

# The 1996 IEEE MTT-S International Microwave Symposium/Exhibition: "Bridging the Spectrum"

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## I. INTRODUCTION

THE 40TH SUCCESSIVE annual MTT-Society symposium was held on June 18–20, 1996, in San Francisco, California. This year's Symposium/Exhibition clearly lived up to the reputation of being the preferred conference for presenting technical papers and for exhibiting the newest products involving microwave and "wireless" (a popular marketing term of the current era) technology. It is particularly gratifying to report the 1996 Microwave Week registration was 9957—a clear record in attendance. "Microwave Week" included three conferences: the 1996 IEEE MTT-S International Microwave Symposium (IMS), the 1996 IEEE Microwave, and the Millimeter-wave Circuits (MMWMC) Symposium,<sup>1</sup> and the 47th Automatic RF Techniques Group (ARFTG) Conference.<sup>2</sup> Registration records indicate a very strong overlap in attendance; nearly everyone who attends either the MMWMC or the ARFTG also attends the IMS. This unadjusted total number of 9957, which was compiled in a manner consistent with historical practice, has a small amount of duplication built in. It is safe to report that over 9000 individuals attended an event of the 1996 Microwave Week in San Francisco. Specific registration statistics are provided in Table I.

There were at least six outstanding successes at the 1996 International Microwave Symposium/Exhibition and MTT-S Microwave Week.

### *Quality and Quantity of Technical Papers*

At the International Microwave Symposium, 461 papers were presented (55% of those submitted) and there is a consensus that the papers were noteworthy for excellence and relevance. Nondefense markets in which most of our membership is currently employed were very well represented.

### *Record Workshop Participation*

The participation in workshops at 2496 was up 65% over last year (which had broken all previous records)! Our members are clearly intent upon learning new fields, and they show a strong preference for the informal workshop format. There

TABLE I  
REGISTRATION STATISTICS

International Microwave Symposium	2299
Full Registration	1749
One-Day Registration	550
Workshops	
People Attending Workshops	≈1400
Total Workshop Registration	2496
Pannel Sessions	1289
Exhibition	7029
MMWMC	585
ARFTG	163
Total Registration (all events)	9957

were about 1400 workshop attendees. Each person attended 1.8 workshops on average!

### *Record Exhibition Participation*

The exhibition attendance was truly record-breaking at 7029 people! Attendance from California was particularly strong (over 50%), which proves why San Francisco is so popular for exhibitors.

### *Comprehensive Digest and (for the First Time) CD-ROM*

The digest and CD-ROM were comprehensive and very professionally edited. The CD-ROM is the first ever produced by the MTT-Society. The hard-copy three-volume digest set a page and (unfortunately) weight record at 14 pounds. Both digests will serve as valued and often-used references for our microwave community.

### *Steering Committee Preparations Paid Off*

The dedication of your '96 IMS Steering Committee and the MMWMC and ARFTG Steering Committees was apparent. The events were very well planned, and nearly all activities were executed smoothly and with minimum inconvenience in spite of the record number of participants.

### *San Francisco is Very Popular!*

San Francisco once again proved to be a favored location for our Microwave Week. The Moscone Convention Center is a world-class facility; the weather cooperated, and the city generally lived up to its fine reputation as a preferred convention and/or vacation destination.

The Microwave Week experience began for most technical participants with a workshop! Arrangements for the record

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<sup>1</sup>The Microwave and Millimeter-wave Monolithic Circuits Conference is sponsored by the MTT-Society (90%) and the ED-Society (10%) of the IEEE.

<sup>2</sup>The ARFTG Conference is a biannual conference of the Automatic RF Techniques Group, which is an affiliate of the MTT-Society.

26 workshops were lead by Special Sessions Chairman Paul Khanna and workshop organizers Chuck Holmes and Edmar Camargo. One-hundred and ninety speakers contributed their expertise to making these a highly valued aspect of Microwave Week. The growth in workshop attendance is nothing short of phenomenal! Attendees clearly see workshops as an essential way to expand skills, and a welcome, if not preferred, opportunity for informal interaction.

The International Microwave Symposium Plenary Session, chaired by Joe Barrera, featured an overview of society status and an awards presentation by 1996 MTT-Society President John Wassel, as well as the two invited Plenary speakers. U.S. Federal Communications Commission (FCC) Chairman Reed Hundt addressed the proactive role of the US regulatory environment in fostering increased competition amongst service providers while also achieving flexibility to encourage technical innovation. Chairman Hundt's message was conveyed by video due to a requirement that he testify that day before the U.S. Congress. FCC Scientist Michael Marcus represented Chairman Hundt at the session, at which he made some brief comments and fielded several questions about regulatory policy. The second Plenary Session speaker, Edward F. Tuck, vice chairman of Teledesic Corp. and partner of Kinship Partners (a California venture management company), spoke on "The Electronic Social Fabric." Mr. Tuck claimed "Microwave is the most important transmission medium through which those changes will be achieved, and represents an immense, immediate commercial opportunity." This upbeat message was appropriate as a prelude to the record-breaking attendance at the symposium and the exhibits.

## II. A COMPREHENSIVE, HIGH-INTEREST TECHNICAL PROGRAM

Our Technical Program Committee (TPC) Co-Chairmen Derry Hornbuckle and Jerry Fiedziuszko and all TPC members certainly should derive great satisfaction from the tremendous success of the technical program. It was particularly important to the future of the IMS that our traditional system of issuing an open Call-for-Papers (enhanced in clarity by this year's committee) and conducting a comprehensive and fair paper review process has again resulted in very high quality, highly relevant contributions. The topics of this year's sessions provided an accurate mirroring of the activities of the most creative engineers in our industry. As our membership has shifted to predominantly commercial activities, with the most popular field being telecommunications and wireless, the content of the technical papers has followed these changes. Defense-funded research was still well represented, but it can be claimed that the 1996 International Microwave Symposium was the first to fully reflect the dominant shift toward commercial work.

From a Steering Committee viewpoint, it was particularly rewarding to observe the acceptance and popularity of the Interactive Forum Sessions, at which 135 papers were presented. Interactive Forum organizers Alfie Riddle and Cindy Yuen, as well as Convention Center Arrangements Chairman Dan Swanson and Catering specialist Kumiko Christopher, clearly succeeded in making the physical setting especially



Vice Chairman Joseph Barrera opens the Plenary Session.

welcoming. Panel sessions were well attended (1289 for five sessions), and the single evening "rump" session had 267 participants. Rump session organizer Bert Berson reported that the wine and discussions were appreciated by all. Speakers at technical sessions, workshops, panel sessions, and the Microwave Application and Product Seminars, as well as the organizers and Steering Committee members, received a 1996 IMS plaque in appreciation for their contributions. These were planned, designed, and distributed by Alfie Riddle and Guo-Chun Liang.

## III. THE PUBLISHING CHALLENGE

The event most awaited by any Steering Committee is the arrival of the digests at the convention center. This year, Editor Richard Ranson was comfortably on schedule and the digests arrived with little suspense. That was not the case, however, for CD-ROM Editor Roger Pollard. The CD-ROM was a new venture for the MTT-Society, and the preparatory effort was immense and not without considerable risk—virtually all of the procedures for submitting manuscripts had to be re-invented by Roger to accommodate current technology (the old "Instructions to Authors" assumed manuscript preparation on a typewriter!). The CD-ROM's did not actually arrive until Saturday afternoon, and this definitely did create an air of suspense. The quality of both the hardcover digest and the electronic version is truly outstanding, and both editors can take great pride in their very significant contributions. By the way, Editors Richard Ranson and Roger Pollard report that the cooperation of the authors in submitting their manuscripts in electronic form was very good (82%), which certainly contributed to the quality of the final product. Our editors also received very strong professional support from Larry and Margaret Whicker of LRW Associates, who serve as the coordinating center for manuscripts, provide administrative support at the Technical Program Committee Meeting, and who directly interface with the digest publishers.



1996 MTT-S President John Wassel presenting a Certificate of Recognition to 1995 MTT-S President Eliot Cohen.



1996 MTT-S President John Wassel conferring with 1995 IEEE President J. Thomas Caine.

#### IV. THE MOST SUCCESSFUL EXHIBITION EVER!

The Exhibition (the largest in the history of this event at 519 revenue booth spaces and 369 participating companies) was located in the north wing of the ultra-modern Moscone Center in San Francisco. Upon registering, attendees proceeded down a large escalator that provided a dramatic entrance to the exhibition and technical session facilities, which are located in very close proximity—quite possibly the smallest separation ever. With over 7000 people attending the Exhibition, there was no doubt that our industry is once again in a welcome period of growth and renewed optimism. Managing such a large exhibition is a very major undertaking, and it is contracted by the MTT-Society to Horizon House, publishers of the *Microwave Journal*. Exhibition managers Harlan Howe and Howard Ellowitz and the Horizon House staff work throughout the year signing up exhibiting companies and organizing the Exhibition. Horizon House also provides (via sub-contract) the registration services for *Microwave Week*.



Convention Center Arrangements Chairman Dan Swanson and Interactive Forum organizer Alfred Riddle.



The highly successful 1996 MTT-S International Microwave Exhibition at the Moscone Center in San Francisco.

From the Steering Committee perspective, Horizon House has been a very welcome and strongly contributing member of the symposium/exhibition team.

A highlighted new feature offered for the first time this year was the Microwave Applications and Products Seminars—micro-APS '96—located on the Exhibition floor. There were 50 applications seminars in two parallel sessions, presented by engineers of the exhibiting companies and coordinated by Technical Chair Martin Grace. Starting a new venture such as micro-APS '96 is a real challenge, and we are particularly indebted to Barry Bakner and Gary Koker of our Industry Relations Committee for up-front organizational work.

#### V. PUBLICITY—KEY TO SYMPOSIUM SUCCESS

Although the delivery of the digests is the activity with the most anxiety for the Steering Committee, there is nothing that has more influence on the eventual success of the event than does the Symposium Program. In many regards, once the Program is published, the remaining activity is simply a matter of making it happen. This year's Publicity Chairman, John Barr, contributed in so many ways, it is difficult to give his work appropriate credit. John suggested our theme "Bridging



Student Paper Session Organizers Rick Branner and Robert Owens with 1996 MTT-S President Wassel and Student Paper First Place Winner Sanjay Raman.



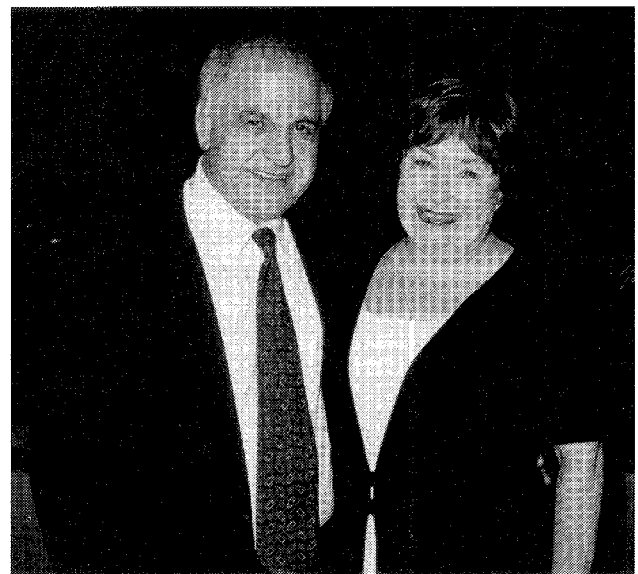
MTT-S President presenting the 1996 Pioneer Award to Kanneyuki Kurokawa.



MTT-S President John Wassel with 1996 MTT-S Microwave Prize winners Linda P. B. Katehi, Hueng-Ju-Cheng, John F. Whitaker, and Thomas M. Weller.

the Spectrum" and led the creation of the logo artwork. He managed the collection and organization of information for the massive 64-page program, and, in a cooperative effort with Horizon House, created the several new features of the program layout and organization. Although there were numerous advertisements and articles about the '96 Symposium, the program was considered our most influential tool for publicity. The full program was distributed to all MTT-Society members and recent Symposium attendees. Overseas (outside North America) mailing costs are very high for the full program, but it was decided we should put service to the members above budget considerations.

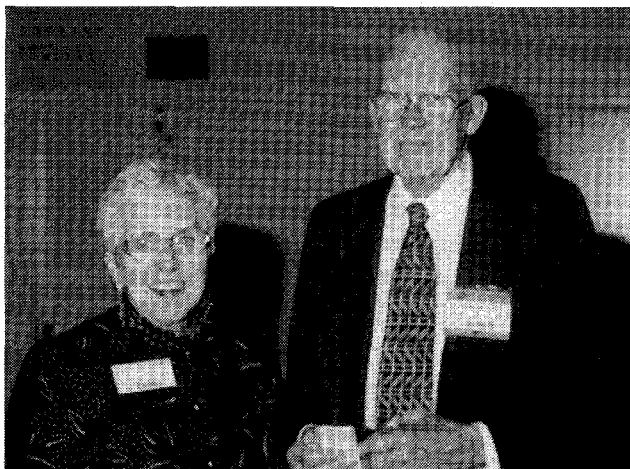
A strongly contributing factor to the record attendance at the Exhibition in particular was the superb work by our co-chairmen of the newly formed Industry Participation Committee, Gary Koker and Barry Bakner. They used their marketing expertise to be sure that virtually every Northern California microwave engineer was informed several times about Microwave Week—often by personal contact. Since over 50% of the 7000 plus who attended the Exhibition were from California, it is clear that the Industry Participation Committee had a much appreciated impact.



Distinguished Educator Award Recipient George Haddad and Mary Haddad.

## VI. REGISTRATION AND LOCAL ARRANGEMENTS FOR 9000-PLUS PEOPLE WAS A REAL CHALLENGE!

As the Microwave Week activities grew and attendance broke records, the work of the registration and local arrangements functions increased proportionally. Although our registration function is managed by Horizon House and sub-contracted to Convention Data Services, the workload of Registration Chairman Vernon Dunn was extremely heavy. Many registrants who experienced an anomaly in the registration process or who required some special consideration interfaced with Vernon. His patience, courtesy, and stamina were greatly appreciated by all. Our Local Arrangements Chairmen, George Vendelin and Dan Swanson, and their respective teams performed admirably in their preparation for the many events. We departed from past organizations



Microwave Career Award Recipient John H. Bryant and Barbara Everitt Bryant.



IEEE MTT-S Honorary Life Member Ted Saad conferring the IEEE Fellow Award to Victor Fouad Hanna.



TPC Co-Chairman Derry Hornbuckle and ARFTG Chairman Ken Wong and associates.

by forming a Local Arrangements-Convention Center Committee, headed by Dan Swanson. This splitting of responsibilities was in response to the ever increasing local arrangements workload. Dan Swanson was our man in con-



CD-ROM Digest Editor Roger Pollard, Registration Chairman Vernon Dunn, and Exhibition Manager Harlan Howe, relaxing after a very busy week.



Chief of Protocol Elaine Crescenzi with 1996 IMS Chairman Jim Crescenzi, prior to greeting guests at a reception.

trol of all meeting room facilities and audio-visual at the Moscone Convention Center. This involved extensive preparation and interface with convention services and many hours on the job during Microwave Week. One individual, our Catering Services Administrator Kumiko Christopher, served as the coordinator of all "event order forms" that documented every meeting that required catering (over 150 for the week!).

The person whose work was most visible at the Symposium was Scott Wetenkamp, who was in charge of all signs for the International Microwave Symposium and for the AdCom and Technical Committee meetings. Scott personally produced the distinctive color graphics and fabricated over 300 signs for the week! His commitment, wonderfully supportive attitude,

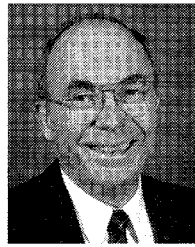


and creativity were all greatly appreciated. The extensive local arrangements for all the AdCom meetings and the Awards Banquet at the Hilton Hotel were coordinated by Steve Kenney. Steve was our very special "blessing from Atlanta," where he had also been active in local arrangements. Steve Kenney and Kumiko Christopher formed the highly successful team that brought us the outstanding Awards Banquet on Wednesday evening. Many of the spouses of our symposium registrants took part in one or more of the tours of our Guest Program, organized by Ibis Swanson. The hospitality suite in the Vista Room of the Hilton Hotel was a particularly popular function this year.

Of course, there were many other individuals who also contributed in critical ways to the 1996 International Microwave Symposium. Our liaisons with the MMWMC and ARFTG, Val Peterson and Ken Wong, were so cooperative and helpful that we often forgot they were "liaison" and instead accepted their contributions as full committee members. As the conference grows, so does the responsibility of financial management. Frank Emery, our Finance Chairman, has provided comprehensive leadership in this regard and is diligently compiling exhaustive financial records that will support a final audit before we "close the books" on Microwave Week. Frank has a long history of contribution to the International Microwave Symposium. He was Digest Editor in Dallas in 1969.

There are, of course, a multitude of social activities associated with the awards ceremonies and with the AdCom meetings. Much of the preparation and communication regarding these events was the responsibility of our Chief of Protocol, Elaine Crescenzi. Elaine contributed in numerous ways and was helpful to the entire Steering Committee in organizing their social activities. She only slowed down slightly after breaking her ankle two weeks before the symposium and was certainly an inspiration to us all.

It simply is not possible to acknowledge all of the contributors on the 1996 Steering Committee in this article. Many have been part of our preparations since the initial San Francisco proposal to the AdCom in 1988. We speak for all of them in stating that it has been our pleasure and privilege to serve the MTT-Society as hosts and hostesses of the 1996 IEEE MTT-S International Microwave Symposium. Our heartfelt thanks to all who participated in the 1996 Microwave Week.



**E. James Crescenzi, Jr.** (S'61-M'92-SM'84-F'96) received the B.S. degree from the University of California at Berkeley in 1961 and Ph.D. degree from the University of Colorado, Boulder, in 1969.

He served for four years as a Lieutenant in the U.S. Air Force. He joined Watkins-Johnson Co. in 1970, where his technical work has ranged from development of MIC fabrication processes to a wide variety of microwave amplifiers, subsystems, and receivers. He is a Principal Scientist in the Microwave Products Division. In the last several years, he has been the technical manager of programs to develop Watkins-Johnson miniature microwave tuner products, including a high-dynamic-range 2-18 GHz tuner with 1.1-GHz instantaneous bandwidth and a 2-40 GHz tuner with 2-GHz bandwidth and subnanosecond response time. He is currently developing power amplifiers for the commercial telecommunications business sector of Watkins-Johnson Co.

Dr. Crescenzi has served on the IMS Technical Program Committee since 1983, on the MTT-S Administrative Committee since 1987, and was President of the IEEE MTT-Society in 1994. He was recently elected a Fellow of the IEEE.



**Joseph Barrera** (S'64-M'66-SM'77) received the B.S.E. degree from Harvey Mudd College, Claremont, CA, in 1962. He received the M.S.E.E. and Ph.D. degrees in 1963 and 1967, respectively, from Carnegie-Mellon University, Pittsburgh, PA.

In January 1967, he joined the Solid State Laboratory of Hewlett-Packard's Corporate Research Center, where from June 1967-August 1974 he was Section Head of Microwave Devices and Materials Research. From August 1974 to June 1980, he was Section Manager for GaAs Product Development at the Microwave Semiconductor Division of Hewlett-Packard. In June 1980, he became a co-founder of Harris Microwave Semiconductor and Director of GaAs Operations. In 1985, he became a Harris Corporation Vice President and the General Manager of Harris Microwave Semiconductor with full profit and loss responsibility. Upon the sale of Harris Microwave to Samsung Electronics Corporation in June 1993, he became a Senior Vice President of Samsung Semiconductor Incorporated and COO of Samsung Microwave Semiconductor.

Dr. Barrera is an author or co-author of nearly 40 technical presentations, papers, and journal articles; he has delivered 19 invited presentations and has been awarded one patent. He was a member of the 1984 MTT Symposium Steering Committee and served as Special Sessions Chair. He has been a Technical Program Committee member of MTT Symposia and has also served as a member of local IEEE chapters. He has been Chair of various specialty workshops and an executive committee member of the GaAs Manufacturing Technology Conference. He was Vice Chair of the 1996 MTT Symposium in San Francisco, CA.