MTT CHAPTER HOSTS TALK ON HIGH POWER MIXERS TO EXTEND DYNAMIC RANGE

The Long Island Microwave Theory and Techniques Chapter will sponsor a talk "High Power Mixers Extend the Dynamic Range of Front-Ends With LNA’s" by Donald Neuf. The talk will be held at Polytechnic University, Route 110, Farmingdale Campus on Wednesday, March 13 at 6:30 PM in the auditorium.

Traditionally, low noise RF amplifiers (LNA’s) are used to improve the minimum detectable signal level of any receiver frontend, not limited by antenna noise. However, the increased RF gain often causes most existing second stage mixers to overload at high input signal levels, thus reducing dynamic range. More recently, MITEQ has developed MESFET double sideband and image rejection mixers that operate at the same local oscillator power as Schottky diode mixers, but provide typically 6dB higher input RF 1dB compression powers (P1dB). Furthermore, these passive mixers have low phase noise and third order intermodulation (IP3) products which are ideal qualities for “block downconversion” receiver architectures with high dynamic range IF digital signal processing (DSP).

The talk will describe designs for 1/4 to 1 watt input P1dB mixers from L to Ku Band with various RF bandwidths for communication, radar and EW applications. Furthermore, many of the designs used have termination independent IP3 performance and low RF and LO VSWR’s. The required LO power for these mixers is from +10 to +30 dBm and is generally equal to the desired input P1dB.

Theoretical and practical MESFET mixer circuits will be reviewed and performance shown. In addition, recent harmonic and sampling mixer MESFET designs will be compared to similar designs using Schottky diodes. Donald Neuf is the Department Head for the Special Mixer Products group at MITEQ Inc. He previously worked for AIL, General Microwave and JPL. He was also the Director of Engineering at RHG/M/A-COM. Mr. Neuf has published over 30 technical articles and has been granted 6 patents.

For further info and directions, call Michael Knox at (516) 872-4437 or Michael Hanczor at (516) 574-2607.

LONG ISLAND SECTION TO HOST AN INTERNET HOME PAGE WORKSHOP

This is a first announcement of a one day Home, Home on the Web workshop presented by Dr. Charles Rubenstein (Pratt Institute). Registration and continental breakfast will start at 8:30 AM with classes starting at 9:00 AM until 4:00 PM. Full detail of facilities and fee schedule will be announced in the April and May issues of The Pulse.

Abstract This workshop is designed to introduce participants to the Internet and the basics of HTML as applied to creating a simple World Wide Web home page. No prior internet experience is required, however, it is expected that the participants will have working knowledge of DOS and Windows 3.1. To be able to access the Internet, participants need to have use of, at the minimum: a 386 IBM PC-compatible computer operating with MS-DOS 5.0 and Microsoft Windows 3.1, with 4 megabytes of RAM and 4 megabytes of free hard disk space, and a 9600 baud modem.

Tentative Outline Brief history of the World Wide Web, Basic online setup and use of local (and/or Netcom) Internet provider services, Basic browser and e-mail capabilities, basic Netscape Navigator(R) download and setup techniques basic HTML language and web page examples, using an HTML editor, and live site visits and evaluation to illustrate home/web page construction techniques.

Home Page Wrangler Dr. Charles Rubenstein has a Ph.D. from the Polytechnic University and is currently an Associate Professor of Engineering and Information Science at Pratt Institute’s School of Information and Library Science. As part of his Networks graduate course at Pratt Institute, he provides seminars and workshops on e-mail for a variety of organizations. He recently presented Internet seminars in Morocco, Africa, as part of a USAID Grant, and since 1994, he has been active in the IEEE as Region 1’s (Northeastern United States) e-mail coordinator. He presented an overview of the Internet as a featured speaker at the Providence Section Annual Meeting. Last spring Dr. Rubenstein provided a successful seminar series on “Multimedia Resources and Requirements for Electrical Engineers” to members of the Long Island Section.

Information For further information or to provide comments, call Tom Campbell at (516) 757-3008.
The Pulse printed a history of the Section’s Professional Groups (Fellows of Societies) which included Automatic Controls, the American Society for Photographic Recording, the Institute of Color, the Society for Technical Communication, Microwave Theory and Techniques, and Electronic Computers. This increased the participation in the specialized groups.

Two of the groups (AG and MTT) sponsored a presentation on "General and Select Optical and Ultraviolet Wavefronts" by John Ramsey and Jesse Tash. John Ramsey described how the "quasi-optical" technique is the future. The Chandler Raytheons, along with Garbassi, and Askinisches, Cole, Hult, Lebedev, Lodge and others in the 1930s and 1940s, were pioneers in this field. Jesse Tash described how "semi-optical" techniques contribute to a new generation of microwave components especially suited to millimeter and submillimeter waves.

In reviewing the history of the Section, I am impressed by the diversity of the authors who have been invited to participate in the various Sections. This diversity reflects the wide range of interests and the numerous opportunities available to our members. For example, over for years has been extending the knowledge of micro and milli-wave devices, transmission line techniques, milli-wave wave components and systems. He has inspired other aspiring engineers into the microwave field where they too have become recognized as leading researchers. For those who have contributed to the success of the Sections, I congratulate all the authors. They are the ones who have taken the initiative and made the significant contributions that have made this program a success. The Section and held major positions of responsibility in the national leadership of the IEEE. Yet another is to continue and reward enginnering excellence through his work with the awards Committee for the Sections.

June 1978 was in its first year in leadership opportunities within the IEEE and has been influential in developing the IEEE-MTT Technical Group. He is a Fellow of the IEEE and a member of the Institute of Electrical and Electronics Engineers (IEEE). He is interested in maintaining good relations with other societies.

We have a list of 23 technical colleges in Nassau and Suffolk Counties that have curriculums supporting electrical engineering, computer sciences or electrical technology programs but are not associated with IEEE student activities. We would like to get at least two additional student chapters active this year.

We are developing several additional workshop series to be presented this year. The CCRJ is emphasizing the workshop series. As other workshops that are being planned, many will be available to the public. The Economic Development was initiated last year and has established a higher profile in our community. This program needs to be strengthened and expanded. The IEEE must focus on creative methods to create awareness, expand awareness of the high technology companies on Long Island. Several new business activity areas have been identified to stimulate innovative activities and have an impact on the business environment.

An expanding program provides us with several interesting challenges. To strengthen our program and achieve our goal requires members to become active. The growing community is a reservoir of talent and expertise to assist local governments and other economic development organizations to successfully attract and retain economic activity. It is important in improving the technical environment in which we work and live, the Section will provide a great deal of technical, professional, leadership and networking skills. Please contact me at (516) 757-3008 to get involved in our future.

30 Years Later
by Rod Lawman, Historian

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SERIOUS ABOUT DEFENSE CONVERSION?

Retif’s long-time involvement in commercial, product safety, international compliance and FCC testing has paid off handsomely for many Long Island defense manufactures. Only that specific problem-solving expertise could guide a manufacturer of cellular antennas through FCC regulations in record time...or help another defense manufacturer navigate targeted regulations so their covert military radio was approved for use by auto racing pit crews...or help adapt a mil data recorder for use in the transportation industry. Put Retif’s experience, equipment and facilities to work helping you make the transition...smoothly and quickly.

RETIIF HELPS MAKE THE TRANSITION SMOOTHER.

AEROSPACE AND ELECTRONIC SYSTEMS CHAPTER TO HOST AN ELECTRICAL VEHICLES BATTERY MANAGEMENT PROGRAM

by Mr. Bob Drake and Joe Ambrosio

The LI AES Chapter will host a BADICHEQ battery Management System technical talk and component presentation by Mr. Bob Drake, President of RETIF, and Mr. Joe Ambrosio, President of Nescon Technologies, Inc. This meeting started on Monday, March 21, 1996 at the Polytechnic University’s Long Island Campus, Farmingdale. The speakers will display several battery management system components as well as battery installation and data management systems have also been made with Dr. Peter Voltz for an informal visit to Polytechnic’s EV laboratory from 5:30 to 6:00 pm to discuss the KA1000.

Mr. Ambrosio will talk about near term, mid-term and long term battery technology. Mr. Drake will discuss battery technologies and battery management systems, particularly the BADICHEQ battery management system and the BADICHEQ battery management and the integration in various vehicle platforms. It is a microcontroller-based device that combines single battery measurement, including battery history monitoring and individual battery recharging by means of a small integrated controller. The patented hardware allows for high compactness and reliability. Using a charger with external current control capability, in combination with the patented charge procedure, yields a unique Cell Regulator (C.R.) The main charge current is controlled in such a way that none of the battery voltages rises above a specific limit, thus avoiding overcharging at high, nonrechargeable current. Incomplete charged cells are recharged individually by means of the BADICHEQ-integrated low power charger. The BADICHEQ system is widely used in Europe and is installed in over 50 vehicles in the United States. It is the industry standard and many battery manufacturers extended their warranties when a BADICHEQ management system is installed in their packs.

Mr. Drake graduated with a BBA with a major in industrial management from Fairfield University, Fairfield Connecticut in 1990. He holds a patent #5,223,231 for a Micro-Med Waste Treatment Process for hazardous, infectious and medical waste. He is Co-author ASTM paper 81-JPGC-PWR-13 on Power Station Condenser Cleaning Systems. He was a member of ARPA Consorium Electrocore. Mr. Drake has extensive experience in business operations, management and sales/marketing. Over 16 years of experience in industrial, national and international sales for European Industrial Corporation. He is involved in improving and integrating the U.S. market for a potential battery management system for the electric vehicle market. He is supporting the development of a local EV workshop for installation and maintenance of EV components by working closely with research groups, battery manufacturers and automobile manufacturers to make EV a reality.

Mr. Ambrosio graduated with a B.S. degree in mechanical engineering from New York Institute of Technology in 1993. He is involved in EV conversions, ground up electrical vehicles, and hybrid EV systems with digital fuel management. He has developed new electrical drive trains and new battery type installations and manipulations. He has been instrumental in developing thermal management systems for cold weather EV and battery/ EV safety equipment as “Fault Finder”, Current Leakage, and Hydrogen Sensing Systems.

The meeting is open and free of charge to the public. For information on this talk or to join the speakers for a post talk dinner, call Tom Campbell at (516). 757-3008.
**Microprocessors and Software for the Novice**

The Long Island IEEE Section is presenting a five session (3 hours per session) training course "Microprocessors and Software for the Novice". It will be given at AIL Systems on Comack Road in Deer Park on five consecutive Thursday nights, from 6 to 9 PM beginning April 18, 1996.

This course is for engineers and managers who need a better understanding of the terminology, advantages, and pitfalls of today's microprocessor/software technology. It will also serve the needs of the entry level hardware or software engineer who can gain much practical knowledge based on the many years of experience of the engineer/instructor.

The instructor is Peter Buitkental, MSEE, a software consultant and Chairman of the IEEE Consultants Network of Long Island. Mr. Buitkental has been active in designing embedded microprocessor systems hardware and software since their introduction commercially in the 1970's. He has designed systems based upon microprocessors developed by National, Motorola, Intel, Hitachi, Signetics and Intersil. He has shared his experience by teaching microprocessor courses since 1976 at CQMC, AIL, Litton Systems, Loral, Loral Systems, and Peterson Associates.

**Content**

I. Purpose of this course
   a. What you will learn: hardware / software
   b. Make or buy. Resist temptation to reinvent.
   c. What can the U do?
      - Families
      - Abilities and constraints

II. Programming languages
    a. Comparison of strengths and weaknesses

Registration

Make checks payable to IEEE Long Island Section  
m and mail to Batak Behesti, 101 Caffere Ave., Bethpage, NY 11714, include your address, phone and e-mail numbers. For info call Don Greco at (516) 488-8171. The fees for the training course are:

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The Pulse of Long Island

6 March, 1996

Professioal Activities Report

The month's column applies to all engineers but recent graduates should pay special attention because you have a distinct advantage over your more experienced colleagues.

As you have all read in the press and in some of my previous reports the relationship between companies and employees has changed dramatically in the last five years. One of the results of "downsizing" has been the growth of "outsourcing." This is the process whereby a company purchases its manpower from a company. I read in a newspaper, several years ago, an extreme example of this. A large California defense company laid off 7000 employees on one day. On the following Monday morning 3000 of them were back at their desks, but they no longer worked for the same company. They now worked for a job shop, for less salary and no benefits. I am sure there are many stories of similar situations that you have heard about. I recently heard of a company that was much more benevolent by not eliminating any jobs, improving the medical and retirement benefits and now all it's former employees (from the President on down) work for another corporate entity. I don't know what the long term implications of this process are, but "Times are different."

California is a strange place. Sometimes they are ahead of the rest of the country and other times ???? If you read my previous articles regarding professional registration and California you would know that in New York all professional registration is controlled by the New York State Board of Regents. In California it is called the Consumer Protection Agency. All types of service providers must register, from Doctors to hair dressers to any kind of "Consultant." This has caused great turmoil for the last several years. An engineer who has an opportunity to work for a company as an independent consultant "May" or "May Not" have to be registered. This battle is not yet settled. Many Engineers in California fear that they may have to apply for a P.E. License and of course take the examination. I will let you fill in the rest of this story.

So how does this apply to you? Did you ever think of moving to California? Perhaps the same thing could happen here. Now we come to you recent graduates and those of you who still remember all the engineering basics you learned in college. Sign up for the "Engineer In Training" (EIT) Exam at your earliest opportunity. A minimum of study will be required to get that first part of the Exam behind you. There is no time limit on when you must take the second part. My youngest son was able to take the EIT in his senior year and is now signed up to take the second part in April of '96. (He must have a P.E. since he's a Structural Engineer.) Wouldn't it be nice if you could get your P.E. and have one less concern about your future? I assure you that having a P.E. makes you more attractive to any employer. If you want to become a consultant then the P.E. License gives you both professional and legal stature.

As far as other things you can do to secure your future in the world of outsourcing, keeping up to date and educat-
SECOND CALL FOR PAPERS

Microwave and millimeter-wave integrated circuits are becoming increasingly important in modern military and commercial communication systems. Current trends are towards low-cost, high-density, multilevel, and multifunctional integration, covering millimeter and submillimeter wave regions. The integration of diverse subfunctions, such as light-wave devices, superconductor circuits, digital circuits and ferrite devices, together with conventional microwave or millimeter-wave devices, circuits and antennas, would allow implementation of large systems on a single chip. Research on advanced device concepts, 3-D interconnects, high-performance packaging methods, advanced CAD-tools, measurement and testing techniques, as well as material and fabrication technologies, are being directed to meet the new challenges.

Continuing on our Weber Research Institute's series of symposia, we will host an international symposium on the recent developments and new research directions for the next generation of microwave and millimeter wave integrated circuits and systems. It will be organized as a 3-day symposium, running in a single-session format of regular papers, poster presentations and panel discussions. The symposium will be held in our CATT Auditorium located at the Metrotech Center, Brooklyn, New York. Hotel accommodations will be available in the Manhattan area, conveniently connected to the conference site by subways. The extended versions of the papers will be published as a bound volume by Plenum Press, New York.

The topics of interest cover various aspects of the following suggested areas:

- Components and Devices
- Novel Transmission Media
- Printed Antennas and Phased Arrays
- Multilevel Integration
- Interconnects and Packaging
- Multifunctional Integration
- Fabrication Technology
- Measurement, Testing and Reliability
- Application Systems
- CAD Tools and Environment
- Analytical/Computational Techniques
- Guided Wave Effects and EM-Theory


Send two copies of one-page abstracts addressed to Prof. Nirod K. Das, Conference Co-Chair, 1996 WRI Symposium, Polytechnic University, Route 110, Farmingdale, NY 11735. For further information contact Tel: (516) 755-4228, Fax: (516) 755-4404, E-mail: ndas@prism.poly.edu.

Sponsor: Weber Research Institute, Polytechnic University, New York