

# Foreword

THE IEEE-S-MTT Technical Committee on Microwave and Millimeter-Wave Integrated Circuits (MTT-6), in its continuing effort to review its field of responsibility, considers it timely to sponsor this issue.

Microwave integrated circuits have become well established. The microwave engineer has at his disposal a variety of transmission media, all with well-documented design information. His main challenge is the optimum choice of the media to meet physical and electrical requirements at the lowest cost. Still new technologies which minimize parasitics and improve the device-circuit interface, such as monolithic circuits and improved hybrid techniques, are being explored. These permit, for example, complete broadband microwave amplifiers in a transistor package. The future will show how they can compete economically with more conventional technology in a very narrow market.

Millimeter wave integrated circuits have received increased attention over the last few years. Although the various transmission media are continuing to be evaluated, already complete integrated subsystems are being afforded for the very diverse military market. No universally applicable transmission medium is emerging. Each is matched with specific applications based on its technical and economical merits, as demonstrated by the submitted papers.

In editing this issue I relied very heavily on the members of MTT-6 for reviewing and identifying papers. They are as follows:

Dr. Erwin Belohoubek, *Cochairman*  
Dr. Charles Buntschuh  
Dr. Martin Caulton

Dr. Yu-Wen Chang  
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Dr. Reinhard H. Knerr, *Chairman*  
Mr. Paul Meier  
Mr. W. Horton Prather  
Dr. Martin V. Schneider  
Dr. Barry Spielman  
Mr. Frank Sullivan.

I also had the pleasure to contact other experts in this complex field, and their willingness to thoroughly review papers made this job so much easier. For this reason I am indebted to:

Dr. John C. Beal	Dr. H. F. Lenzing
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Dr. K. J. Button	Dr. G. Novick
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Mr. William H. Childs	Dr. F. J. Rosenbaum
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Dr. J. W. Gewartowski	Dr. R. M. Ryder
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**Reinhard H. Knerr** (M'71-SM'73) received a B.S.E.E. degree from the Technical University, Aachen, Germany, in 1960, the Dipl. Ing. degree from École Nationale Supérieure d'Électrotechnique, d'Électronique et d'Hydraulique de Toulouse, France, in 1962, and the M.S. and Ph.D. degrees in 1964 and 1968, respectively, from Lehigh University, Bethlehem, PA. From 1963 to 1964 he was a NATO-scholar.

He joined Bell Laboratories in 1968. He has been involved in R&D of circulators, MIC's, microwave power amplifiers using IMPATTs, bipolar transistors, and GaAs FET's. He studied linearization schemes for solid-state power amplifiers, developed low noise GaAs FET amplifiers, and is now interested in satellite receivers.

Dr. Knerr is a member of the Editorial Board of this TRANSACTIONS, the Technical Committee on Microwave Ferrites (MTT-13), the Administrative Committee of MTT-S, and is Chairman of the Technical Committee on Microwave and Millimeter-Wave Integrated Circuits (MTT-6).