

452. Title:Bidirectional surface wave splitters excited by a cylindrical wire

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Abstract:Bidirectional surface wave splitters excited by a cylindrical wire in the microwave frequency have been proposed and fabricated. Compared to the bidirectional subwavelength-slit splitter, the novelty of the proposed structure is the coupling mechanism from the cylindrical wire to the surface gratings. By designing the grating structures with different depths and the feeding wire, electromagnetic waves at the designed frequencies will be confined and guided in the predetermined opposite directions. The finite integral time-domain method is used to model the splitters. Experimental results are presented in the microwave frequencies to verify the new structure, which have very good agreements to the simulated results. Based on the same coupling mechanism, a bidirectional surface wave splitter excited by a cylindrical wire in the terahertz (THz) frequencies is further been proposed and modeled. The simulation results demonstrate the validity of the THz splitter.