

# Slot-Line Mode Suppression Using A Fast-Wave Method For Broadband Antenna Feed Line Structures

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NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

## DESCRIPTION OF WORK

- ◆ The goal of the work is to suppress slot-line mode occurring at the right-angle coplanar waveguide (CPW) using a fast-wave method.
- ◆ The CPW with trenches were characterized using the S-parameters, loss, and effective dielectric constant.

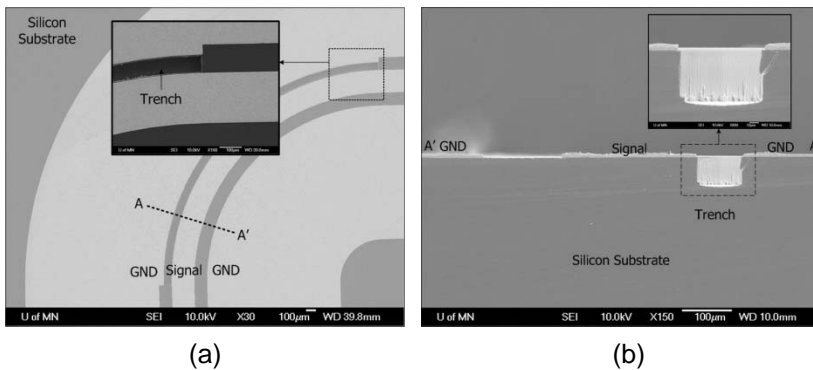


Fig. 1. SEM pictures of the 90° circular bend with a trench.  
(a) Top view of a 90° circular bend with trench compensation.  
(b) Cross sectional view of a 90° circular bend with trench compensation at the section AA'

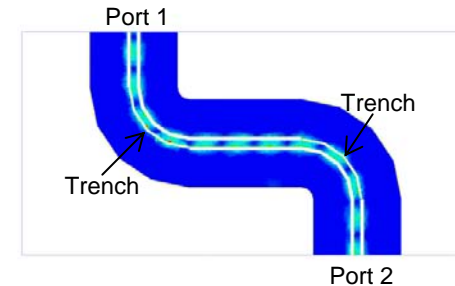


Fig. 2. Back-to-back 90° circular CPW bend with a outer trenched slot

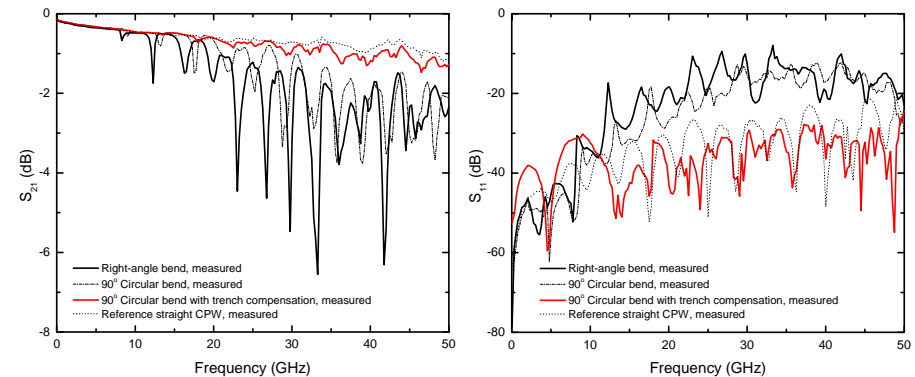


Fig. 3. Measured S parameters of the back-to-back structures

## MAJOR OBSERVATIONS

- ◆ Equalization of the traveling time of the electromagnetic wave propagating along inner and outer slots
- ◆ No strong resonance responses, the insertion loss close to that of a reference straight CPW line, and the return loss less than -20dB over the frequencies up to 50GHz

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