

SIW-Fed Dual-Polarized Magneto-Electric Dipole for 6G

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Abstract:

This paper presents a dual-polarized magneto-electric (ME) dipole antenna operating at 140GHz for 6G applications. The antenna can be fabricated by PCB stack-up process. It is fed through slots etched on surface of substrate integrated waveguide (SIW). The antenna is composed of three layers. There is the main radiating structure which resembles a conventional ME dipole on the top layer. The electric wall in the conventional ME dipole is replaced by a group of vias on the layer. SIW for exciting each polarization is on the middle and the bottom layers. Despite partial overlap of both excitation paths, more than 30dB isolation is confirmed for both ports in the operating bandwidth using crossed slots and crossed SIW directions. The 10dB impedance bandwidth of the antenna is 20GHz for both polarization which is 14.2% in fractional bandwidth. The Gain is observed to be more than 8dBi for the bandwidth in simulation. The structure can be useful in 6G applications with dual polarization.

Keywords:

Magneto-electric dipole, dual-polarization, 6G

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