

# Performance Enhancement of Semicircular Shaped Array Antenna using Metasurface

## **Abstract**

This work studies the integration of a semicircular shaped array antenna into an Artificial Magnetic Conductor (AMC) which resonate at the desired operating frequency of 9.41 GHz. The proposed AMC performs as a high impedance surface with a high permeability (approximately 7.08) at 9.41 GHz, with a perfect magnetic conductor characteristic. As result, the AMC is able to be stacked adjacent to the semicircular shaped. The simulation results show that the AMC has successfully enhanced the gain and efficiency of the antenna to 9.55 dB and 97% respectively compared to 8.44 dB and 96% without AMC. Besides that, a slight bandwidth improvement, from 395 MHz to 398 MHz can be observed with the AMC. Both simulated and measured results show a good agreement in term of reflection coefficients and radiation patterns.

## **Keywords**

AMC; array antenna; performance enhancement