

EXHIBIT #2 as part of
FCC FORM 442 – APPLICATION FOR NEW RADIO STATION UNDER PART 5 OF FCC RULES
– EXPERIMENTAL RADIO SERVICE (OTHER THAN BROADCAST)

submitted by ARTEMIS, INC. File # 0342-EX-PL-2009

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

The proposed radiating device is a synthetic aperture radar (SAR) system being developed by ARTEMIS, INC. For the remainder of this document, it will be referred to as “SlimSAR-Ku,” which is an ARTEMIS, INC. internal designation for this project. This document describes the properties and operational configuration of the transmit antenna used.

Antenna Properties

The relevant properties of the SlimSAR-Ku antennas are listed below.

SlimSAR Antenna Parameters

Physical Size: 3.5x2.2x1.75”

3-dB Beamwidth: 10°x40°

Peak Gain: 17 dB (TBD)

Antenna Mounting

The SlimSAR-Ku antenna is mounted on an 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.

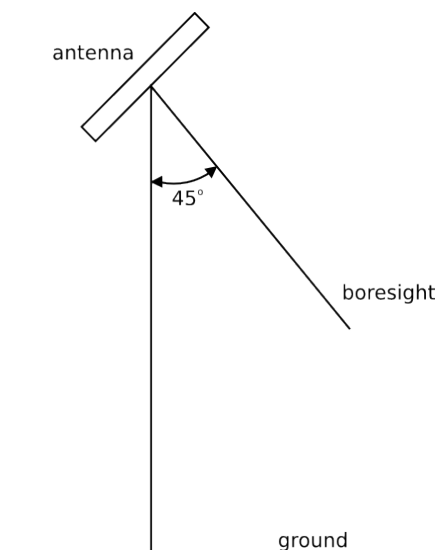


Illustration 1: Angle of antenna boresight relative to ground normal.

The SlimSAR-Ku is designed to be operated at a nominal altitude of 5000 ft above ground level and a velocity of approximately 120 knots. A $10 \times 40^\circ$ beamwidth and 45° mounting angle produces a 3-dB footprint on the ground which is approximately 1200 ft in the direction parallel to the radar's path and 8400 ft in the direction perpendicular to the radar's path. A footprint with these dimensions has an area of approximately 0.36 mi^2 . A single point on the ground falls within the 3-dB footprint of the antenna for about 6 seconds as the aircraft passes overhead. During this time, the target is exposed to an RF radiation power density of approximately $3.2 \text{ } \mu\text{W}/\text{m}^2$ ($-24.9 \text{ dBm}/\text{m}^2$). For this reason, SlimSAR-Ku is expected to have a minimal impact on other devices that may be operating in the same band.