SPECIAL MTT-S TECHNICAL SESSIONS

TU1B: *FOCUSED SESSION*
AUTOMOTIVE APPLICATIONS OF MICROWAVE AND MILLIMETER-WAVE TECHNIQUES

Date: Tuesday, June 18, 1996

Time: 8:00–9:50 AM

Location: Moscone Convention Center, Room 132

Sponsor: MTT-6, Microwave & Millimeter-wave Integrated Circuits

Chairmen: Fazal Ali, Westinghouse
Eliot Cohen, Palisades Institute for Research

Speakers: Rahul Dixit, TRW Automotive Electronics Group
Lamberto Raffaelli, ARCOM Inc.
H. Dambkes, Daimler Benz
M. Camiade, Thomson-CSF
Nick Morenc, HE Microwave

The electronics content of automobiles will increase significantly during the next decade. Automobile manufacturers are currently developing collision avoidance radars, speed sensors, warning devices for safe lane changing, near object detection systems, GPS-based guidance systems, automatic toll collection units that make use of vehicle identification techniques and a host of other intelligent electronic features for the next generation cars, buses, trucks and highways. An overview of these new developments is provided and possible opportunities for MMIC-based transportation electronics in the US and Europe are highlighted.

TU3D: *FOCUSED SESSION*
HISTORICAL PERSPECTIVES ON MICROWAVES IN THE SAN FRANCISCO BAY AREA

Date: Tuesday, June 18, 1996

Time: 1:40–3:30 PM

Location: Moscone Convention Center, Room 134

Sponsor: 1996 IMS Steering Committee

Organizer: C. Rick Branner, UC Davis, CA
Chuck Holmes

Speakers: D. Watkins, Watkins Johnson
Bill B. May, Argo Systems Inc.
J.J. Spilker, Stanford Telecom
R.W. Anderson, Hewlett Packard
Seymour Cohn, S.B. Cohn Associates
G. Matthaei, UC Santa Barbara
J. Barrera,Samsung Microwave Semiconductor
Chet Loeb, CPI Inc.

The San Francisco Bay Area has been a focal point for significant developments and advances in the field of RF and microwave technology for many decades. From the early pioneering work of Sig and Russel Varian in the 1930s, the momentous advances in aerospace electronics of World War II and the Cold War years, to the current explosive growth in wireless technology, the San Francisco Bay Area has occupied a key developmental role. It is of significance, in the best interest of the microwave community, to place these developments in a historical perspective. A distinguished assemblage of eminent scientists, entrepreneurs and pioneers chronicle the vast array of developments that have emerged from Bay Area industries and universities in the area of microwave technology.

WE1D: *FOCUSED SESSION*
MICROWAVE/MILLIMETER-WAVE/OPTICAL APPLICATIONS IN PERSONAL COMMUNICATIONS

Date: Wednesday, June 19, 1996

Time: 8:00 AM–9:50 PM

Location: Moscone Convention Center, Room 134

Sponsor: MTT-16, Technical Committee on Microwave Systems

Chairmen: J.B. Horton, TRW
T.H. Oxley, Consultant

Organizers: J.B. Horton
T.H. Oxley
E. Yamashita, Univ. of Electro Com.

Speakers: H.H. Meinel, Daimler-Benz Res. Center
J.G. Gardiner, Univ. of Bradford
J. Wenger, Daimler-Benz Res. Center
U. Guttuch, Daimler-Benz Aerospace
R.P. Braun, Heinrich Herz Inst.

Microwave frequencies from 1 to 100 GHz, supported by interconnecting LANs including optical networks, are being considered for future broadband radio networks and services that will be applied to wide-area and intra-/inter-building mobile personal communications networks (PCN). Some of the recent work in the emerging technologies associated with wireless PCNs, with emphasis on applications in the millimeter-wave frequency bands, are addressed. An international survey of current/planned developments in wireless PCNs is included.

WE2D: *FOCUSED SESSION*
PERSONAL COMMUNICATIONS VIA SATELLITES: TECHNOLOGY & TRENDS

Date: Wednesday, June 19, 1996

Time: 10:20 AM–12:10 PM

Location: Moscone Convention Center, Room 134

Sponsor: MTT-16, Microwave Systems Technical Committee

Organizers: Ramesh K. Gupta, COMSAT Laboratories
Bernard Geller, David Sarnoff Research Center/SRI

Speakers: A.E. Williams, COMSAT Laboratories
A. Pullara, Alenia Spazio
Peter Karabinis, Ericsson
Ian Corden, Nokia

A number of satellite systems have been proposed for global/regional personal communications via satellites such as IRIDIUM, INMARSAT-P, Globalstar, Odyssey and Agrani. Many of these systems have moved from system concept to development with a promise to make global personal communications services available before the year 2000. The status and trends in personal communications via satellites, key features of proposed systems, technology trends related to the satellite designs and the user terminal equipment are presented.

SPECIAL MTT-S TECHNICAL SESSIONS

WE4C: *FOCUSED SESSION*
MICROMACHINING FOR MICROWAVE AND MILLIMETER-WAVE APPLICATIONS

Date: Wednesday, June 19, 1996

Time: 4:00–5:50 PM

Location: Moscone Convention Center, Room 133

Sponsor: MTT-6, Microwave and mm-wave Integrated Circuits

Organizer: Gabriel M. Rebeiz, University of Michigan
Alfy Riddle, Macallan Consulting

Speakers: Chuck Goldsmith, Texas Instruments
Linda Katehi, University of Michigan
David Rutledge, Caltech CA
Richard Ruby, HP Laboratories
Onodera Hirano, NTT Laboratories

The emerging application of micromachining technology is presented. This technology uses bulk processes in silicon, GaAs or piezoelectric materials, very thin dielectric membrane structures, micro-electromechanical surface actuators or thick polyimide structures to build novel low-loss and low cost microwave and mm-wave components. The components realized so far include wideband low-loss switches, wideband couplers and baluns, power dividers, very low-loss planar and cavity-like filters for cellular and satellite communications, and high efficiency integrated antennas and receivers for mm-wave and submm-wave applications.

TH1C: *JOINT MTT-S/ARFTG SESSION*
MARIO A. MAURY, JR. MEMORIAL SESSION

Date: Thursday, June 20, 1996

Time: 8:00 AM–9:50 PM

Location: Moscone Convention Center, Room 133

Sponsors: 1996 IMS TPC
MTT-11, Microwave Measurements
Automated RF Techniques Group

Organizers: Steve Adam, Adam Microwave Consulting
Ron Ham, Frequency Engineering Corp.
Roger Marks, NIST

Mario A. Maury, Jr, a long time contributor to the microwave community and actively involved in the MTT-S and ARFTG, will be remembered in this technical session. Following a tribute to Mario and a retrospective of his contributions to the microwave industry, to MTT-S and to ARFTG, there will the presentation of microwave measurement technology papers in areas that Mario was an active contributor. These papers cover nonlinear measurements and noise characterization.

TH1D: *FOCUSED SESSION*
HIGH SPEED LIGHTWAVE COMMUNICATIONS SYSTEMS

Date: Thursday, June 20, 1996

Time: 8:00–9:50 PM

Location: Moscone Convention Center, Room 134

Sponsor: MTT-3, Lightwave Technology and Techniques

Organizer: Norman R. Dietrich
Reinhard H. Knerr

Speakers: Harold Sobol, University of Texas at Arlington
Carl Davidson, AT&T Bell Laboratories
Brian Hendrickson, ARPA

Significant progress in lightwave communication systems has been made. Terrestrial long-haul systems at 2.5 and 5 Gbps are now commercially available, with 10 Gbps systems in field trials. The competition, in the research laboratories, between NRZ formatted signals and solutions is still undecided. Development of the erbium doped fiber amplifier has revolutionized the systems design and makes the systems, to a large degree, line rate independent. The capacity of these already high capacity systems may be further increased through wavelength division multiplexing, which when combined with dispersion management of the cable plant, also increases the repeater spacing. This same technology enables the distribution of broadband, multimedia information. Video transmission over fiber is already in commercial use and represents one of the fastest growing markets. The military applications are spawning as well. From missile guiding systems, to phased-array radar, from optical signal processing to onboard ship LANs, the military realizes the advantage of the light weight and immunity to electromagnetic interference of the fiber systems.

TH2A: *FOCUSED SESSION*
PROGRESS IN HIGH SPEED DIGITAL APPLICATIONS

Date: Thursday, June 20, 1996

Time: 10:20 AM–12:10 PM

Location: Moscone Convention Center, Room 135

Sponsors: MTT-9, Digital Signal Processing and MTT-16, Microwave Systems

Organizers: Christopher Chang, Texas Instruments
George Heiter, AT&T Bell Laboratories

Speakers: Leland Langston, Texas Instruments
Stephen Kaiser, Northrop Grumman
Tom Gratzek, Analog Devices
James Tsui, Wright Laboratories
Van Andrews, Texas Instruments
Jeffrey Piepmeiex, Georgia Inst. Tech.
F. Sinnesbichler, Tech. Uni. of Munich

Digital signal processing and digitally implemented modulation schemes are playing an increasingly important role in both military and commercial markets. Increased processing speeds and lower costs result in the creation of new and ever expanding areas of interest. A system and specific application examples are used to demonstrate trends in high speed digital technology applications. An overview with highlights of selected sections of a recently developed commercial system is provided. Developments of digital receivers for a military and a commercial application and the performance of analog-to-digital converters that play a major role in both designs are described. Insight into design trade-offs by comparing experimental results of a directly digitized signal with one digitized after downconversion is presented. Progress on a critical component to future developments of high speed digital systems, the direct digital synthesizer, is discussed. High speed digital correlator and pseudo-random sequence generator applications are also presented.