



IEEE AP/MTT (Hong Kong Chapter)
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The University of Hong Kong
Department of Electrical and Electronic Engineering



Seminar on

A 30 GHz Integrated, Wide-Scanning Active Antenna Array

By

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Date : September 22, 2014 (Monday)

Time : 11:00am – 12:00pm

Venue : Room 204K, Chow Yei Ching Building, HKU



Abstract

High data rate links for continuous mobile services have become one of the main drivers for broadband mobile Satellite Communication (SatCom) links on platforms like airplanes, trains or ships. This scenario demands for low-profile antenna system on mechanical structures. In order to maintain communication links while moving and to avoid bulky configurations, e.g. mechanical scanned antennas, an electronically steerable antenna array approach is of major importance. In this talk, a highly integrated phased array transmit/receive architecture is presented. Multilayer microstrip antennas with a scanning potential up to 60° are combined, on a common manifold, with SiGe MMICs including four RF channels each, together with the necessary digital control circuits. Power distribution and combining is realized by the concept of a folded planar reflectarray. This work also includes the necessary solutions for multilayer interconnects and efficient heat removal from the active circuits. To prove the concept, passive arrays with different fixed beam positions have been tested successfully; followed by a first active array demonstrating excellent scanning performance up to 60° both in E- and H-plane.

Biography

Wolfgang Menzel received the Dipl.-Ing. degree in electrical engineering from the Technical University of Aachen, Germany, in 1974, and the Dr.-Ing. degree from the University of Duisburg, Germany, in 1977. From 1979 to 1989, he was with the Millimeter-Wave Department of AEG, Ulm, Germany [now Airbus Defense and Space]. In 1989, he became a Full Professor with the Institute of Microwave Techniques, University of Ulm, Germany. His current areas of interest are multilayer planar circuits, waveguide filters and components, antennas, interconnects and packaging, and millimeter-wave application and system aspects.

Dr. Menzel is a Fellow of the IEEE. He was an associate editor for the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (2003-2005). From 1997 to 1999, he was a Distinguished Microwave Lecturer for Microwave/Millimeter Wave Packaging. From 1997 to 2001, he chaired the German IEEE Microwave Theory and Techniques (MTT)/Antennas and Propagation (AP) Chapter. He was the recipient of the 2002 European Microwave Prize and the 2013 IEEE MTT Microwave Application Award.

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