

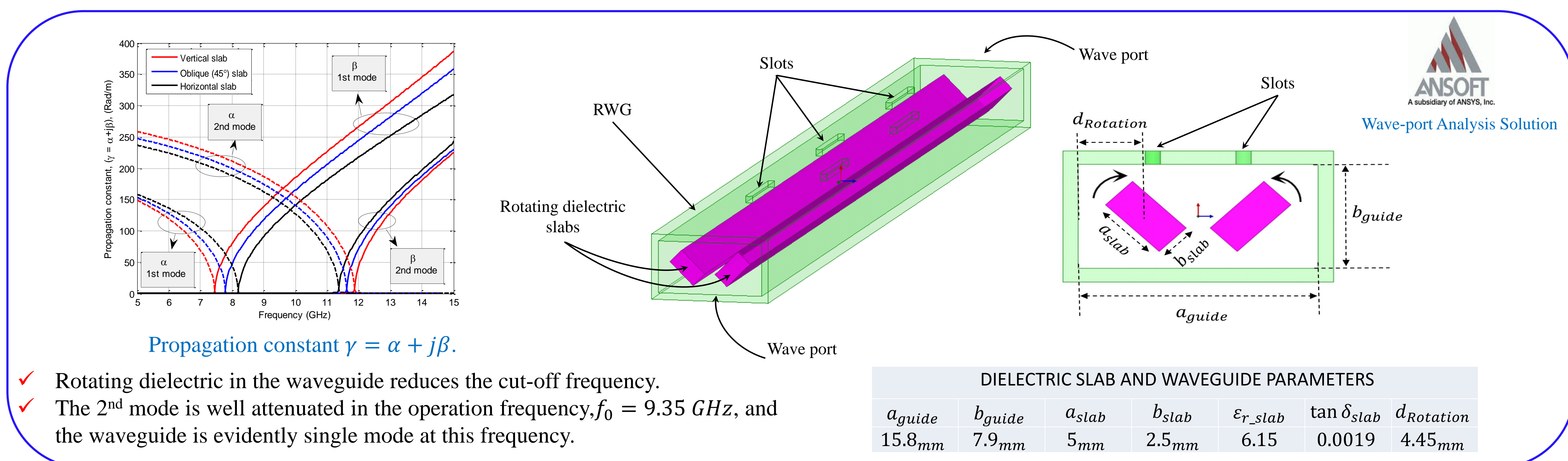
# Waveguide Phase Shifter for Application in Meteorology Radar Antennas

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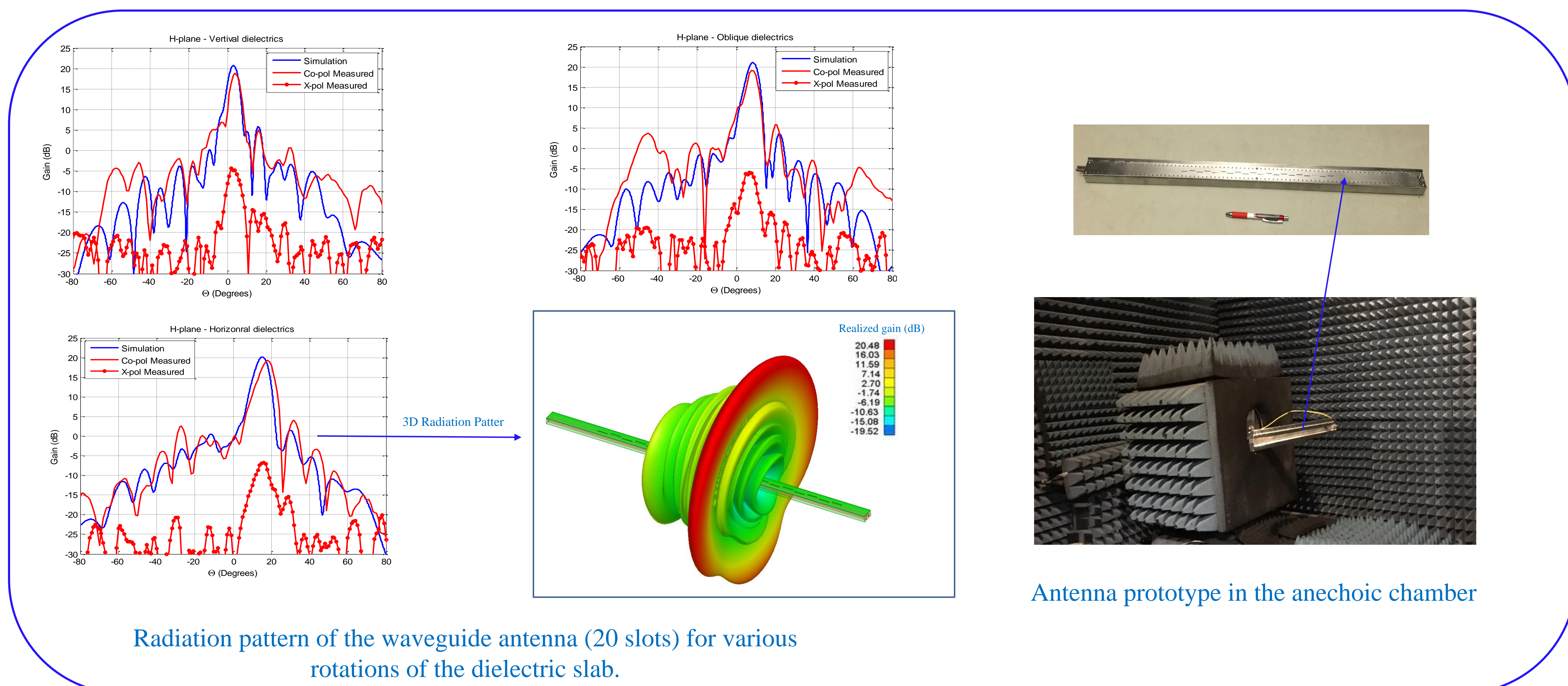
## INTRODUCTION

We present a new configuration of a phase shifter based on a Rectangular Waveguide (RWG) operating at 9.35 GHz. The proposed phase shifter consists of a standard RWG section with an inserted dielectric slab. The phase shifting in this configuration is achieved by rotating the slab inside the waveguide. Numerical simulations have been carried out for different positions of the slab and the prototype has been fabricated. A 14° beam deflection is observed for a slotted waveguide antenna array which is designed with this phase shifter.

## DESIGN PRINCIPLE OF THE PHASE SHIFTER



## PROTOTYPE AND MEASUREMENT RESULTS



## CONCLUSION

A new topology of electromechanical waveguide phase shifter is presented as a proof of concept. We demonstrate that the modelled waveguide phase shifter is able to present a propagation constant variation of  $\Delta\beta_g = 45.6$  rad/m and hence a beam-steering of 14° at the frequency of 9.35 GHz. Since a slotted waveguide has low insertion loss, low cost, suitable power handling capabilities and low phase shift error, it could be a good candidate for the application of radar systems.