

1998 Microwave Symposium Technical Program Schedule



Session WE1A

MM and Sub MM-Wave Mixers and Multipliers

8:00 am–9:40 am

Room 307/308

Wednesday, June 10, 1998

Chair: K. Agarwal, Raytheon Systems
Co-Chair: A. Riddle, Macallan Consulting

WE1A-1	Novel Millimeter Wave Active MMIC Triplers	387
8:00 am	H. Fudem and E.C. Niehenke	
WE1A-2	An 80/160 GHZ Broadband, Fixed-Tuned, Balanced Frequency Doubler	391
8:20 am	D.W. Porterfield, T.W. Crowe, R.F. Bradley and N.R. Erickson	
WE1A-3	Millimeter-Wave GaAs Monolithic Multipliers	395
8:30 am	J. Papapolymerou, J. East and L.P.B. Katehi	
WE1A-4	Progress Towards the Realization of MMIC Technology at Submillimeter Wavelengths:	
8:40 am	A Frequency Multiplier to 320 GHz.	399
	J. Bruston, R.P. Smith, S.C. Martin, D. Humphrey A. Pease and P.H. Siegel	
WE1A-5	An All Solid-State 640 GHz Subharmonic Mixer	403
9:00 am	I. Mehdi, P.H. Siegel, D.A. Humphrey, T.H. Lee, R.J. Dengler, J.E. Oswald, A. Pease, R. Lin H. Eisele, R. Zimmermann and N. Erickson	
WE1A-6	A 640 GHz Planar-Diode Fundamental Mixer/Receiver	407
9:20 am	P.H. Siegel, I. Mehdi, R.J. Dengler, T.H. Lee, D.A. Humphrey and A. Pease	

Session WE1B

(Focused Session)

Historical Perspectives on Microwave Systems in the Baltimore Washington Area

8:00 am–9:40 am

309/310

Wednesday, June 10, 1998

Chair: M. Skolnik, NRL, Retired

WE1B-1	Westinghouse Microwave Systems and Technology	413
8:00 am	G. Strull	
WE1B-2	Early Work on Millimeter Wave Systems and Phased Array Radars (in the Baltimore-Washington Area)	417
8:20 am	C.M. Johnson	
WE1B-3	Historical Perspectives on Commercial and Non-Military Government Space Applications of Microwave Systems in the Baltimore/Washington Area	421
8:40 am	G. Hyde	
WE1B-4	The Origins of the Proximity Fuze	425
9:00 am	L. Brown	

Session WE1C

Power Amplifier Technology for Wireless Applications

8:00 am–9:40 am

Room 314/317

Wednesday, June 10, 1998

Chair: J.L. Heaton, Sanders, a Lockheed-Martin Co.

Co-Chair: K. Ikossi-Anastasiou, Louisiana State University

WE1C-1	A 1.9 GHZ Fully Integrated PHS Power Amplifier with a Novel Automatic Gate-Bias Control Circuit	431
8:00 am	R. Singh, H. Nakamura, K.-S. Tan and J. Shibata	
WE1C-2	63.2% High Efficiency and High Linearity Two-stage InGaP/GaAs HBT Power Amplifier for Personal Digital Cellular Phone System	435
8:20 am	T. Iwai, S. Ohara, T. Miyashita and K. Joshin	
WE1C-3	64% Efficiency Enhancement-Mode Power Heterojunction FET for 3.5 V Li-Ion Battery Operated Personal Digital Cellular Phones	439
8:30 am	Y. Bito, N. Iwata and M. Tomita	
WE1C-4	A High Efficiency GaAs Power Amplifier Module with a Single Voltage for Digital Cellular Phone Systems	443
8:40 am	M. Nishida, S. Murai, H. Uda, H. Tominaga, T. Sawai and A. Ibaraki	
WE1C-5	3.5 V Operation Driver-Amplifier MMIC Utilizing SrTiO₃ Capacitors for 1.95 GHz Wide-Band CDMA Cellular Phones	447
8:50 am	T.B. Nishimura, N. Iwata, K. Yamaguchi, K. Takemura and Y. Miyasaka	
WE1C-6	Performance of RFMOS™ for 1.9 GHz CDMA Operation	451
9:00 am	F. Brauchler, M. Tutt, D. Seymour, A. Khatibzadeh, J. Erdljac and J. Arch	
WE1C-7	High Efficiency Mode “E” Amplifier Powers High Efficiency Active Transmitting Patch Antenna	455
9:10 am	F.J. Ortega González, A.A. López, V. González Posadas, J.L.J. Martin and C.M. Pascual	

Session WE1D

Time Domain Methods I

8:00 am–9:40 am

Room 318/323

Wednesday, June 10, 1998

Chair: P. Russer, University of Technology, Munich
Co-Chair: L.P.B. Katehi, University of Michigan

WE1D-1	Stable and Efficient ABCs for Graded Mesh FDTD Simulations	461	WE
8:00 am	A. Lauer and I. Wolff		1D
WE1D-2	Adapted Radiating Boundaries (ARB) for Efficient Time Domain Simulation of Electromagnetic Interferences	465	WE
8:20 am	S. Lindenmeier, L. Pierantoni and P. Russer		1E
WE1D-3	Unsplit-Field Formulations for Generalised Material Independent PML Absorbers	469	WE
8:40 am	A.P. Zhao		2A
WE1D-A	An Interface for the FDTD Diakoptics	473	WE
8:50 am	T. Shibata and M. Tomizawa		2B
WE1D-5	A Novel 2-D Multi-Mode Parallel Time Domain Diakoptics and its Application in Filter Analysis and Design	477	
9:00 am	D. Su, J.-S. Park, B. Houshmand, Y. Qian and T. Itoh		
WE1D-6	Space Adaptive Analysis of Evanescent Waveguide Filters	481	
9:20 am	E.M. Tentzeris and L.P.B. Katehi		
WE1D-7	Time-Domain Vector-Potential Analysis of Complex RF Multilayer Structures via Segmentation Technique	485	
9:30 am	N. Georgieva, Z. Chen and W. Oberhammer		

Session WE1E

SAW Systems and Sensors

8:00 am–9:40 am

Room 327/329

Wednesday, June 10, 1998

Chair: K. Anemogiannis, SAWTEK

WE1E-1	A Robust Ultra Broadband Wireless Communication System Using Saw Chirped Delay Lines	491
8:00 am	A. Springer, A. Pohl, W. Gugler, M. Huemer, L. Reindl, C.C.W. Ruppel, F. Seifert and R. Weigel	
WE1E-2	Performance Degradation in GPS-Receiver Caused by Group Delay Variations of SAW-Filters	495
8:20 am	T. Müller	
WE1E-3	Miniature SAW Antenna Duplexer Module for 1.9 GHz PCN Systems Using SAW-Resonator-Coupled Filters	499
8:30 am	N. Shibagaki, K. Sakiyama and M. Hikita	
WE1E-4	New Applications of Wirelessly Interrogable Passive SAW Sensors	503
8:50 am	A. Pohl, A. Springer, L. Reindl, F. Seifert and R. Weigel	
WE1E-5	A Chirp Spread Spectrum DPSK Modulator and Demodulator for a Time Shift Multiple Access Communication System by Using SAW Devices	507
9:10 am	Y. Takeuchi and K. Yamanouchi	
WE1E-6	Novel Nonlinear FMCW Radar for Precise Distance and Velocity Measurements	511
9:20 am	M. Vossiek, T. v. Kerssenbrock and P. Heide	

Session WE2A

Millimeter Wave Technology and Applications

10:10 am–11:50 am

Room 307/308

Wednesday, June 10, 1998

Chair: J.C. Wiltse, Georgia Tech Research Institute
Co-Chair: J.W. Dees, Georgia Institute of Technology

WE2A-1	A W-Band Dielectric-Lens-Based Integrated Monopulse Radar Receiver	517
10:10 am	S. Raman, N.S. Barker and G.M. Rebeiz	
WE2A-2	Multi-Beam Automotive Radar Front End Using Non-Contact Cylindrical NRD Switch	521
10:30 am	T. Tanizaki, H. Nishida, T. Nishiyama, H. Yamada, K. Sakamoto and Y. Ishikawa	
WE2A-3	A Flip-Chip MMIC Design With CPW Technology in the W-Band	525
10:50 am	T. Hirose, K. Makiyama, T.M. Shimura, S. Aoki, Y. Ohashi, S. Yokokawa and Y. Watanabe	
WE2A-4	80 GHz Distributed Amplifiers With Transferred-Substrate Heterojunction Bipolar Transistors	529
11:00 am	B. Agarwal, R. Pullela, Q. Lee, D. Mensa, J. Guthrie and M.J.W. Rodwell	
WE2A-5	Characteristics of A MM-Wave Tapered Slot Antenna With Corrugated Edges	533
11:20 am	S. Sugawara, Y. Maita, K. Adachi, K. Mori and K. Mizuno	
WE2A-6	Optimization of MM-Wave Distribution Networks Using Silicon-Based CPW	537
11:30 am	T.M. Weller, R.M. Henderson, S.V. Robertson and L.P.B. Katchi	

Session WE2B

(Focused Session)

Microwave and Wireless Education in a Rapidly Changing Environment

10:10 am–11:50 am

Room 309/310

Wednesday, June 10, 1998

Chair: R. Caverly, Villanova University

WE2B-1	Chairman's Introduction	
10:10 am	R. Caverly	
WE2B-2	Is Our Engineering Education System Suitable to Fulfill the Needs of the Wireless Industry?	543
10:20 am	L. Besser	
WE2B-3	East-West Summer Schools in Microwave and Optical Engineering	547
10:40 am	H.L. Hartnagel	
WE2B-4	MMIC Designers Trained on Real Chips Without Expensive Fabrication	551
11:00 am	J.C.M. Hwang	
WE2B-5	A Virtual Field-Based Laboratory for Microwave Education	555
11:15 am	M. Righi, W.J.R. Hoefer and T. Weiland	
WE2B-6	Microwave Education After the Unification of Germany—An Example:	
11:30 am	Gerhard-Mercator-University Duisburg	559
	A. Beyer, K. Solbach and A. Ziermann	
WE2B-7	Educating Tomorrow's RF/Microwave Engineer: A New Undergraduate Laboratory	
11:40 am	Uniting Circuit and System Concepts	563
	T.M. Weller, P.G. Flikkema, L.P. Dunleavy, H.C. Gordon and R.E. Henning	

Session WE2C

Microwave Power Amplifiers

10:10 am–11:50 am

Room 314/317

Wednesday, June 10, 1998

Chair: L.J. Kushner, Lincoln Laboratory, MIT

Co-Chair: B. Bayraktaroglu, Northrop Grumman, Baltimore

WE2C-1	A High Power and High Efficiency Monolithic Power Amplifier for Local Multipoint	
10:10 am	Distribution Service	569
	M.K. Siddiqui, A.K. Sharma, L.G. Callejo and R. Lai	
WE2C-2	Ka-Band 2 Watt Power SSPA for LMDS Application	573
10:30 am	J. Shu, T. Hwang, D. Nguyen, R. Pumares, P. Chye and P. Khanna	
WE2C-3	High-Efficiency, Packaged Ka-Band MMIC Operating at 24 Volts	577
10:40 am	J. Schellenberg	
WE2C-4	A Robust 3W High Efficiency 8-14 GHz GaAs/AlGaAs Heterojunction Bipolar Transistor	
10:50 am	Power Amplifier	581
	M. Salib, A. Gupta, A. Ezis, M. Lee and M. Murphy	
WE2C-5	High-Efficiency L-Band Kahn-Technique Transmitter	585
11:00 am	F.H. Raab, B.E. Sigmon, R.G. Myers and R.M. Jackson	
WE2C-6	Microwave Power Amplifier Efficiency Improvement With A 10 MHz HBT DC-DC Converter	589
11:20 am	G. Hanington, P.F. Chen, V. Radisic, T. Itoh and P.M. Asbeck	

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Session WE2D

Nonlinear Device Modeling

10:10 am–11:50 am

Room 318/323

Wednesday, June 10, 1998

Chair: C.M. Snowden, University of Leeds, UK

WE2D-1	Analytical Charge Conservative Large Signal Model for MODFETs Validated Up	
10:10 am	to MM-Wave Range	595
	R. Osorio, M. Berroth, W. Marsetz, L. Verweyen, M. Demmler, H. Massler, M. Neumann and M. Schlechtweg	
WE2D-2	Measurement Based Nonlinear Electrothermal Modeling of GaAs FET With	
10:30 am	Dynamical Trapping Effects	599
	Z. Ouarch, J.M. Collantes, J.P. Teyssier and R. Quéré	
WE2D-3	Modeling of Current Lag in GaAs IC's	603
10:50 am	W.R. Curtice, J.H. Bennett, D. Suda and B.A. Syrett	
WE2D-4	A Physically-Based Transient SPICE Model for GaAs MESFETs	607
11:00 am	R.E. Leoni III, J.W. Bao, M.S. Shirokov and J.C.M. Hwang	
WE2D-5	Characterization and Modeling of Thermal Dynamic Behavior of AlGaAs/GaAs HBTs	611
11:10 am	K. Lu and X. Zhang	

Session WE2E

Ferrite Devices: UHF to W-band

10:10 am–11:50 am

Room 327/329

Wednesday, June 10, 1998

Chair: L.E. Davis, UMIST, UK

WE2E-1	Ferrite and Wire Baluns with Under 1 dB Loss to 2.5 GHz	617
10:10 am	A. Riddle	
WE2E-2	Insertion Loss Analysis of Small Isolator for Portable Phones	621
10:30 am	S. Takeda	
WE2E-3	Thermostable Stripline Lumped Element Circulator for UHF Applications	625
10:40 am	A.G. Schuchinsky	
WE2E-4	Finite-Difference Time-Domain Analysis of a Stripline Disc Junction Circulator	629
11:00 am	B.S. Yildirim and E.-B. El-Sharawy	
WE2E-5	FDTD Analysis of Microwave Circulators Involving Saturated Magnetized Ferrites	633
11:20 am	J. Lenge, A. Ahland, J. Kastner and D. Schulz	
WE2E-6	The New Approach to Designing W-Band Y-Junction Circulator with Small Insertion Loss	637
11:30 am	H.D. Kim, I. Kirsanov and N. Volobouev	

Session WE3A

New Guided Wave Effects

1:20 pm–3:00 pm

Room 307/308

Wednesday, June 10, 1998

Chair: A. Oliner, Polytechnic University, New York (Retired)
Co-Chair: A. Omar, Technical University of Hamburg, Germany

WE3A-1	Space-Wave-Type Leaky Mode Carrying Dominant-Mode-Like Modal Current Distributions	643
1:20 pm	C.-K.C. Tzuang and C.-C. Lin	
WE3A-2	Unexpected Contribution of Nonphysical Mode to the Fields Excited by a Practical Source in Printed-Circuit Transmission Lines	647
1:40 pm	M. Tsuji, H. Takayama and H. Shigesawa	
WE3A-3	Mode-Coupling Phenomena of the Even Modes on Microstrip Line	651
2:00 pm	J.-W. Sheen, T.-L. Chen and Y.-D. Lin	
WE3A-4	Propagation and Radiation Characteristics of Gyrotropic Open Structures in the Presence of Sources	655
2:10 pm	P. Baccarelli, C. Di Nallo, F. Frezza, A. Galli and P. Lampariello	
WE3A-5	Leaky-Wave Characteristics of Trapezoidally Shaped NRD-Guide Suitable for Design of Millimeter-Wave Antenna	659
2:30 pm	S.J. Xu, X.Y. Zeng, K. Wu and K.M. Luk	
WE3A-6	Eliminating Surface Currents with Metallodielectric Photonic Crystals	663
2:40 pm	D. Sievenpiper and E. Yablonovitch	

Session WE3B

Low Noise Techniques

1:20 pm–3:00 pm

Room 309/310

Wednesday, June 10, 1998

Chair: J.J. Whelehan, JJW Consulting, Inc.

WE3B-1	Characteristics of Broadband InP Millimeter-Wave Amplifiers for Radiometry	669
1:20 pm	E.J. Wollack and M.W. Pospieszalski	
WE3B-2	Noise Temperature Estimates for a Next Generation Very Large Microwave Array	673
1:40 pm	S. Weinreb	
WE3B-3	A Comparison of Topologies for Single-Ended Millimeter-Wave Monolithic Amplifier Design	677
1:50 pm	S. Nam, S. Miya, M. Ozaki and I.D. Robertson	
WE3B-4	Low Noise Broadband MMIC Amplifier Concept	681
2:10 pm	Z. Nosal	
WE3B-5	A Compact Coplanar W-Band Variable Gain Amplifier MMIC with Wide Control Range Using Dual-Gate HEMTs	685
2:20 pm	A. Tessmann, W.H. Haydl, T. Krems, M. Neumann, H. Massler, L. Verweyen, A. Hülsmann and M. Schlechtweg	
WE3B-6	800 MHz-Band Low Noise Low Distortion Si-MMIC Front-End Using BJT/MOSFET LNA and MOSFET Mixer	689
2:30 pm	N. Suematsu, M. Ono, S. Sugiyama, S. Kubo, M. Uesugi, K. Hasegawa, K. Hiroshige, Y. Iyama and O. Ishida	
WE3B-7	Microwave Low-Noise GaAs HBTs	693
2:50 pm	H. Dodo, Y. Amamiya, T. Niwa, M. Mamada, S. Tanaka and H. Shimawaki	

Session WE3C

High Power Low Distortion Amplifiers

1:20 pm–3:00 pm

Room 314/317

Wednesday, June 10, 1998

Chair: A. Platzker, Raytheon Company
Co-Chair: E.J. Crescenzi, Spectrian Corp.

WE3C-1	Three-Dimensional MMIC Architecture Using Low Thermal Impedance Technology	699
1:20 pm	D. Hill, M. Tutt, R. Yarborough, T. Budka and T. Kim	
WE3C-2	L-Band 100-WATTS Push-Pull GaAs Power FET	703
1:40 pm	K. Ebihara, H. Takahashi, Y. Tateno, T. Igarashi and J. Fukaya	
WE3C-3	120 Watt, 2GHz, Si LDMOS RF Power Transistor for PCS Base Station Applications	707
1:50 pm	A. Wood, W. Brakensiek, C. Dragon and W. Burger	
WE3C-4	High-Efficiency L and S-Band Power Amplifiers with High-Breakdown GaAs-Based pHEMTs	711
2:00 pm	J.A. Pustl, R.D. Widman, J.J. Brown, M. Hu, N. Kaur, M. BeZaire and L.D. Nguyen	
WE3C-5	Low Distortion and High Efficiency 17 W Power GaAs FETs for Satellite Communication System Applications	715
2:20 pm	H. Tsutsui, I. Takenaka, H. Takahashi, K. Asano, J. Morikawa, K. Ishikura and M. Kuzuhara	
WE3C-6	An L Band Adaptive Digital Predistorter for Power Amplifiers Using Direct I-Q Modem	719
2:30 pm	E.G. Jeckeln, F.M. Ghannouchi and M.A. Sawan	
WE3C-7	A Novel Envelope-Termination Load-Pull Method for ACPR Optimization of RF/Microwave Power Amplifiers	723
2:40 pm	J.F. Sevic, K.L. Burger and M.B. Steer	

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Session WE3D

Spectral Regrowth and Distortion of Modulated Signals

1:20 pm–3:00 pm

Room 318/323

Wednesday, June 10, 1998

Chair: S. Maas, Nonlinear Technologies, Inc.

WE3D-1	Simulation of Multi-Tone IMD Distortion and Spectral Regrowth Using Spectral Balance	729
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WE3D-2	A Nonlinear ARMA Model for Simulating Power Amplifiers	733
1:40 pm	G. Chrisikos, C.J. Clark, A.A. Moulthrop, M.S. Muha and C.P. Silva	
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WE3D-6	Improved Prediction of the Intermodulation Distortion Characteristics of MESFETs and PHEMTs Via a Robust Nonlinear Device Model	749
2:30 pm	V.I. Cojocaru and T.J. Brazil	

Session WE3E

Biological Effects and Medical Applications

1:20 pm–3:00 pm

Room 327/329

Wednesday, June 10, 1998

Chair: A. Rosen, Sarnoff Corporation

WE3E-1	A 9.2GHz Microwave Applicator for the Treatment of Menorrhagia	755
1:20 pm	I.B. Feldberg and N.J. Cronin	
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Session WEIF Interactive Forum I

2:30–5:00 pm

Camden Lobby

Wednesday, June 10, 1998

Chair: H. Newman, The Naval Research Laboratory

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WEIF-03	Wideband, Planar, Log-Periodic Balun M. Basraoui and S.N. Prasad	785
WEIF-04	Planar Transmission Line Transformer Using Coupled Microstrip Lines S.-P. Liu	789
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Session WE4A

Properties of Substrates and Artificial Surfaces

3:30 pm–5:10 pm

Room 307/308

Wednesday, June 10, 1998

Chair: M. Dydyk, Motorola

Co-Chair: S. El-Ghazaly, Arizona State University

WE4A-1	Finite Element Method for Rigorous Design of Microwave Devices Using Photonic Band Gap Structures	1061
3:30 pm	B. Lenoir, D. Baillargeat, S. Verdeyme and P. Guillon	
WE4A-2	Microwave Properties of Coplanar Transmission Lines and Filters on Diamond from 1-120 GHz	1065
3:50 pm	F. Steinhagen, W.H. Haydl, T. Krems, W. Marsetz, R. Locher, C. Wild, P. Koidl, A. Hülsmann, T.v. Kerksenbrock and P. Heide	
WE4A-3	Theoretical and Experimental Investigation of Bias and Temperature Effects on High Resistivity Silicon Substrates for RF Applications	1069
4:10 pm	A.C. Reyes, S.M. El-Ghazaly and M. Dydyk	
WE4A-4	Near and Far Field Characterization of Radiation from Ultra-Fast Electronic Systems	1073
4:30 pm	K.A. Remley, A. Weisshaar, S.M. Goodnick and V.K. Tripathi	
WE4A-5	Edge Element Modeling of 3D Interconnection Structures	1077
4:50 pm	J. Tan, G. Pan and B.K. Gilbert	

Session WE4B

Packaging and Interconnects

3:30 pm–5:10 pm

Room 309/310

Wednesday, June 10, 1998

Chair: R. Sturdivant, SCS Raytheon Company

Co-Chair: J. Wooldridge, TRW

WE4B-1	Millimeterwave Characteristics of Flip-Chip Interconnects for Multi-Chip Modules	1083
3:30 pm	W. Heinrich, A. Jentzsch and G. Baumann	
WE4B-2	Development of a Package Utilizing an Electromagnetic Coupling Structure	1087
3:50 pm	S. Koriyama, K. Kitazawa and M. Fujii	
WE4B-3	Avoiding Cross Talk and Feed Back Effects in Packaging Coplanar Millimeter-Wave Circuits	1091
4:00 pm	T. Krems, A. Tessmann, W.H. Haydl, C. Schmelz and P. Heide	
WE4B-4	RF Performance of a 77 GHz Monolithic CPW Amplifier With Flip-Chip Interconnections	1095
4:20 pm	K. Maruhashi, M. Ito, H. Kusamitsu, Y. Morishita and K. Ohata	
WE4B-5	The Thermal Benefits of Diamond Enhanced Plastic Packages for Microwave Applications	1099
4:40 pm	M. Gomes-Casseres	
WE4B-6	Development of Millimeter Wave Multi-Layer Organic Based MCM Technology	1103
5:00 pm	A. Pham, A. Sutono, J. Laskar, V. Krishnamurthy, H.S. Cole and T. Sitnik-Nieters	

Session WE4C

(Focused Session)

HF-VHF-UHF Power Amplifiers

3:30 pm–5:10 pm

Room 314/317

Wednesday, June 10, 1998

Chair: F.H. Raab, Green Mountain Radio Research

WE4C-1	Class E High-Efficiency Power Amplifiers, From HF to Microwave	1109
3:30 pm	N.O. Sokal	
WE4C-2	A Low-Cost Class-E Power Amplifier with Sine-Wave Drive	1113
3:50 pm	J.F. Davis and D.B. Rutledge	
WE4C-3	Capabilities of Low-Cost High Voltage RF Power MOSFETs at HF and VHF	1117
4:10 pm	R. Frey	
WE4C-4	A Novel High Frequency Single-Sideband Transmitter Using Constant-Envelope Modulation	1121
4:30 pm	R.L. Campbell	
WE4C-5	Ultra Linear/Feedforward Amplifier Design	1125
4:50 pm	D. Myer	

Session WE4D

Nonlinear Modeling of Circuit Field Interactions

3:30 pm–5:10 pm

Room 318/323

Wednesday, June 10, 1998

Chair: M.B. Steer, North Carolina State University

WE4D-1	Harmonic Balance Analysis for Systems with Circuit-Field Iterations	1131
3:30 pm	C.E. Christoffersen, M.B. Steer and M.A. Summers	
WE4D-2	Global Time-Domain Full-Wave Analysis of Microwave FET Oscillators and Self-Oscillating Mixers	1135
3:50 pm	M. Chen, W.R. Deal, B. Houshmand and T. Itoh	
WE4D-3	RF Power Detector Using a Silicon Mosfet	1139
4:00 pm	M. Ratni, B. Huyart, E. Bergeault and L. Jallet	

Session WE4E

High Power Generation, Amplification, and Control Components

3:30 pm–5:10 pm

Room 327/329

Wednesday, June 10, 1998

Chair: J. Goel, S&EG TRW

WE4E-1	Adaptive Joint Linearization/Equalization with Delay Alignments for a Wide-Band Power Amplifier	1145
3:30 pm	J.-T. Chen, H.-S. Tsai and Y.-K. Chen	Paper Withdrawn
WE4E-2	An X-Band 2 kW CW GaAs Fet Power Amplifier for Continuous Wave Illuminator Application	1149
3:50 pm	H. Ashoka, J. Ness, A. Robinson, M. Gourlay, J. Logan, P. Woodhead and D. Reuther	
WE4E-3	The Design and Analysis of Multi-Megawatt Distributed Single Pole Double Throw (SPDT) Microwave Switches	1153
4:10 pm	S.G. Tantawi and M.I. Petelin	
WE4E-4	Use of a Magnetron as a High-Gain, Phased-Locked Amplifier in an Electronically-Steerable Phased Array for Wireless Power Transmission	1157
4:30 pm	M.C. Hatfield, J.G. Hawkins and W.C. Brown	
WE4E-5	A Novel Oscillating Rectenna for Wireless Microwave Power Transmission	1161
4:50 pm	J.O. McSpadden, R.M. Dickinson, L. Fan and K. Chang	