Update on Waveguide-Embedded Differential MMIC Amplifiers
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There is an update on the subject matter of “Differential InP HEMT MMIC Amplifiers Embedded in Waveguides” (NPO-42857) NASA Tech Briefs, Vol. 33, No. 9 (September 2009), page 35. To recapitulate: Monolithic microwave integrated-circuit (MMIC) amplifiers of a type now being developed for operation at frequencies of hundreds of gigahertz contain InP high-electron-mobility transistors (HEMTs) in a differential configuration. The MMICs are designed integrally with, and embedded in, waveguide packages. The instant work does not mention InP HEMTs but otherwise reiterates part of the subject matter of the cited prior article, with emphasis on the following salient points:

- An MMIC is mounted in the electric-field plane (“E-plane”) of a waveguide and includes a finline transition to each differential-amplifier stage.
- The differential configuration creates a virtual ground within each pair of transistor-gate fingers, eliminating the need for external radio-frequency grounding.

This work concludes by describing a single-stage differential submillimeter-wave amplifier packaged in a rectangular waveguide and summarizing results of tests of this amplifier at frequencies of 220 and 305 GHz.

This work was done by Pekka Kangaslahti and Erich Schlecht of Caltech for NASA’s Jet Propulsion Laboratory. For more information, contact iaoffice@jpl.nasa.gov.

In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning nonexclusive or exclusive license for its commercial development should be addressed to: Innovitive Technology Assets Management JPL Mail Stop 202-233 4800 Oak Grove Drive Pasadena, CA 91109-8099 E-mail: iaoffice@jpl.nasa.gov

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