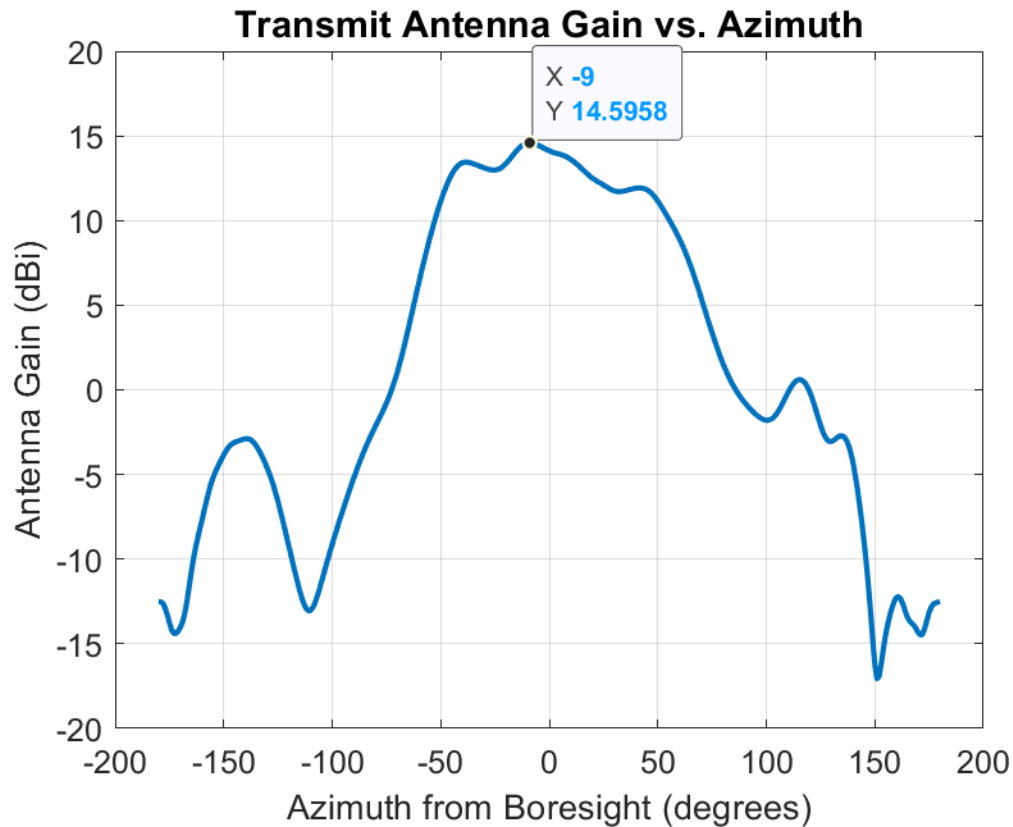


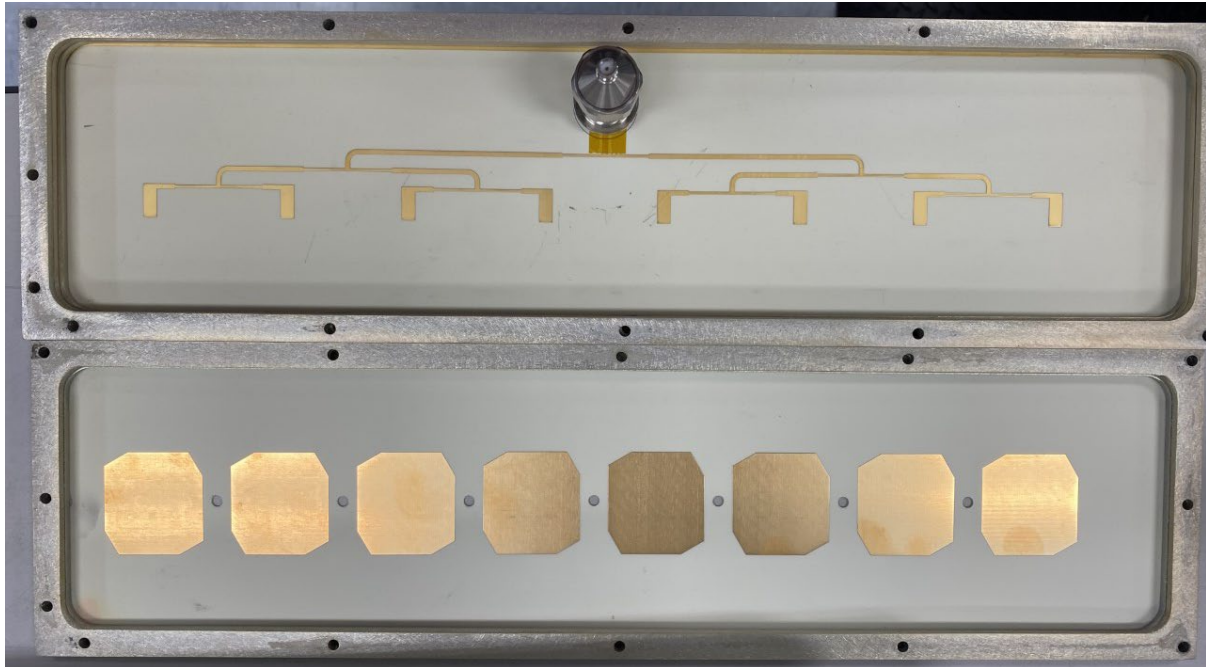
GroundAware 9000 Series Antenna Gain

The GroundAware 9000 series radar transmit antenna is standard design of a slot-fed patch array designed to be effective from 3.0-3.3 GHz. The patch array is 8 elements. From [1], a single patch's gain is 6 dBi, and the array gain from an in-phase fed 8 element patch array is 9 dBi, therefore the total antenna gain is 15 dBi.

This gain has been verified through antenna simulation with HFSS, which produced the antenna gain pattern below. As can be seen, the simulated antenna gain is 14.6 dBi, therefore the greater of the approximation and the simulation should be used, which is 15 dBi antenna gain.



The patches are rectangular with the corners cut off for extended bandwidth and designed for low loss onto Rogers 4350 substrate. The printed circuit board design files for this antenna can be provided upon request. Pictures of the patch and feed boards are show below. The feed board is on the top and the patch board is on the bottom of the image.



[1] Kraus, John D. and Marhefka, Ronald J. *Antennas for All Applications, 3rd Edition*. Pgs. 322-329. McGraw Hill Publishing. 2002.