



# Boston 2002

ADVANCE PROGRAM



## 2002 IEEE Radio and Wireless Conference

Boston  
Massachusetts, USA  
August 11-14, 2002

<http://www.rawcon.org>

*General Chair:*

Peter Staecker, *Photonic Systems, Inc.*

*Technical Program Chair:*

J. Stevenson Kenney, *Georgia Institute of Technology*

Michael S. Heutmaker, *Lucent Technologies*

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IEEE Microwave Theory and  
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## 2002 IEEE Radio and Wireless Conference

### Keynote Address

**D**on't miss the opening session of the Conference, featuring our keynote speaker, Richard Frenkiel, Director of Strategic Planning of the Wireless Information Networks Laboratory (WINLAB) at Rutgers University.

#### "The Cost of a Bit and Other Annoying Problems"

Traditionally, wireless end-points have been the 'bottlenecks' on our ever-faster information highways. Limited spectrum and battery power, coupled with a dispersive and highly variable channel, have limited data throughput to a few thousand bits per second (b/s), while cable and digital subscriber line (DSL) modems now offer speeds of hundreds of kilobits per second (kb/s) to wireline customers. Therefore, it is not surprising that so much of the focus of third-generation (3G) wireless systems has been on achieving similarly high bit-rates. It is likely, however, that other problems, in particular the cost per bit, will be more important than bit-rate in determining the success of future wireless information systems.

### Poster/Exhibition Reception

Monday, August 12, 2002

**O**n 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 RAWCON2002 Exhibition of wireless products and services.

### Conference Banquet

**O**n Monday evening at 7:00 PM, following the opening of the Poster Session, Exhibition and Reception, you are invited to the conference Banquet, followed at 8:15 PM by an address entitled "Micro Fuel Cells: Beyond Batteries." The speaker, Robert Hockaday, is President, Energy Related Devices Inc., Technology Partner of Manhattan Scientifics, Inc., Los Alamos, NM. His company is engaged in research and development of micro fuel cells for wireless applications.

### Monday, August 12, 2002

1:00 PM

#### Opening Remarks:

Peter Staecker, Photonic Systems, Inc.

1:20 PM

**Keynote Address: "The Cost of a Bit, and Other Annoying Problems," Richard Frenkiel, Director of Strategic Planning, WINLAB Rutgers University, New Brunswick, NJ, USA**

#### Session M1 1:50 PM - 3:30 PM

##### Cellular System Performance

Chair: Bjorn Bjerede, *Consultant*

M1.1 1:50 PM

##### Strategies to Increase Forward Link Capacity of 3G CDMA Wireless Networks by QOS (Data-Rate) Modification

J. A. Khoja, J. W. Bredow, *The University of Texas at Arlington, Arlington, TX, USA*

M1.2 2:10 PM

##### On the Backhaul Efficiency of 3G CDMA Radio Access Network

D. T. Chen, I. Vukovic, *Motorola, Arlington Heights, IL, USA*

M1.3 2:30 PM

##### Multicell Uplink of Multi-Carrier DS-CDMA Wireless Communications

P. Nanan, *Keio University, Yokohama, Japan*

M1.4 2:50 PM

##### Mobile Positioning Technologies and Location Services

P. Wang, M. Green, M. Malkawi, *Nokia, Irving, TX, USA*

M1.5 3:10 PM

##### WCDMA Cross Modulation Effects and Implications for Receiver Linearity Requirements

N. E. Swanberg, J. Phelps, M. Recouly, T. Beukema, *IBM, Encinitas, CA, USA*

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BREAK 3:30 PM - 3:40 PM

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#### Session M2: 3:40 PM - 5:00 PM

##### Heterogeneous Networks and Convergence

Chair: Bjorn Bjerede, *Consultant*

M2.1 3:40 PM

##### An Overview of OFDM and Related Techniques Towards Development of Future Wireless Multimedia Communications (Invited)

F. B. Frederiksen and R. Prasad, *Center for PersonKommunikation, Aalborg University, Denmark*

M2.2 4:00 PM

##### Two Dimensional Dynamic Channel Assignment for Wireless Mobile High Speed Data Network

F. Alizadeh, *George Washington University, Washington, DC, USA*

M2.3 4:20 PM

##### Re-configurable Multi-standard Terminal for Heterogeneous Networks

J. Brakensiek, B. Oelkrug, M. Bucker, D. Uffmann, A. Dröge, M. Darianian, *Nokia GmbH, Bochum, Germany*

M2.4 4:40 PM

##### Throughput Performance Analysis of Automatic Repeat Request Strategies Combined with Adaptive Rate Transmission

J. Yun, W. Jeong, M. Kavehrad, *The Pennsylvania State University, University Park, PA, USA*

#### Poster Preview Session 5:00 PM-5:30PM

Chair: J. Stevenson Kenney, *Georgia Tech*

#### Session P1 5:30 PM - 7:00 PM

P1.1

##### A New Radio Resource Management Scheme for Multiple Video Stream Transmission

R. Shinkuma, M. Okada\*, S. Komaki, *Osaka University, Osaka, Japan, \*Nara Institute of Science and Technology, Nara, Japan*

P1.2

##### Combined Spatial Filter and Joint Detector in the Uplink of TD-SCDMA

L. Kun, Z. Zhang, *Harbin Institute of Technology, Harbin, China*

P1.3

##### Non-linear Spectral Analysis of Direct Conversion Wireless Receivers

A. Bevilacqua, F. Svelto\*, *University of Padova, Padova, Italy, \*University of Pavia, Pavia, Italy*

P1.4

##### On the Impact of Receiver RX Filters on EDGE EVM Measurements

R. Mahmoudi, J. L. Tauritz\*, *Applied Wave Research, El Segundo, CA, USA, \*University of Twente, Enschede, The Netherlands*

P1.5

##### An Analysis of Direction-of-Arrival Estimation for Closely Spaced Wideband Sources in Direction Finding Smart Antennas

T. Do-Hong, P. Russer, *Munich University of Technology, Munich, Germany*

P1.6

**A Low-Complexity Robust Bearing Estimator Using Reparameterization and Covariance Match for the Distributed Source**

S. Liu, Q. Wan, Y. Peng, *High-Speed Digital Signal Processing and Network Transmission Laboratory, Beijing, China*

P1.7

**Design and Implementation of a Switched-Beam Smart Antenna for an 802.11b Wireless Access Point**

F. W. Caldwell, M. A. Ingram, J. S. Kenney, *Georgia Institute of Technology, Atlanta, GA, USA*

P1.8

**Broadband Slotted Spiral Antennas With Thin Dielectric Substrates**

B. Liu, A. M. Ferendeci, *University of Cincinnati, Cincinnati, OH, USA*

P1.9

**Interference Mitigation in WLAN Networks using Client-Based Smart Antennas**

E. G. Desautel, S. Kenney, D. Kim, D. Kiesling\*, *Georgia Institute of Technology, Atlanta, GA, USA*, \**Microcoating Technologies, Inc., Chamblee, GA, USA*

P1.10

**A tuning method using a dummy cavity for dual-mode cavity filters**

J. Lee, M. S. Uhm, S. Kahng, I. Yom, S. Lee, *Electronics and Telecommunications Research Institute, Daejeon, S. Korea*

P1.11

**A Novel Electromagnetic Bandgap Structure and Its Application for Antenna Duplexer**

Z. Chen, N. Yang, Y. Wang, M. Y. Chia, *Institute for Communications Research, Singapore, Southeast University, Nanjing, China*

P1.12

**A Low Cost and High Performance Bandpass Filter on a Ridge Waveguide Structure for 5 GHz U-NII band Radio Channel Selection**

Y. Sinelnikov, Y. Oh, J. Kwon\*, H. Yun\*, *Hong-ik University, Seoul, Korea*, \**Win Telecom Inc., Seoul, Korea*

P1.13

**A Strongly Coupled Microstrip Ring Resonator using Linearly Tapered Feedline for Bandpass Filter Applications**

S. Han, Y. Kim, *Korea University, Seoul, Korea*

## TUESDAY, AUGUST 13, 2002

### Session T1 8:00 AM - 9:20 AM

Chair: Sridhar Kanamaluru, *Sarnoff Corp.*

#### Ultra wideband Systems

T1.1 8:00 AM

**On the Performance Comparison of Different UWB Data Modulation Schemes in AWGN Channel in the Presence of Jamming**

M. Hamalainen R. Tesi, J. Iinatti, V. Hovinen, *Centre for Wireless Communication, University of Oulu, Finland*

T1.2 8:20 AM

**Analysis of Ultra-Wideband Frequency Diversity Six-Port Receiver**

X. Xu, S. Tatu, E. Moldovan, R. Bosisio, K. Wu, *Centre de Recherches Avancées en Micro-ondes et en Électronique Spatiale (Poly-Grames), Montreal, Canada*

T1.3 8:40 AM

**BER for Synchronous Multi-Access UWB Radio Using Pseudo-Chaotic Time Hopping**

G. Maggio, D. Laney\*, F. Lehmann†, *University of California, San Diego, CA, USA*, \**STMicroelectronics, San Diego, CA, USA*, †*HRL Laboratories, Malibu, CA, USA*

T1.4 9:00 AM

**Power Saving Strategy for an UWB Impulse Radio Transceiver Using PCTH**

G. Maggio\*, L. Reggiani†, \**University of California San Diego, La Jolla, CA, USA*, †*Politecnico di Milano, Milano, Italy*

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BREAK 9:30 AM - 10:00 AM

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### Session T2 10:00 AM - 11:40 AM

Chair: Jenshan Lin, *Agere Systems*

#### Mobile System Design and Implementation

T2.1 10:00 AM

**On the Performance of a Blind Source Separation Based I/Q-Corrector**

E. Cetin, I. Kale, R. C. Morling, *University of Westminster, London, UK*

T2.2 10:20 AM

**High-Speed Carrier Recovery Circuit Suitable for Direct Digital QPSK Transceivers**

E. Marsan, J. Schiel, K. Wu, R. G. Bosisio, *Poly-Grames, École Polytechnique, Montreal, Canada*

T2.3 10:40 AM

**Adaptive Pre-Equalization in Analog Heterodyne Architectures for Wireless Local Network**

E. Coersmeier, *Nokia, Bochum, Germany*

T2.4 11:00 AM

**OFDM-WLAN Receiver Performance Improvement by Digital Compensation Techniques**

W. Eberle, J. Tubbx, B. Come, S. Donnay, G. Gielen\*, H. De Man\*, *Imec, DESICS, Leuven, Belgium*, \**KU Leuven, Leuven, Belgium*

T2.5 11:20 AM

**Millimeter-wave Self-Heterodyne Transmission Technique and a Simple Millimeter-wave Diversity Reception System**

Y. Shoji, K. Hamaguchi, H. Ogawa, *Communications Research Laboratory, Yokosuka, Japan*

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LUNCH 12:00 PM - 1:00 PM

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### Session T3 1:00 PM - 2:40 PM

Chair: Jerry Grimm, *Nokia USA*

#### Propagation and Measurement

T3.1 1:00 PM

**Signal Propagation Model Used to Predict Location Accuracy of GSM Mobile Phones for Emergency Applications**

M.Green, S. Wang\*, *Nokia Research Center, Pomona, CA, USA*, \**Nokia Research Center, Irving, TX, USA*

T3.2 1:20 PM

**WCDMA STTD Performance Analysis with Transmitter Location Optimization in Indoor Systems Using Ray-tracing Technique**

K. K. Bae, J. Jiang, W. H. Tranter, J. He, A. Verstak, L. T. Watson, N. Ramakrishnan, C. R. Anderson, T. S. Rappaport, C. A. Shaffer, *Virginia Polytechnic Institute and State University, Blacksburg, VA, USA*

T3.3 1:40 PM

**Non-invasive statistical SAR assessment from rapid near-field measurements in spherical antenna test range.**

L. Duchesne, M. Legoff, V. Monebhurrn\*, J. Bolomey\*, *SATIMO, Courtaboeuf, France*, \**SUPELEC, Gif-sur-Yvette, France*

T3.4 2:00 PM

**Measurement of Multipath Signal Component Amplitude Correlation Coefficients Versus Propagation Delay**

W. G. Newhall, R. Mostafa, K. Dietze, J. H. Reed, *Virginia Tech, Blacksburg, VA, USA*

T3.5 2:20 PM

**2 to 60 GHz RF Propagation Characteristics Variations due to Foliage, Rain and Wind**

S. A. Perras, *Communication Research Centre, Ottawa, Canada*

BREAK 2:40 PM - 3:10 PM

**Session T4 3:10 PM - 4:50 PM**

**Antenna Technology**

Chair: Tuli Herscovici, *Spike Broadband*

T4.1 3:10 PM

**Super Resolution Processing for Smart Antennas**

D. Kasilingam, H. Chen, *University of Massachusetts, Dartmouth, North Dartmouth, MA, USA*

T4.2 3:30 PM

**A DSP-Based Implementation of Adaptive Algorithms for a W-CDMA Reverse Link Beamformer**

R. Martínez-Rodríguez-Osorio, L. García-García, L. de-Haro-Ariet, M. Calvo-Ramón, *Polytechnic University of Madrid, Madrid, Spain*

T4.3 3:50 PM

**An Omnidirectional and Low-VSWR Antenna for Ultra-Wideband Wireless Systems**

T. Taniguchi, T. Kobayashi, *Tokyo Denki University, Tokyo, Japan*

T4.4 4:10 PM

**An Integrated Chip-Scale Active Antenna for 5-6 GHz Wireless Microsystems**

J. Zhao, S. Raman, *Virginia Tech, Blacksburg, VA, USA*

T4.5 4:30 PM

**Prediction of Mutual Coupling Between Base Station Antenna Arrays**

A. H. Mohammadian, L. Golovanevsky, S. S. Soliman, A. Tassoudji, *Qualcomm Incorporated, San Diego, CA, USA*

**Poster Preview Session 5:00 PM - 5:30 PM**

**Tuesday Poster Session**

Chair: Michael S. Heutmaker, *Lucent Technologies*

**Session P2 5:30 PM - 7:00 PM**

P2.1

**A Low-Power CMOS Mixer for Low-IF Receiver**

E. Zencir, N. S. Dogan, E. Arvas\*, *North Carolina A&T State University, Greensboro, NC, USA*, \**Syracuse University, Syracuse, NY, USA*

P2.2

**The Effect of Order of Nonlinearity on the Estimation of Distortion in Nonlinear RF Power Amplifiers**

K. M. Gharaibeh, M. B. Steer, K. Gard\*, H. Gutierrez\*, *North Carolina State University, Raleigh, NC, USA*, \**Qualcomm CDMA Technologies Inc, San Diego, CA, USA*, †*Florida Institute of Technology, Melbourne, FL, USA*

P2.3

**A 2.4GHz Sub-1dB CMOS Low Noise Amplifier with On-Chip Interstage Inductor and Parallel Intrinsic Capacitor**

J. Long, N. Badr, R. J. Weber, *Iowa State University, Ames, IA, USA*

P2.4

**Half Frequency Instability on a 1W Bipolar Part**

A. Aimdilokwong, R. J. Weber, *Iowa State University, Ames, IA, USA*

P2.5

**An Enhanced Linear Amplification with Non-Linear Component (ELINC) System**

J. Gu, *4D Connect, Inc., San Diego, CA, USA*

P2.6

**A Class-S RF Amplifier Architecture with Envelope Delta-Sigma Modulation**

Y. Wang, *UCLA, Los Angeles, CA, USA*

P2.7

**VCOOPT: A Tool for VCO Phase Noise Optimization**

V. Kratyuk, K. Mayaram, *Oregon State University, Corvallis, OR, USA*

P2.8

**A 2.7-V Monolithic SiGe HBT Variable Gain Amplifier for CDMA Applications**

C. Kim, S. Park, Y. Kim\*, *Kyung Hee University, Yongin, Korea*, \**Anyang University, Anyang, Korea*

P2.9

**The Feasibility of a Variable Output Matching Circuit in a High-Power SSPA**

A. C. Cotler, E. R. Brown, *UCLA, Los Angeles, CA, USA*

P2.10

**Novel Combiner for Hybrid Digital/RF Fiber-Optic Application**

M. Maeng, K. Lim, Y. Hur, M. F. Davis, N. Lal, S. Yoon, J. Laskar, *Georgia Institute of Technology, Atlanta, GA, USA*

P2.11

**An Improved Characterization Method for the Dielectric Properties of RFIC Encapsulating Plastics**

D. Jessie, L. Larson, *University of California, San Diego, La Jolla, CA, USA*

P2.12

**Development and Characterization of Embedded Thin-Film Capacitors for Mixed Signal Applications on Fully Organic System-on-Package Technology**

J. M. Hobbs\*, S. S. Dalmia, V. Sundaram, L. Wan, W. Kim, G. E. White, M. Swaminathan, R. R. Tummala, *Georgia Institute of Technology Atlanta, GA, USA*, \**Delphi Automotive Systems, Warren, OH, USA*

**Wednesday, August 13, 2002**

**Session W1: 8:00 AM - 9:40 AM**

**RFIC Technology**

Chair: Joe Staudinger, *Motorola*

W1.1 8:00 AM

**A Fully Integrated GSM/DCS/PCS Rx VCO With Fast Switching Auto-Band Selection**

D. Wang, X. Wang, A. Eshraghi, P. Bacon, *IBM, Lowell, MA, USA*

W1.2 8:20 AM

**A 5-6 GHz Fully-Integrated CMOS LNA for a Dual-Band WLAN Receiver**

D. Mukherjee, J. Bhattacharjee, S. Chakraborty, J. Laskar, *Georgia Institute of Technology, Atlanta, GA, USA*

W1.3 8:40 AM

**A Layout Dependent and Bias Independent Scalable Substrate Model for CMOS RF Transistors**

R. Suravarapu, K. Mayaram, R. Shi\*, *Oregon State University, Corvallis, OR, USA*, \**University of Washington, Seattle, WA, USA*

W1.4 9:00 AM

**A Differential 2.4GHz Switched-Gain LNA for 802.11b and Bluetooth**

R. W. Point, M. Mendes, W. Foley, *Global Communications Devices, Inc., North Andover, MA, USA*

W1.5 9:20 AM

**A CMOS RF Bandpass Low Noise Amplifier for Multi-band Wireless Communication Applications**

S. Mou, J. Ma, K. Yeo, M. Do, *Nanyang Technological University, Singapore, China*

**Poster/Exhibition Reception**

Tuesday August 13, 2002

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 RAWCON2002 Exhibition of wireless products and services. The reception includes a dinner buffet. At 7PM we will proceed to the Panel Session "WLAN and 3G Services: Convergence or Coexistence?"

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BREAK 9:40 AM - 10:10 AM

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**Session W2 10:10 AM - 11:50 AM**

**Power Amplifiers and Linearization**

Chair: Joe Staudinger, *Motorola*

W2.1 10:10 AM

**Adaptive Baseband Power Amplifier Linearization using Genetic Algorithms**

James Sills, *Intersil Corp., Scottsdale, AZ, USA*

W2.2 10:30 AM

**Adaptive Predistortion Linearization of RF Power Amplifiers Using Look-Up Tables Generated from Subsampled Data**

Y. Park, W. Woo, R. Raich, J. S. Kenney, G. T. Zhou, *Georgia Institute of Technology, Atlanta, GA, USA*

W2.3 10:50 AM

**Power Amplifier Linearization Through Generation and Injection of Low-Frequency Second-Order Nonlinear Products**

A. Khanifar, W. Jenkins\*, *Powerwave Technologies Inc, Santa Ana, CA, USA*, \**Nokia Networks, Camberley, UK*

W2.4 11:10 AM

**Improved Design Technique of a Microwave Class-E Power Amplifier with Finite Switching-on Resistance**

C. Wang, L. E. Larson, P. M. Asbeck, *Center for Wireless Communications, University of California, San Diego, CA, USA*

W2.5 11:30 AM

**Power Amplifiers for 60 GHz WLAN Applications**

M. J. Varonen, M. M. Kärkkäinen, J. Riska, P. Kangaslahti\*, V. Porra, *Helsinki University of Technology, Espoo, Finland*, \**Ylinen Electronics Oy, Kauniainen, Finland*

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LUNCH 12:00 PM - 1:00 PM

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**Session W3 1:00 PM - 2:20 PM**

**Novel Filtering and Coupling Structures**

Chair: Ke Wu, *École Polytechnique*

W3.1 1:00 PM

**Hairpin-shaped Step-Impedance Slip-Ring Resonators**

T. N. Chang, J. H. Li, *Tatung University, Taipei, Taiwan*

W3.2 1:20 PM

**A Novel Low Loss Microwave Multiplexer Design Based on Directional Filters**

V. Neubauer, M. L. Mayer, G. Magerl, *Vienna University of Technology, Vienna, Austria*

W3.3 1:40 PM

**Design of Directional Couplers Using Multilayer Thick-Film Technology**

Z. Tian, C. Free\*, P. Barnwell<sup>†</sup>, J. Wood<sup>‡</sup>, C. Aitchison\*, *Middlesex University, London, UK*, \**University of Surrey, Guildford, UK*, <sup>†</sup>*Heraeus, West Conschohoken, PA, USA*

W3.4 2:00 PM

**Quasi-3D Multi-Way Power Dividers in LTCC technology**

G. Passiopoulos, K. Lamacraft, *Nokia, Camberley, UK*

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BREAK 2:20 PM - 2:50 PM

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**Session W4 2:50 PM - 4:30 PM**

**MEMS Structures and Applications**

Chair: Ken Lakin, *TFR Technologies*

W4.1 2:50 PM

**RF MEMS and Si Micromachining in High Frequency Applications**

D. Peroulis, A. Margomenos, L. P. B. Katehi\*, *Univ. of Michigan, MI, USA*, \**Purdue Univ., IN, USA*

W4.2 3:10 PM

**RF MEMS Switches for 3D-IC Phased Array Antenna Modules**

Y. A. Wang, A. M. Ferendeci, *Microwave and Millimeter Wave Electronics Lab, University of Cincinnati, Cincinnati, OH, USA*

W4.3 3:30 PM

**The Study of MEMS Millimeter Wave Phase Shifter**

G. F. Min, L. Z. Sheng, Z. S. Zheng, X. P. Sheng, Z. Z. Qiang, *East China Normal University, Changning, China*

W4.4 3:50 PM

**Modeling and Comparison of Different Micromachined Three-Dimensional Structure of Inductors**

S. Liang, S. Tsai, C. Lee, R. Huang, *Asia Pacific Microsystems, Inc., HsinChu, Taiwan*

W4.5 4:10 PM

**Polymer-Membrane-Supported Fin-Line Frequency Multipliers**

W. Y. Liu, *University of Michigan, Ann Arbor, MI, USA*



**RAWCON 2002**

**AT A GLANCE**

**2002 IEEE Radio and Wireless Conference**

**Sunday August 11, 2002**

*Sunday registration ends at 2PM*

9 AM - 2 PM	Registration
10 AM - 5 PM	Workshop: Next Generation Wireless LAN Systems

**Monday, August 12, 2002**

*Monday registration ends at 6 PM*

7 AM - 6 PM	Registration
7 AM - 8 AM	Workshop Breakfast
8 AM - 12 PM	Advanced Integration Techniques for RF Wireless Devices
12 PM - 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: Micro Fuel Cells: Beyond Batteries

**Tuesday, August 13, 2002**

*Tuesday registration ends at 4PM*

7 AM - 4 PM	Registration
7 AM - 7 PM	Exhibition
7 AM - 8 AM	Breakfast
8 AM - 11:40 PM	Technical Sessions
12 PM - 1 PM	Lunch
1:00 PM - 4:50 PM	Technical Sessions
5:30 PM - 7 PM	Exhibition, Poster Session, Reception (includes dinner buffet)
7 PM - 8:30 PM	WLAN and 3G Services - Convergence or Coexistence?

**Wednesday, August 14, 2002**

*Wednesday registration ends at 12 PM*

7 AM - 12 PM	Registration
7 AM - 8 AM	Breakfast
8 AM - 11:50 AM	Technical Sessions
12 PM - 1 PM	Lunch
1 PM - 4:30 PM	Technical Sessions

Watch //www.rawcon.org for the latest information on **RAWCON2002**

# SPECIAL TECHNICAL PROGRAMS

## SUNDAY WORKSHOP

### NEXT GENERATION WIRELESS LAN SYSTEMS

Sunday, August 11, 2002

Organizer: Doug Teeter, *RF Micro Devices*

Craig Mathias *Principal, Farpoint Group*

Paul Nikolich *Chair, IEEE 802. Committee*

Jim Zyren *Director of Marketing, Intersil*

Kalwant Singh *Senior Design Engineer,*

*Atheros*

Jim Wight *Principal Architect, IceFyre*

*Semiconductor*

Flemming Frederiken, Ramjee Prasad,

*Institute of Electronic Systems, Aalborg*

*University*

Usage of wireless local area network (WLAN) technology has grown dramatically over the past several 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. Technology enhancements continue to improve the speed, security, and quality of service for WLANs. This workshop focuses on the latest developments in WLAN standards, technologies, design issues, and future directions.

#### Topics to be covered include:

- Overview of the various 802 standards including the wide range of 802.11 WLAN standards, 802.15 Wireless Personal Area Networks, and 802.16 Broadband Wireless Access standards.
- Convergence and coexistence with other wireless standards including cellular/GPRS, Bluetooth, and more
- Tradeoffs between the 2.4 GHz and 5 GHz bands
- Detailed discussion of the OFDM Physical Layer
- Baseband and RF circuit design challenges for WLAN systems
- OFDM transmitter architectures for high efficiency and high linearity
- OFDM receiver architectures for high adjacent channel rejection and high image channel rejection

## MONDAY MORNING WORKSHOP

### ADVANCED INTEGRATION TECHNIQUES FOR RF WIRELESS DEVICES

Monday, August 12, 2002

Organizer: Doug Teeter, *RF Micro Devices*

Kyutae Lim, *Georgia Tech*

David Coveyou, *RF Micro Devices*

Sanjay Moghe, *RF Solutions*

Increased functionality combined with smaller form factors and lower manufacturing costs have pushed the wireless industry to higher levels of integration. New technologies have emerged enabling system-on-a-chip solutions for a number of applications including WLAN, Bluetooth, and handsets. This workshop will highlight recent developments that enable highly integrated designs.

#### Topics to be covered include:

- The system on package concept
- Embedded passive element technologies
- Vertical interconnect technology
- Highly integrated handset receive modules
- Highly integrated, multi-band, multi-mode chips covering WLAN, Bluetooth, GPRS, cellular, and more.

## Registration Hours

**Sunday, August 11** 9 AM - 2 PM

**Monday, August 12** 7 AM - 6 PM

**Tuesday, August 13** 7 AM - 4 PM

**Wednesday, August 14** 7 AM - 12 PM

## Exhibition

RAWCON2002 includes an Exhibition of wireless products and services on Monday (5:30PM - 7PM) and Tuesday (7AM - 7PM). For information on availability of booth and tabletop spaces, please contact Bob Alongi at the IEEE Boston Section Office (r.alongi@ieee.org or +1-781-890-5290)



# Boston 2002

## Hotel and Travel

### Hilton Boston Back Bay

40 Dalton Street  
Boston, MA 02115 USA  
+1-800-445-8667  
+1-617-236-1100  
+1-617-867-6104 (fax)

Please make your own reservations with the hotel. The conference rate is \$179 (single or double occupancy) plus tax (currently 12.45%). The event name is IEEE. Rooms are available at the conference rate through July 11, 2002. After the cutoff date, rooms may be offered at the conference rate at the discretion of the hotel. Unfortunately, the hotel cannot accept conference-rate reservations at its web site. The hotel is 4 miles from Boston Logan International Airport; driving time is approximately 15 minutes. Parking at the hotel is \$28 per day. Shuttle service from the airport to the hotel is available from Back Bay Coach (+1-888-222-5229) for a fare of \$9 per person one-way. Call toll free from any public phone after you claim your bags, you should be picked up in 5 to 15 minutes. Two or three persons sharing a taxi is approximately \$20. See [www.rawcon.org](http://www.rawcon.org) for full details and directions.



# REGISTRATION FORM

## 2002 IEEE Radio and Wireless Conference

August 11-14, 2002

Boston, MA, USA

<http://www.rawcon.org>

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E-Mail \_\_\_\_\_ Nickname to print on badge \_\_\_\_\_

### REGISTRATION FEES

By July 22  After July 22

#### Technical Sessions

<input type="checkbox"/> IEEE Member	\$295	\$390
<input type="checkbox"/> Non-member	\$390	\$450
<input type="checkbox"/> IEEE Student Member	\$230	\$295
<input type="checkbox"/> Retired IEEE Member	\$230	\$295
<input type="checkbox"/> Presenter	\$230	\$295

#### Optional Workshops (including lunch and notes)

<input type="checkbox"/> Next Generation Wireless LAN Systems , Sunday full day	\$100	
<input type="checkbox"/> Advanced Integration Techniques for RF Wireless Devices , Monday morning	\$80	

#### Additional Options

<input type="checkbox"/> Monday Reception, Banquet, Panel, and Exhibition Only	\$60	\$70
<input type="checkbox"/> Tuesday Reception, Panel, and Exhibition Only	\$25	\$30
<input type="checkbox"/> Additional copy of Proceedings (on-site pickup only)	\$35	\$40
<input type="checkbox"/> Guest Registration (meals only)	\$160	\$160

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Total Payment Due: \$ \_\_\_\_\_

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### 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 with 72 four-page papers
- Meals (banquet on Monday evening; breakfast, lunch and dinner on Tuesday; breakfast and lunch on Wednesday)
- Monday and Tuesday evening receptions

### CANCELLATIONS

Cancellations will be refunded less a \$50 processing fee only if written notice is postmarked on or before July 22, 2002.

### HOUSING

Accommodations should be secured directly with the Hilton Boston Back Bay at +1-800-HILTONS, or [www.hilton.com](http://www.hilton.com). The conference room rate is \$179 (single or double occupancy) plus tax (currently 12.45%). This rate is available through July 11, 2002. After the cutoff date, rooms at this rate may be offered only at the discretion of the hotel.

### TO REGISTER BY MAIL, SEND THIS FORM AND PAYMENT TO:

RAWCON Registrar, c/o IEEE Boston Section,  
240 Bear Hill Road, Waltham, MA, USA 02451  
OR Fax this form to: +1-781-890-5294.

#### Questions concerning your registration?

Contact Angie Emberley: E-Mail: [a.emberley@ieee.org](mailto:a.emberley@ieee.org)  
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### ADDITIONAL INFORMATION

Visit our web site at <http://www.rawcon.org>

### DON'T FORGET TO SIGN!

**Privacy Notice:** Your registration data may be made available to RAWCON2002 exhibitors. See <http://www.rawcon.org> for details.

## MESSAGE FROM THE GENERAL CHAIR

**R**AWCON continues to take an interdisciplinary look at developments in wireless communication technology and systems: architecture, design, and “inside-the-box” details. For this edition of the conference, we continue to encourage 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. The mix of papers received suggests continued activity in 802.11, as well as 3G, leading us to wonder whether we should see convergence, conflict, or co-existence between them in the future. We have constructed sessions in a single track that mix component and system presentations within these system contexts, in an effort to foster as much interaction between disciplines as possible.

Augmenting the Technical Program, several elements of RAWCON2002 highlight the impact of wireless data communications in the industry. The Keynote address: “The Cost of a Bit and Other Annoying Problems” will be delivered by Richard Frenkiel, Director for Strategic Planning at Wireless Information Networks Laboratory (WINLAB), Rutgers University. This discussion promises to be an “outside-the-box” view of our industry, including where it’s going and where it should be going. Monday evening’s Banquet Address: “Micro Fuel Cells: Beyond Batteries,” will be given by Robert Hockaday, President, Energy Related Devices Inc., Technology Partner of Manhattan Scientifics, Inc. Can fuel cells indeed revolutionize the hand-held electronics market? Join us for insight into the matter. The Tuesday Panel Session, “3G & 802.11 WLAN Technologies and Systems: Convergence or Coexistence,” moderated by Steve Kenney, Technical Program Co-Chair, will explore the trajectories of these two technologies. Further information: [www.rawcon.org](http://www.rawcon.org).

RAWCON2002 offers two optional workshops that treat system and component issues, both organized by Doug Teeter of RFMD. On Sunday August 11, a full day workshop, “Next Generation Wireless LAN Systems” will discuss the wide range of WLAN standards, describe signal processing and physical layer issues, and explore circuit design techniques for next generation WLAN systems. On Monday August 12, a half day workshop, “Advanced Integration Techniques for RF Wireless Devices” will explore new technologies including high density vertical interconnects, embedded passive elements, and multi-function system on chip concepts for a variety of applications including Bluetooth, Wireless LAN, PDAs, and cell phones.

The Vendor Exhibit includes booth and tabletop displays from leading wireless industry suppliers and is open Monday and Tuesday. Now in its 7th year, this will be the second year in the Boston area. We hope that the in-town Boston venue will provide attendees with a chance to visit the city (follow the links at [www.rawcon.org](http://www.rawcon.org) for ideas) as well as experience the technical aspects of the meeting. This may be your last chance to get tangled up in the Big Dig J ([www.bigdig.com](http://www.bigdig.com)). 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 me. See you in August!

- Peter

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