FINAL PROGRAM

2001 IEEE Radio and Wireless Conference

Westin Waltham-Boston
Waltham, Massachusetts, USA
August 19-22, 2001

http://rawcon.org

General Chair:
Dr. Michael S. Heutmaker, *Lucent Technologies*

Technical Program Chair:
Dr. Peter Staecker

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RAWCON 2001

2001 IEEE Radio and Wireless Conference

MONDAY, AUGUST 20, 2001

1:00 PM
Opening Remarks

1:20 PM
Keynote Address
The Ever-Present Wireless LAN Future
Greg Ennis, Technical Director, *Wireless Ethernet Compatibility Alliance (WECA)*

Session M1 1:50 PM - 2:40 PM
Wireless Data Systems
Chair: Peter Staecker

M1.1 1:50 PM
Wideband Code Division Multiple Access (invited)
Laurence B. Milstein, *University of California, San Diego, CA, USA*

M1.2 2:20 PM
System Considerations for Ultra-Wideband Wireless Networks
Matthew L. Welborn, *XtremeSpectrum, Inc., Vienna, VA, USA*

BREAK 2:40 PM - 3:10 PM

Session M2 3:10 PM - 4:30 PM
Broadband Wireless Access
Chair: Bernard Geller, *Mitsubishi USA*

Poster/Exhibition Reception and Banquet

Monday, August 20, 2001

On Monday evening, please join us from 5:30 to 7:00 PM for a welcome reception, held in conjunction with the Monday Poster Session and the opening of the RAWCON2001 Exhibition of wireless products and services. At 7:00 PM we will proceed to the RAWCON2001 Banquet, which includes the Banquet Address, "Opportunities from the Wireless Industry Migration" by Thomas Rowbotham.

M2.1 3:10 PM
Performance of Second Generation Fixed Wireless Access Networks
D. Gesbert, L. Haumonte, R. Krishnamoorthy, A. Paulraj, *Iospan Wireless Inc., San Jose, CA, USA*

M2.2 3:30 PM
Experimental Results and Transceiver Hardware Design for Fixed Broadband Wireless Non-Line of Sight Transmission: up to 1 Gbit/sec in 4.6 MHz
Max Martone, *WJ Communications, Inc., San Jose, CA, USA*

M2.3 3:50 PM
A Proposal of Millimeter-wave Multi-hop Mesh Wireless Network Architecture with Adaptive Network Control Features for Broadband Fixed Wireless Access
Yoji Kishi, Satoshi Konishi, Shinobu Nanba, Shinichi Nomoto, *KDD R&D Laboratories, Inc., Kamifukuoka, Japan*

M2.4 4:10 PM
Defining a Repeater for LMDS Deployment
Dieter Scherer, *Lucent Technologies, Milpitas, CA, USA*

4:30 PM - 5:00 PM
Poster Preview
Chair: Joseph Staudinger, *Motorola SPS*

Session M3 5:30 PM - 7:00 PM
Monday Poster Session
Chair: Joseph Staudinger, *Motorola SPS*

M3.1
A GaAs Based High Performance Transceiver Front-end Chipset for 5-6 GHz Wireless Applications
S.Chakraborty, C.-H. Lee, S. Yoo, D. Heo, A. Raghavan, D.Mukherjee, J. Bhattacharjee, J. Laskar, *Georgia Institute of Technology, Atlanta, GA, USA*

M3.2
Integrated CMOS Power Amplifier and Down-Converter for 2.4 GHz Bluetooth Applications
Chao-Chih Hsiao, Chin-Wei Kuo, Yi-Jen Chan, *National Central University, Chung-li, Taiwan, R.O.C.*

M3.3
W-CDMA Even Harmonic Type Direct Conversion Receiver Based on 3GPP Definition
Kenji Itoh, Takatoshi Katsura, Hiroaki Nagano, Tatsuya Yamaguchi, *Mitsubishi Electric Corp., Hyogo, Japan*

M3.4
Co-channel Interference Suppression In D-TDD Fixed Wireless Systems Using Analytic Model
Wun-Cheol Jeong and Mohsen Kavehrad, *Pennsylvania State University, University Park, PA, USA*

M3.5
A Dual Band SiGe MMIC LNA and Mixer with Ground Shield for WCDMA and CDMA Applications
Young-Gi Kim, Shin-Young Yoon, Hyuk Kim, Seung-Hee Yoo, Young-Gul Kim, Kyung-Sik Baek, *Anyang University, Anyang-City, Korea*; Chang-Woo Kim, *Kyung Hee University, Yongin-si, Korea*; Daek-Ho Jo, Tae-Hyun Han, Byung-Lyul Youm, *ASB Inc., Taejon, Korea*

M3.6
A Low Distortion C-band Double Balanced Up-converter MMIC
Chang-Ho Lee, Sudipto Chakraborty, Joy Laskar, *Georgia Institute of Technology, Atlanta, GA, USA*

M3.7
A Compact K-Band Transceiver Module for Broadband Wireless and LMDS Applications
T. Nguyen, J. Novak, J. Gawron, G. Dietz, P. Sahm, A. Ferek, B. Bourgeois, R. Haubenstricker, E. Bogus, K. Peterson, R. Becker, S. Consolazio, *Northrop Grumman Corp., Rolling Meadows, IL, USA;* J. Van der Star, *Galleon Corp., Milpitas, CA, USA*

M3.9
An Independently Controllable AM/AM and AM/PM Predistortion Linearizer for cdma2000 Multi-carrier Applications
Chan-Wang Park, Francois Beauregard, Fadhel M. Ghannouchi, *AmpliX Wireless & Satcom, Montreal, QC, Canada*; Gary Carangelo, *Mitec Wireless, Inc., Tinton Falls, NJ, USA*

M3.10
Structural Optimization of InGaP/GaAs HBT for Power Amplifier Applications
Y.S. Lee, C.S. Park, *Information and Communications University, Taejon, Korea*

M3.12
Highly Linear Low Voltage GaAs pHEMT MMIC Switches for Multimode Wireless Handset Applications
Michael Roberts, Lutfi Albasha, Wolfgang Bosch, Damian Gotch, James Mayock, Pallavi Sandhiya, *Filtronic Compound Semiconductors, Newton Aycliffe, UK*

M3.13
Improvement of Harmonic Responses of a λ/4 Resonator BPF with Tap-Connection Technique
Kouji Wada, Atsushi Suzuki, Osamu Hashimoto, *Aoyama Gakuin University, Tokyo, Japan*; Hiroshi Harada, *Yokogawa Denshikiki Co., Kanagawa, Japan*

TUESDAY, AUGUST 21, 2001

Session T1 8:00 AM - 10:00 AM
Cellular Systems and Components
Chair: Jerry Grimm, *Nokia Networks*

T1.1 8:00 AM
Performance Analysis of Integrated Wireless Mobile Networks with Queueing Handoff Scheme
Jingao Wang, Qing-An Zeng, Dharma P. Agrawal, *University of Cincinnati, Cincinnati, OH, USA*

T1.2 8:20 AM
Multi-Class Packet Multiplexing Scheme for Wireless Internet over CDMA Systems
Masahiro Ishiba, Hideki Satoh, Takehiko Kobayashi, *YRP Mobile Telecommunications Key Technology Research Laboratories Co., Yokosuka, Japan*

T1.3 8:40 AM
Adaptive Antenna Arrays for Downlink Capacity Increase in Third Generation Wireless CDMA
Joseph Cleveland, *Samsung Telecommunications America, Richardson, TX, USA*; Adnan Kavak, *Kocaeli University, Izmit, Turkey*

T1.4 9:00 AM
Pilotless Adaptation of Feedforward Amplifiers for High-Stress Communications Signals
Colin L. Larose, Fadhel M. Ghannouchi, *Ecole Polytechnique de Montreal, Montreal, Quebec, Canada*

T1.5 9:20 AM
Low Noise Amplifier Design for CDMA Receivers
Henry Lau, *Conexant Systems Inc., Chelmsford, MA, USA*; Glenn Watanabe, Rick Holbrook, Kelvin Leung, *Motorola Inc., Tempe, AZ, USA*

T1.6 9:40 AM
Thin Film Bulk Acoustic Wave Resonator and Filter Technology
K. M. Lakin, *TFR Technologies Inc., Bend, OR, USA*

BREAK 10:00 AM - 10:30 AM

Session T2 10:30 AM - 12:10 PM
Ultrawideband Systems, Components & Coexistence
Chair: Mark Wickert, *University of Colorado*

T2.1 10:30 AM
FDTD Simulations of Ultrawide Band Impulse Transmissions
Kazimierz Siwiak, *Time Domain Corporation, Huntsville, AL, USA*; Tadeusz M. Babij, Zhong Yang, *Florida International University, Miami, FL, USA*

T2.2 10:50 AM
The Use of the Genetic Algorithm Approach in the Design of Ultra-Wideband Antennas
Aaron J. Kerkhoff, *Applied Research Laboratories, University of Texas, Austin, TX, USA*

T2.3 11:10 AM
In-band Interference Power Caused by Three Kind of UWB Signals in UMTS/WCDMA Frequencies
Matti Hamalainen, Jari Iinatti, Veikko Hovinen, Matti Latva-aho, *University of Oulu, Oulu, Finland*

T2.4 11:30 AM
Aggregate Ultra Wideband Impact on GPS Receivers
Douglas A. Cummings, *Applied Research Laboratories, University of Texas, Austin, TX, USA*

T2.5 11:50 AM
A Channelized DSSS Ultra-Wideband Receiver
Won Namgoong, *University of Southern California, Los Angeles, CA, USA*

LUNCH 12:10 PM - 1:20 PM

Session T3 1:20 PM - 2:20 PM
Active Components and Assemblies
Chair: Masashi Nakatsugawa, *NTT*

T3.1 1:20 PM
Fully Integrated Low Phase Noise VCO Design in SiGe BiCMOS Technology
Xudong Wang, Dawn Wang, Kurt Schelkle, Peter Bacon, *IBM Microelectronics, Lowell, MA, USA*

T3.2 1:40 PM
A Flicker-Noise-Free DC-Offset-Free LBJT Harmonic Mixer in a CMOS Process
Zhaofeng Zhang, Jack Lau, *Hong Kong University of Science & Technology, Hong Kong, China*

T3.3 2:00 PM
Development Of An Integrated Bluetooth RF Transceiver Module Using Multi-layer System On Package Technology
S. Chakraborty, K. Lim, A. Sutono, E. Chen, S. Yoo, A. Obatoyinbo, J. Laskar, *Georgia Institute of Technology, Atlanta , GA, USA*

BREAK 2:20 PM - 2:50 PM

Session T4 2:50 PM - 4:30 PM
Component and System Modeling
Chair: Lutfi Albasha, *Filtronic*

T4.1 2:50 PM
Nonlinear Design of Low Phase Noise Oscillator based on Load Line Analysis
Moon-Que Lee, Keun-Kwan Ryu, In-Bok Yom, Sung-Pal Lee, *Electronics and Telecommunications Research Institute, Taejon, Korea*

T4.2 3:10 PM
Modeling the Bipolar Transistor Using Multibias S Parameter Sets
T. Biondi, G. Palmisano, *Università di Catania, Catania, Italy*; G. Ferla, G. Privitera, S. Rinaudo, *STMicroelectronics, Catania, Italy*

T4.3 3:30 PM
Multi-Finger Power HBT Model for Nonlinear Circuit Simulation
Yu Zhu, Qian Cai, Raju Balasubramanian, Jason Gerber, *Ansoft Corporation, Elmwood Park, NJ, USA*

T4.4 3:50 PM
A Novel Time-Frequency Method for the Simulation/Verification of Mixed Analog and RF Communication Systems
Vincent Janicot, *Anacad-Mentor Graphics Company, Meylan, France*

T4.5 4:10 PM
Harmonic Balance Analysis for Coupled Device and Circuit Simulation
Yutao Hu, Kartikeya Mayaram, *Oregon State University, Corvallis, OR, USA*

4:30 PM - 5:00 PM
Poster Preview
Chair: Elizabeth Logan

Session T5 5:30 PM - 7:00 PM
Tuesday Poster Session
Chair: Elizabeth Logan

T5.1
Performance Analysis of Rake Receivers with Maximum a Posteriori Channel State Estimation over Time Varying Frequency Selective Finite State Markov Fading Channels
Bruno Clerckx, Danielle Vanhoenacker-Janvier, *Universite Catholique de Louvain, Louvain-la-Neuve, Belgium*

T5.2
Design and Optimization of Embedded RF Filters using a Hybrid Approach
Sidharth Dalmia, Sung Hwan Min, Madhavan Swaminathan, *Georgia Institute of Technology, Atlanta, GA, USA*

T5.3
A High Efficiency 20 dBm, 900 MHz Power Amplifier Module in 0.35 um CMOS
Jonghae Kim, Bradford Palmer, Ramesh Harjani, *University of Minnesota, Minneapolis, MN, USA*

T5.4
Wideband Printed Dipole Antenna for Multiple Wireless Services
Jeong Il Kim, *Electronics and Telecommunications Research Institute, Taejon, Korea*; Byung Moo Lee, Young Joong Yoon, *Yonsei University, Seoul, Korea*

T5.5
Development of a High-Power and High-Efficiency HBT MMIC VCO
Chang-Ho Lee, Albert Sutono, Joy Laskar, *Georgia Institute of Technology, Atlanta, GA, USA*

T5.6
A Novel Surface Mount Filter Based on a Triple-Mode Ceramic Cavity
Yuri Tikhov, Jeong Phill Kim, Kong Mahn Park, *LG Innotek Co., Ltd., Yongin-Shi, Korea*

T5.7
An Experimental DSRC Multimode Terminal Using Software Defined Radio Technology
M. Umemoto, *Telecommunication Advancement Organization of Japan, Yokosuka, Japan*

T5.8
A Frequency-based Multiple Access Architecture for High Performance Wireless Communication
Zhiqiang Wu, Carl R. Nassar and Balasubramaniam Natarajan, *Colorado State University, Fort Collins, CO, USA*

T5.9
Aperture Field Integration Method Applied to On-board Array-fed Reflector Antenna for DBS
Tetsuya Yamada, Shoji Tanaka, Toshihiro Nomoto, Takao Murata, Hajime Matsumura, *NHK Science and Technical Research Laboratories, Tokyo, Japan*

T5.10
A Compact Duplexer for IMT-2000 Handsets using Microstrip Slow-Wave Open-Loop Resonators with High-Impedance Meander Lines
Soon-Soo Oh and Young-Sik Kim, *Korea University, Seoul, Korea*

T5.11
Development of Low Loss Organic-Micromachined Interconnects on Silicon at Microwave Frequencies
D. Newlin, A. Pham, J. Harriss, *Clemson University, Clemson, SC, USA*; J.B. Lee, *Louisiana State University, Baton Rouge, LA, USA*

Poster/Exhibition Reception

Tuesday, August 21, 2001
5:30 - 7:00 PM

On Tuesday evening, please join us from 5:30 to 7:00 PM for a reception, held in conjunction with the Tuesday Poster Session and the finale of the RAWCON2001 Exhibition of wireless products and services. The reception includes a dinner buffet. At 7:00 PM we will proceed to the Panel Session 'The Next Step for the Wireless LAN."

WEDNESDAY, AUGUST 22, 2001

Session W1 8:00 AM - 9:20 AM
WLAN/OFDM Technology

Chair: Gene Tkachenko, *Alpha Industries*

W1.1 8:00 AM
An SDR Platform for Cellular/WLAN Systems Based on a Systematic Analysis of Hardware Implementation Issues to Maximize System Functionality
Masashi Nakatsugawa, Yushi Shirato, Hiroshi Yoshioka, Akinori Shibuya, Munehiro Matsui, *NTT Network Innovation Laboratories, Yokosuka, Japan*

W1.2 8:20 AM
Power Amplifier Back-off Analysis with AM-to-PM for Millimeter-wave OFDM Wireless LAN
J.S. Park, S.R. Park, H.J. Roh and K.H. Koo, *University of Inchon, Inchon, Korea*

W1.3 8:40 AM
Impact of Front-end Filters on Bit Error Performances in WLAN-OFDM Transceivers
B. Debaillie, B. Côme, W. Eberle, S. Donnay, M. Engels, I. Bolsens, *IMEC v.z.w., Leuven, Belgium*

W1.4 9:00 AM
PAPR Reduction by Envelope Stabilization using Partial Response Signaling in OFDM Systems
Venkatesh Vadde, *Nokia Research Center, Irving, TX, USA*

BREAK 9:20 AM - 9:50 AM

Session W2 9:50 AM - 11:30 AM
Broadband Antenna Elements and Arrays

Chair: Donn Harvey, *Metawave Corp.*

W2.1 9:50 AM
Reconfigurable Miniature Multielement Antenna for Wireless Networking
Bedri A. Cetiner, Luis Jofre, Franco De Flaviis, *University of California, Irvine, CA, USA*

W2.2 10:10 AM
Dual Frequency Microstrip Patch Antenna for WLAN/Bluetooth and HIPERLAN Applications
Mari Komulainen, Pekka Salonen, Markku Kivikoski, *Tampere University of Technology, Tampere, Finland*

W2.3 10:30 AM
A Wide-Band Single-Layer Patch Antenna
Naftali Herscovici, *Spike Broadband Systems, Inc., Nashua, NH, USA*

W2.4 10:50 AM
Small Size Single and MultiBand Antenna Arrays With Diversity Capabilities for Portable Devices
R. R. Ramirez, L. Jofre, F. De Flaviis, *University of California, Irvine, CA, USA*

W2.5 11:10 AM
A Compact and Broadband Microstrip Patch Antenna
Wang Yajun, Koh Wee Jin, *DSO National Laboratories, Singapore*; Lee Ching Kwang, *Nanyang Technological University, Singapore*

LUNCH 12:00 PM - 1:00 PM

Session W3 1:00 PM - 2:20 PM
Adaptive Antennas

Chair: Jonathon Veihl, *Andrew Corp.*

W3.1 1:00 PM
Achieving Directionality and Transmit Diversity via Smart Antenna Pattern Oscillation with a Geometric-Based Stochastic Channel Model for Coherence Time Evaluation
Seyed Alireza Zekavat, Carl R. Nassar, *Colorado State University, Fort Collins CO, USA*; Steve Shattil, *Idris Communications, Louisville, CO, USA*

W3.2 1:20 PM
Virginia Tech Space-Time Advanced Radio (VT-STAR)
R. Gozali, R. Mostafa, R.C. Palat, S. Marikar, P.M. Robert, W.G. Newhall, C. Beaudette, S.A. Tsiakkouris, B.D. Woerner, J.H. Reed, *Mobile and Portable Radio Research Group, Virginia Tech, Blacksburg, VA, USA*

W3.3 1:40 PM
A Novel Approach for Joint Spatial and Temporal Characterization of the Wideband Wireless Communication Channel Concerning Multiple-Antenna Applications

M. Stoytchev, H. F. Safar, *Agere Systems, Murray Hill, NJ, USA*; J. B. Raveché, *Massachusetts Institute of Technology, Cambridge, MA, USA*

W3.4 2:00 PM
A Control Algorithm for an Adaptive Reflector Antenna
John T. MacDonald, *Sapient Systems, Inc., Wilmette, IL, USA*; Donald R. Ucci, *Illinois Institute of Technology, Chicago, IL, USA*

BREAK 2:20 PM - 2:50 PM

Session W4 2:50 PM - 4:30 PM
Amplifiers and Linearization
Chair: Masami Akaike, *Science University of Tokyo*

W4.1 2:50 PM
Adaptive Algorithms for Calibrating a LINC Amplifier
Rajiv Chandrasekaran, James C. Kolanek, Anne L. Thomas, *Fujant, Inc, Carpinteria, CA, USA*; Rajeev Gandhi, *Motorola Inc., San Diego, CA, USA*; John J. Shynk, *University of California, Santa Barbara, CA, USA*

W4.2 3:10 PM
Role of Signal Envelope Distribution in Predicting the Performance of a Multicarrier Communication System
Philip Balister, Muhammad Nizamuddin, Max Robert, Jeffrey H. Reed, *MPRG, Virginia Tech, Blacksburg, VA, USA*

W4.3 3:30 PM
Linearized InGaP/GaAs HBT MMIC Power Amplifier with Active Bias Circuit for WCDMA/CDMA2000 Applications
Y.S. Noh, C.S. Park, *Information and Communications University, Taejon, Korea*

W4.4 3:50 PM
Linearization Techniques for Amplifiers Using MESFETs Fabricated with a Self-Align/Selective Ion-Implantation Process
Masashi Nakatsugawa, *NTT Network Innovation Laboratories, Yokosuka, Japan*

W4.5 4:10 PM
Memory Effects Compensation in RF Power Amplifiers by Using Envelope Injection Technique
Joel Vuolevi, Jani Manninen, Timo Rahkonen, *University of Oulu, Oulu, Finland*

Registration Hours

Sunday, August 19 9 am - 4 pm
Monday, August 20 7 am - 6 pm
Tuesday, August 21 7 am - 6 pm
Wednesday, August 22 7 am - noon

RAWCON2001 AT A GLANCE

2001 IEEE Radio and Wireless Conference

Sunday, August 19, 2001

9 AM - 4 PM	Registration
10 AM - 5 PM	Workshop: Characterization and Modeling of Power Amplifier Circuits and Transistor Technologies

Monday, August 20, 2001

7 AM - 6 PM	Registration
7 AM - 8 AM	Workshop Breakfast
8 AM - 12 noon	Workshop: Methods and Concepts for Power Amplifier Linearization
12 noon - 1 PM	Workshop Lunch
1 PM - 5 PM	Technical Sessions
5:30 PM - 7 PM	Exhibition, Poster Session, and Reception
7 PM - 8:30 PM	Banquet
8:15 PM	Banquet Address: Opportunities from the Wireless Industry Migration

Tuesday, August 21, 2001

7 AM - 6 PM	Registration
7 AM - 7 PM	Exhibition
7 AM - 8 AM	Breakfast
8 AM - 12:10 PM	Technical Sessions
12:10 PM - 1:20 PM	Lunch
1:20 PM - 5 PM	Technical Sessions
5:30 PM - 7 PM	Exhibition, Poster Session, Reception (includes dinner buffet)
7 PM - 8:30 PM	Panel: The Next Step for the Wireless LAN

Wednesday, August 22, 2001

7 AM - 12 noon	Registration
7 AM - 8 AM	Breakfast
8 AM - 11:30 AM	Technical Sessions
12 noon - 1 PM	Lunch
1 PM - 4:30 PM	Technical Sessions

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RAWCON2001

SUNDAY WORKSHOP

CHARACTERIZATION AND MODELING OF POWER AMPLIFIER CIRCUITS AND TRANSISTOR TECHNOLOGIES

Sunday, August 19, 2001 10:00 AM - 5:00 PM

Organizer:

Gene Tkachenko, *Alpha Industries*

Speakers:

S. Cherepko, *Lehigh University*; N. Iwata, *NEC*; M. Jones, *Triquint;* T. Moriuchi, *Fujitsu;* D. Shreurs, *Katholike Universiteit Leuven*; C. Wei, *Alpha Industries*

The workshop will address various aspects of characterization and modeling of discrete transistors and ICs with the primary focus on power amplifiers for wireless communication systems. The scope of the workshop will include large-signal transistor measurements, extraction of various types of large-signal models, characterization of power amplifier linearity and stability, as well as power amplifier design considerations for 3G wireless systems.

MONDAY MORNING WORKSHOP

METHODS AND CONCEPTS FOR POWER AMPLIFIER LINEARIZATION

Monday, August 20, 2001,
8:00 AM - 12:00 noon

Organizer:

J. S. Kenney, *Georgia Institute of Technology*

Speakers:

J. S. Kenney, *Georgia Institute of Technology;* K. Muhonen, *RF Micro Devices;* J. Sills, *Intersil;* Y. Wang, *UCLA*

Power amplifiers represent one of the more significant design challenges in many RF systems. Trade-offs between cost, linearity, efficiency, and reliability must be considered when optimizing a design for a particular application. Linearization techniques are often employed to extend this set of trade-offs beyond the limitations of the RF technology. This workshop will present recent advances in RF power amplifier linearization, including:

- Digital baseband predistortion
- Analog RF techniques including envelope restoration and out-phasing architectures
- Novel implementations of feed-forward correction
- RF amplifier characterization including memory effects

KEYNOTE ADDRESS

THE EVER-PRESENT WIRELESS LAN FUTURE

Monday, August 20, 2001, 1:20 PM

Greg Ennis, Technical Director, *Wireless Ethernet Compatibility Alliance*

Wi-Fi based wireless LANs are already being deployed at a rapid pace in offices, homes, airports, hotels, cafes and conference facilities. The success of this technology thus far has been due in large part to interoperability among vendors. However, future wireless LANs will be integrated into a dazzling array of different products, far different from the PC cards most common today. Can the wireless LAN industry continue to guarantee interoperability with such a proliferation of unique products? And how will technology advances affect interoperability? We'll look into the future challenges of the ever-present wireless LAN.

BANQUET ADDRESS

OPPORTUNITIES FROM THE WIRELESS INDUSTRY MIGRATION

Thomas Rowbotham, Venture Partner, *St Paul Venture Capital*

Monday, August 20, 2001, 8:15 PM

As customers come to grips with data coming through the window instead of coming through the wall, and the paths taken by American, European, and Asian industries converge, opportunities abound. This talk takes a look at these opportunities as seen through the eyes of a venture capitalist, helping manage one of the world's biggest funds focusing on telecommunications. It also touches on what a venture capitalist looks for in a proposal.

TUESDAY EVENING PANEL SESSION

THE NEXT STEP FOR THE WIRELESS LAN

Tuesday, August 21, 2001 7:00 PM - 8:30 PM

Organizer:

Michael Heutmaker, *Lucent Technologies*

Moderator:

Craig Mathias, Principal, *Farpoint Group*

Panelists:

Amit Dhir, System Architect, Strategic Marketing, *Xilinx;* Marketing Co-Chair, *HiperLAN2 Global Forum*

James Lansford, Vice President of Business Development, *Mobilian Corp.*

Allan Scott, Business Manager, Americas Region, ORiNOCO Products, *Agere Systems*

Ali Tabassi, Chief Technology and Development Officer, *MobileStar Network Corp.*

Carl Temme, Director of Product Management, *Atheros Communications*

Jim Zyren, *Director of Marketing, Wireless Networking Business, Intersil Corp.*

Usage of wireless local area network (WLAN) technology has grown dramatically in the past two years, as more PCs include the IEEE 802.11b interface, as prices fall for home access points, and as service providers deploy publicly accessible WLANs in airports, hotels, and elsewhere. As technology enhancements continue to improve the speed, security, and quality of service of WLANs, what will be the next technological challenge? What are the tradeoffs between WLAN service in the 2.4 GHz band vs. the 5 GHz band? Will high-rate spread-spectrum technology ((802.11g) share the market with newly developed OFDM technology (802.11a)? How critical is the capability to roam between WLAN networks, or between WLAN, GPRS, and Bluetooth networks? What are the limits imposed by interference, coexistence, and interoperability? What is the potential impact of harmonization of the 5 GHz WLAN standards (802.11a and HiperLAN2)? The panelists present the perspectives of service providers, hardware designers, system developers and others on these issues.

Exhibition

RAWCON2001 includes an exhibition of wireless products and services on Monday (5:30 - 7 PM) and Tuesday (7 AM - 7 PM). Booth and tabletop spaces may still be available. For information please check rawcon.org or contact the Exhibition Co-Chair, Robert Alongi of the IEEE Boston Section (Bostonieee@aol.com, or +1-781-890-5290).

Hotel and Travel

Westin Waltham-Boston
70 Third Avenue
Waltham, Massachusetts 02154
1-800-937-8461
+1-781-290-5600
+1-781-890-5959 (fax)

Please make your own reservations with the hotel. The conference rate is $189 (single or double occupancy) plus tax (currently 9.7%). Rooms are available at the conference rate through July 28, 2001. After the cutoff date, rooms may be offered at the conference rate at the discretion of the hotel.

The hotel is 18 miles from Boston Logan International Airport; driving time is approximately 30 minutes. Free covered garage parking is available at the hotel. Shuttle service from the airport to the hotel is available from US Shuttle (1-800-714-1115) for a fare of $23 per person one-way. If you call US Shuttle from the airport, they usually can pick you up within 15 minutes. See **rawcon.org** for full details and directions.

ON-SITE REGISTRATION FORM

2001 IEEE Radio and Wireless Conference

August 19-22, 2001
Waltham, MA, USA
http://rawcon.org

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REGISTRATION FEES

Technical Sessions

❑ IEEE Member	$360
❑ Non-member	$430
❑ IEEE Student Member	$280
❑ Retired IEEE Member	$280
❑ Presenter	$280

Optional Workshops (including lunch and notes)

❑ Power Amplifier Modeling, Sunday full day	$130
❑ Amplifier Linearization, Monday morning	$100

Additional Options

❑ Monday Reception, Banquet, Panel, and Exhibition Only	$60
❑ Tuesday Reception, Panel, and Exhibition Only	$25
❑ Additional copy of Proceedings (on-site pickup only)	$40
❑ Guest Registration (meals only)	$150

Guest name for badge: _____

INCLUDED WITH TECHNICAL SESSIONS

- Admission to two and a half days of oral technical sessions
- Admission to exhibition, poster sessions, and two evening panel sessions
- Proceedings book with about 65 four-page papers
- Meals (banquet on Monday evening; breakfast, lunch and dinner on Tuesday; breakfast and lunch on Wednesday)
- Monday and Tuesday evening reception

PAYMENT

Total Payment Due: $_____

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MESSAGE FROM THE GENERAL CHAIR

The organizers of RAWCON continue to look for meaning in the term "interdisciplinary" as it applies to RF technology and wireless communications. For this edition of the conference, we have been seeking papers that explore the connections between component design and system performance, in a variety of system contexts — cellular, fixed wireless, ultra wideband, and wireless LAN. We have constructed sessions that mix component and system presentations within these system contexts, in an effort to foster as much interaction between disciplines as possible.

Beyond the Technical Program, several elements of RAWCON2001 highlight the impact of wireless data communications in the industry. The Keynote Address and Tuesday Panel Session pertain to wireless LAN technology, which may be one of the telecommunications sectors that is least adversely affected by the present economic climate. The Keynote is "The Ever-Present Wireless LAN Future" by Greg Ennis, who is the Technical Director of the Wireless Ethernet Compatibility Alliance (WECA). The Tuesday Panel Session, "The Next Step for the Wireless LAN," moderated by Craig Mathias of the Farpoint Group, will explore business and technology issues in this fast-growing segment. The Monday Banquet Address, "Opportunities from the Wireless Industry Migration," will be given by Thomas Rowbotham of St. Paul Venture Capital, who views the convergence of wireless data networking from the perspective of a venture capitalist.

RAWCON2001 offers two optional workshops that focus on nonlinearity at the component/subsystem level. The all-day Sunday Workshop "Characterization and Modeling of Power Amplifier Circuits and Transistor Technologies" highlights large-signal modeling and has been organized by Gene Tkachenko of Alpha Industries. The half-day Monday Workshop "Methods and Concepts for Power Amplifier Linearization" has been organized by Steve Kenney of Georgia Tech.

The Vendor Exhibit includes booth and tabletop displays from leading wireless industry suppliers and is open Monday and Tuesday.

Since its origin in 1996, RAWCON has been held in Colorado, and this year marks the first time that the conference has left its birthplace. We hope that the Boston venue will provide attendees with a positive experience. As always, we seek feedback from attendees, presenters and exhibitors to help us chart the future of RAWCON. Please give your comments and suggestions to any Committee member or myself. I'm looking forward to seeing you in August.

—*Mike*

RAWCON 2001

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