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Title:Micromachined probes for submillimeter-wave on-wafer measurements - Part II: RF design and characterization

Authors:Reck, Theodore J. (1); Chen, Lihan (2); Zhang, Chunhu (2); Arsenovic, Alex (2); Groppi, Christopher (3); Lichtenberger, Arthur (2); Weikle, Robert M. (2); Barker, N. Scott (2)

Author affiliation:(1) Jet Propulsion Laboratory, Pasadena, CA 91030, United States; (2) Charles L. Brown Department of Electrical Engineering, University of Virginia, Charlottesville, VA 22903, United States; (3) Arizona State University, School of Earth and Space Exploration, Tempe, AZ 85287, United States

Corresponding author:Reck, T.J.(theodore.reck@jpl.nasa.gov)

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Abstract:The electromagnetic design and characterization of a micromachined submillimeter-wave on-wafer probe is presented. The mechanical design and fabrication of the probe is presented in the companion paper (Part I). Finite element simulations are applied to design an integrated probe chip to couple between rectangular waveguide and the ground-signal-ground (GSG) probe. Two designs based on different transmission line topologies are implemented and their performance assessed. The insertion loss of the probes over the WR-1.5 band measures between 6-10 dB and return loss measures from 10 to 15 dB. Offset short measurements are used to verify the performance of the probes and that they can be employed for calibrated on-wafer measurements.

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