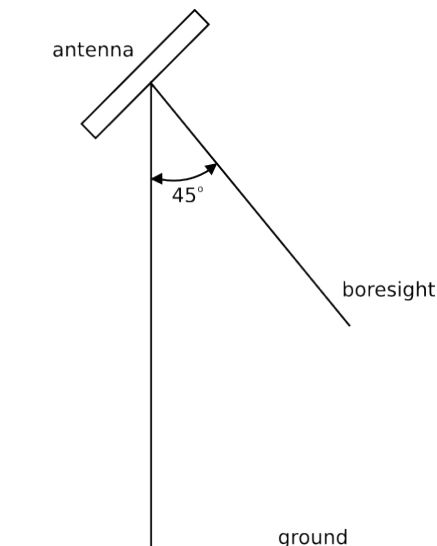


Illustration 1: Angle of antenna boresight relative to ground normal.

During the MIZOPEX mission, the SlimSAR will be operated a maximum altitude of 18,000 ft MSL over the Beaufort Sea north of the Alaskan coast. Given the antenna parameters and mounting geometry, the radar will illuminate a 3-dB footprint on the ground which is approximately 0.42 miles in the direction parallel to the radar's path and 4.82 miles in the direction perpendicular to the radar's path. The area of this footprint is around 1.6 square miles