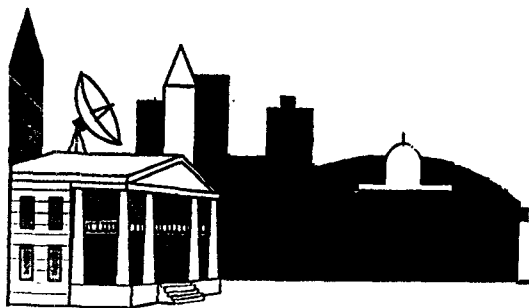




1993 IEEE MTT-S International Microwave Symposium Digest

Technical Program Contents

Technical Program Contents

Session A

(Plenary)

World Congress Center Auditorium

9:00 a.m. to 10:30 a.m.

Tuesday, June 15, 1993

Chairman: G.P. Rodrigue

“The Global Reach of Microwaves”

Speakers: John Day, Consultant, Strategies Unlimited

Richard Snelling, Retired Executive Vice President, Bell South Telecommunications

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Session B

(Joint with MMWMC Symposium)

Advanced MMIC Technology Auditorium

11:00 a.m. to 12:00 p.m.

Tuesday, June 15, 1993

Chairman: M. Kumar—Paramax Systems Corp., Great Neck, NY

Co-Chairman: W. C. Niehaus—AT&T Bell Laboratories, Reading, PA

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11:00 a.m. H.Q. Tserng and P. Saunier

B-2: The Inductive Connection Effects of a Mounted SPDT in a Plastic SO8 Package 91

11:20 a.m. F. Ndagijimana, J. Engdahl, A. Ahmadouche and J. Chilo

B-3: An MMIC Linearized Amplifier Using Active Feedback 95

11:40 a.m. J.C. Pedro and J. Perez

Session C

(Special Session)

Intelligent Vehicle Highway Systems

Room: 216/217

11:00 a.m. to 12:00 p.m.

Tuesday, June 15, 1993

Chairman: R.A. Sparks—Anro, Lexington, MA

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11:00 a.m. J.M. Sussman

C-2: Spectrum Allocations for IVHS *

11:30 a.m. D.J. Chadwick

C-3: Potential System Architectures for IVHS *

12:00 p.m. M.F. McGuire

*Paper not available at time of printing.

Session D
(Special Session)

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Room: 202

11:00 a.m. to 12:00 p.m. **Tuesday, June 15, 1993**

Chairman: R.K. Parker—Naval Research Laboratory, Washington, DC

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| D-3: | MPM Technology Developments: An Industry Perspective | 115 |
| 11:40 a.m. | J.A Christiansen, T.J. Grant, P.M. Lally, P. Puri, G. Dohler and S. Ludvik | |

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Room: 218/219

11:00 a.m. to 12:00 p.m. **Tuesday, June 15, 1993**

Chairman: T.C.Cisco—Hughes Aircraft Company, El Segundo, CA

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| E-3: | Computer Based Methods for Production Tuning of Microwave Components | 127 |
| 11:30 a.m. | D.E. Stoneking | |
| E-4: | Electrical Characterization of Packages for Use with GaAs MMIC Amplifiers | 131 |
| 11:40 a.m. | S.R. Smith and M.T. Murphy | |

Session F

(Joint with MMWMC Symposium)

Broadband MMIC Circuits

Auditorium

1:30 p.m. to 3:00 p.m.

Tuesday, June 15, 1993

Chairman: D. Meharry—Lockheed-Sanders, Nashua, NH
Co-Chairman: H.-L. Hung—COMSAT Laboratories, Clarksburg, MD

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Tuesday, June 15, 1993

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Special Session-Status of Microwave Ferrite Technology

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Tuesday, June 15, 1993

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*Paper not available at time of printing.

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Session J
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Co-Chairman: C. Huang—Anadigics, Warren, NJ

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Co-Chairman: A.S. Omar—Tech. University, Hamburg-Harburg, Germany

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Wednesday, June 16, 1993

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*Paper not available at time of printing.

Session O

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Wednesday, June 16, 1993

Chairman: E.C. Niehenke—Westinghouse ESG, Baltimore, MD

Co-Chairman: M.N. Afsar—Tufts University, Medford, MA

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(Focused Session)

Developments in Global Communications

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Session R

Passive Components

Room 215

Vol 2

8:30 a.m. to 10:00 a.m.

Wednesday, June 16, 1993

Chairman: L.P.B. Katehi, University of Michigan, Ann Arbor, MI

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R-3:	A New Class of Branch-Line Directional Couplers	589
9:00 a.m.	J.W. Gippich	
R-4:	Folded Stubs for Compact Suspended Stripline Circuits	593
9:10 a.m.	W. Menzel and F. Bögelsack	
R-5:	Modeling of Cylindrical Dielectric Resonators in Rectangular Waveguides and Cavities	597
9:20 a.m.	X-P. Liang, H-C. Chang and K.A. Zaki	
R-6:	Waveguide and Ridge Waveguide T-Junctions for Wide Band Applications	601
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Session S

Phased Arrays II

Room 202

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: D. Rutledge—Cal. Tech., Pasadena, CA

S-1:	A 4x4 Spatial Power-Combining Array with Strongly Coupled Oscillators in Multi-Layer Structure	607
10:30 a.m.	J. Lin and T. Itoh	
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11:30 a.m.	J.A. Benet, A.R. Perkons, S.H. Wong and A. Zaman	
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Session T

Non-Linear Modeling and Analysis Room 216/217

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: M. Calcaterra, USAF Wright Lab., Dayton, OH

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| 10:30 a.m. | V. Rizzoli, A. Costanzo and C. Cecchetti | |
| T-2: | Analysis of Strongly Nonlinear Circuits with a Frequency-Domain Method Coupled | |
| 10:50 a.m. | with a Consistent Large-Signal Model | 633 |
| | T. Närhi | |
| T-3: | Analysis of Nonlinear Microwave Circuits Using the Compression Approach | 637 |
| 11:10 a.m. | J. Kunisch, A. Bahr, M. Rittweger and I. Wolff | |
| T-4: | Nonlinear Model for Predicting Intermodulation Distortion in GaAs FET RF Switch | |
| 11:20 a.m. | Devices | 641 |
| | J.A. Plá and W. Struble | |
| T-5: | Direct Nonlinear Power MESFET Parameter Extraction and Consistent Modeling | 645 |
| 11:40 a.m. | A. Werthof, F. van Raay and G. Kompa | |
| T-6: | Analysis of Symmetric-Varactor Frequency Triples | 649 |
| 11:50 a.m. | K. Krishnamurthi and R.G. Harrison | |

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Solid State Oscillators Room 218/219

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: A.P.S. Khanna—Avantek/HP, Santa Clara, CA

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| U-1: | A General Method Based on Harmonic Balance Techniques to Simulate Noise in | |
| 10:30 a.m. | Free Running Oscillators | 655 |
| | W. Anzill and P. Russer | |
| U-2: | A Fast-Tuned, Injection Locked, DDS-Based Local Oscillator for the 3.6 to 4.1 GHz | |
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| | L.D. Cohen and K. Breuer | |
| U-3: | GaAs FET Direct Frequency-Modulators for 42-GHz-Band HDTV Radio Cameras | |
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| | H. Mitsumoto and K. Imai | |
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| 11:30 a.m. | Millimeter Wave Range | 667 |
| | U. Güttich, J-M. Dieudonne, and L.-P. Schmidt | |

Session V

Focused Session

Wireless Local Area Networks

Room 205

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: J.B. Horton—TRW, Redondo Beach, CA

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V-5:	A Frequency Hopping Microwave Radio System for Local Area Network Communication	685
11:40 a.m.	D.A. Williams	

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Session W

Coplanar Structures

Room 215

10:30 a.m. to 12:00 p.m.

Wednesday, June 16, 1993

Chairman: T.A. Brunasso—Electromagnetic Sciences, Inc., Norcross, GA

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W-3:	Effects of Ground Equalization on the Electrical Performance of Asymmetric CPW Shunt Stubs	701
11:00 a.m.	N. Dib, M. Gupta, G. Ponchak and L. Katehi	
W-4:	Comparing Coax Launcher and Wafer Probe Excitation for 10 mil Conductor Backed CPW with Via Holes and Airbridges	705
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W-5:	3D Characterization of Air-Bridges and Via Holes in Conductor Backed Coplanar Waveguides for MMIC Applications	709
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High Speed Fiber Optic Links-Systems

Room 202

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Wednesday, June 16, 1993

Chairman: P.R. Herczfeld—Drexel University, Philadelphia, PA

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X-4:	Microwave Signal Distribution Using an Optical Amplifier	731
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Session Y

Field Theoretic CAD

Room 216/217

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Wednesday, June 16, 1993

Chairman: K.C. Gupta—University of Colorado, Boulder, CO

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Chairman: J.J. Whelehan—AIL Systems, Deer Park, NY

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Session BB

Planar Structures

Room 215

1:30 p.m. to 3:00 p.m.

Wednesday, June 16, 1993

Chairman: J. Taub—AIL Systems, Deer Park, NY

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Interactive Forum II

GWCC Ballroom

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Wednesday, June 16, 1993

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Session CC

High Speed Fiber Optic Links-Components Session Room 202

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: H. Sobol—University of Texas at Arlington, Arlington, TX

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Session DD

CAD of Passive Components

Room 216/217

3:30 p.m. to 5:00 p.m. **Wednesday, June 16, 1993**

Chairman: I. Wolff—Düsseldorf University, Düsseldorf, Germany

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DD-5:	Analysis of Branch Line Coupler in Suspended Stripline with Finite Metallization Thickness	1089
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Session EE

Receiver Components

Room 218/219

3:30 p.m. to 5:00 p.m. **Wednesday, June 16, 1993**

Chairman: E.W. Rezek—TRW, Torrance, CA

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3:30 p.m.	J. Laskar, J.J. Bautista, B. Fujiwara, D. Scherrer and M. Feng	
EE-2:	Characteristics of MESFET and MODFET Microwave Noise Properties Utilizing Drain Noise Current	1099
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EE-3:	A 7 to 11 GHz AlInAs/GaInAs/InP MMIC Low Noise Amplifier	1103
4:10 p.m.	S.E. Rosenbaum, C.S. Chou, C.M. Ngo, L.E. Larson, T. Liu and M.A. Thompson	
EE-4:	A Low Power GaAs MESFET Monolithic Downconverter for Digital Handheld Telephone Applications	1105
4:20 p.m.	J. Birkeland	
EE-5:	3 to 5 GHz Compact Microwave Delay Line	1109
4:30 p.m.	J.L. Merenda, J. Pierro, S.M. Weiner and C. Fenniman	
EE-6:	VCO Based Chirp Generation for Broad Bandwidth Compressive Receiver Applications	1113
4:50 p.m.	J.S. Levy, P.J. Burke, L.D. Cohen and R. Cecchini	

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Session FF

Selected Russian Microwave Technologies Room 205

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: G.W. Ewell—Georgia Tech Research Institute, Atlanta, GA

- | | | |
|------------------|---|-------------|
| FF-1: | High-Power Millimeter Wave Tubes | 1119 |
| 3:30 p.m. | M.I. Lopin, B.A. Belyavsky, K.G. Simonov, V.A. Cherepenin, A.D. Zakurdayev, B.S. Grishin, A.A. Negirev and A.S. Pobedonostsev | |
| FF-2: | A New Class of Self-Protecting Low-Noise Microwave Amplifiers | 1123 |
| 2:50 p.m. | Y.A. Budzinsky and S.P. Kantyuk | |
| FF-3: | “Istok” — A Leading Russian Microwave R&D Facility | 1127 |
| 4:10 p.m. | A.N. Korolyov | |
| FF-4: | Istok Achievements in Solid-State Microwave Devices | 1129 |
| 4:30 p.m. | S.A. Zaytsev, V.N. Lebedev, I.A. Ledov, A.S. Negirev, A.D. Rodyonov, E.I. Ryzhik and A.M. Temnov | |
| FF-5: | Multiple-Beam Microwave Tubes | 1131 |
| 4:50 p.m. | A.S. Pobedonostsev, A.E. Gelvich, M.I. Lopin, A.M. Alexeyenko, A.A. Negirev and B.V. Sazonov | |

Session GG

Biological Effects and Medical Applications Room 215

3:30 p.m. to 5:00 p.m.

Wednesday, June 16, 1993

Chairman: A. Rosen—David Sarnoff Research Center, Princeton, NJ

- | | | |
|------------------|---|-------------|
| GG-1: | (Invited) Microwave Bioelectromagnetics in Europe | 1137 |
| 3:30 p.m. | A. Vander Vorst | |
| GG-2: | An Improved Diffraction Tomography for Imaging of High-Contrast Dielectric Objects | 1141 |
| 3:50 p.m. | K.-W. Suh, S.-Y. Kim and J.W. Ra | |
| GG-3: | Dielectric Imaging for the Localisation and Detection of Breast Tumours | 1145 |
| 4:00 p.m. | A.W. Preece, R.H. Johnson, J.L. Green and M.P. Robinson | |
| GG-4: | Thermal Modelling of Non-Ideal Interstitial Microwave Antenna Array Hyperthermia for the Treatment of Cancer | 1147 |
| 4:10 p.m. | K.L. Clibbon and A. McCowen | |
| GG-5: | Finite Difference Time Domain Modelling of Hyperthermia Applicators for Cancer Therapy | 1151 |
| 4:30 p.m. | N.M. Potheary and C.J. Railton | |
| GG-6: | RF and Microwave Ablation for the Treatment of Ventricular Tachycardia | 1155 |
| 4:40 p.m. | R.M. Rosenbaum, A.J. Greenspon, S. Hsu, P. Walinsky and A. Rosen | |
| GG-7: | Nonlinear Dynamical Formulation for Describing Growth of Cancer Cells Based on Intracellular Constituents | 1159 |
| 4:50 p.m. | C.M. Krowne and A.P. Krowne | |

Session HH

Device Modeling and CAD

Room 218/219

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: L. Dunleavy—University of South Florida, Tampa, FL

HH-1:	Millimetre-Wave Device Modelling Differences in Microstrip and Coplanar Waveguide	1173
8:30 a.m.	P.C. Walters, R.D. Pollard, J.R. Richardson and G. Gatti	
HH-2:	Accurate and Efficient Modeling of Hetero-FETs	1177
8:50 a.m.	A. Abou-Elnour and K. Schuenemann	
HH-3:	Characterization of Thermal Effects on Microwave Transistor Performance Using an Efficient Physical Model	1181
9:10 a.m.	J.S. Atherton, C.M. Snowden and J.R. Richardson	
HH-4:	Instabilities Diagnosis and the Role of K in Microwave Circuits	1185
9:30 a.m.	A. Platzker, W. Struble and K.T. Hetzler	
HH-5:	Convolution-Based Black-Box Approach for Incorporating Linear Circuit Blocks Described by Frequency-Domain Data into a Non-Linear Transient Time-Domain Simulator	1189
9:40 a.m.	P. Halloran and T.J. Brazil	

Session II

Coupling and Packaging Effects

Room 202

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: A.A. Oliner—Polytechnic University, Brooklyn, NY

II-1:	Packaged Printed Transmission Lines: Modal Phenomena and Relation to Leakage	1195
8:30 a.m.	L. Carin, A.A. Oliner, G.W. Slade and K.J. Webb	
II-2:	Resonant Phenomena in Conductor-Backed Coplanar Waveguide (CBCPW)	1199
8:50 a.m.	W.-T. Lo, C.-K.C. Tzuang, S.-T. Peng, C.-C. Chang, J.W. Huang and C.-C. Tien	
II-3:	Coupling Phenomena in Conductor-Backed Slotline Structures	1203
9:10 a.m.	Y. Liu, T. Hirota and T. Itoh	
II-4:	Measurement of NRD-Guide Leaky Wave Coupler in Ka Band	1207
9:30 a.m.	D.-C. Niu, T. Yoneyama and T. Itoh	

Session JJ

High Power Sources and Control Components Room 216/217

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: J. Goel—TRW, Redondo Beach, CA

JJ-1:	12 KW S-Band Solid State Transmitter for Modern Radar Systems	1213
8:30 a.m.	M. Hanczor and M. Kumar	
JJ-2:	High Power 14 GHz SSPA for SATCOM Applications	1217
8:50 a.m.	R. Mallavarpu and M.P. Puri	
JJ-3:	Monolithic Photoconductive Ultra-Wideband RF Device	1221
9:10 a.m.	A. Kim, L. Di Domenico, R. Youmans, A. Balekdjian, M. Weiner and L. Jasper	
JJ-4:	Solid State 6x6 Transfer Switch for Cylindrical Array Radar	1225
9:30 a.m.	M.E. Knox, P.J. Sbuttoni, J.J. Stangel, M. Kumar and P. Valentino	
JJ-5:	Shunt-Mounted Harmonically-Tuned Power Rectifier for Distributed Power	
9:50 a.m.	Converters	1229
	D.P. Garrison, A. Lam, J.M. Borrego and R.J. Gutmann	

Session KK

Microwave Measurements Room 215

8:30 a.m. to 10:00 a.m.

Thursday, June 17, 1993

Chairman: D. Wait—NIST, Boulder, CO

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KK-1: 8:30 a.m.	A Broad Band Time Domain Technique for the Measurement of the Frequency Dependent Complex Permittivity in Lossy Transmission Line Systems K.M. Lape and T. Rahal-Arabi	1235	JJ
KK-2: 8:40 a.m.	Ultra-Wideband Characterization of Lossy Materials: Short-Pulse Microwave Measurements D. Kralj and L. Carin	1239	KK
KK-3: 8:50 a.m.	MM-Wave Confocal Resonators for Vertical Structure Profiling in Semiconducting and Superconducting Materials J.S. Martens, L. Lee, K. Char, R. Withers, D. Zhang, V.M. Hietala, C.P. Tigges and J. Zolper	1243	
KK-4: 9:00 a.m.	Finite Element Analysis of Open-Ended Coaxial Lines D. Blackham	1247	
KK-5: 9:10 a.m.	Transistor Noise Parameter Extraction Using a 50 Ohm Measurement System P.J. Tasker, W. Reinert, B. Hughes, J. Braunstein and M. Schlectweg	1251	
KK-6: 9:30 a.m.	A Novel Technique for Measuring Small Singal S-Parameters of an RF/ Microwave, Transistor, Power Amplifying Stage for use in Power Amplifier Stability Analysis G. Collinson and M. Jones	1255	
KK-7: 9:40 a.m.	A Systematic Error Analysis of HP8510 Time-Domain Gating Techniques with Experimental Verification K. Lu and T.J. Brazil	1259	
KK-8: 9:50 a.m.	A Robust Six- to Four-Port Reduction Algorithm C.M. Potter and G. Hjiipieries	1263	

Session LL

Superconducting Filters

Room 218/219

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: R. Withers—Conductus, Inc., Sunnyvale, CA

- | | | |
|-------------------|--|------|
| LL-1: | Novel Staggered Resonator Array Superconducting 2.3-GHz Bandpass Filter | 1269 |
| 10:30 a.m. | G.L. Matthaei and G.L. Hey-Shipton | |
| LL-2: | High Temp. Superconducting 8.45-GHz Bandpass Filter for the Deep Space | |
| 10:50 a.m. | Network | 1273 |
| | G.L. Matthaei and G.L. Hey-Shipton | |
| LL-3: | Superconducting Narrow Band Pass Filters for Advanced Multiplexers | 1277 |
| 11:00 a.m. | A. Fathy, D. Kalokitis, V. Pendrick, E. Belohoubek, A. Pique and M. Mathur | |
| LL-4: | Design of Hybrid-Coupled Multiplexers and Diplexers Using Asymmetrical | |
| 11:20 a.m. | Superconducting Filters | 1281 |
| | R.R. Mansour, F. Rammo and V. Dokas | |
| LL-5: | Narrow-Band YBCO Superconducting Parallel-Coupled Coplanar Waveguide | |
| 11:40 a.m. | Band-Pass Filters at 10 GHZ | 1285 |
| | R. Weigel, M. Nalezinski, A.A. Valenzuela and P. Russer | |

Session MM

New Structures and Leaky Modes

Room 202

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: M. Dydyk—Motorola, Inc., Scottsdale, AZ

- | | | |
|-------------------|--|------|
| MM-1: | Existence of a Leaky Dominant Mode on Microstrip Line with an Isotropic | |
| 10:30 a.m. | Substrate: Theory and Measurements | 1291 |
| | D. Nghiem, J.T. Williams, D.R. Jackson and A.A. Oliner | |
| MM-2: | Simultaneous Propagation of Both Bound and Leaky Dominant Modes on | |
| 10:50 a.m. | Conductor-Backed Coplanar Strips | 1295 |
| | M. Tsuji, H. Sigesawa and A.A. Oliner | |
| MM-3: | Channelized Coplanar Waveguides (CCPW)—A New Transmission Line for | |
| 11:10 a.m. | Wideband Applications in Integrated Microwave & Millimeter-Wave Circuits | * |
| | K. Wu, Y. Xu and R.G. Bosisio | |
| MM-4: | Microstrip Discontinuities on Cylindrical Surfaces | 1299 |
| 11:30 a.m. | J. Huang, R. Vahldieck and H. Jin | |
| MM-5: | Analysis of Wave Propagation Effects on Microwave Field-Effect Transistors | 1303 |
| 11:40 a.m. | M.S. Hakim and S.M. El-Ghazaly | |

*Paper not available at time of printing.

Session NN

Microwave Integrated Circuits Room 216/217

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: J. Pierro—AIL Systems, Deer Park, NY

NN-1:	A Novel Approach for Integrating High-Q Band-Pass Filters into Microwave	
10:30 a.m.	Integrated Circuit Assemblies	1309
	G.E. Johnson, M.D. Meldey, R. Levy, R.W. Larson, P. Ng and D.S. Mackie	
NN-2:	A Microwave Active Bandstop Filter with Tunable Centre Frequency	1313
10:40 a.m.	R.G. Arnold and S.P. Marsh	
NN-3:	Coplanar Waveguide Filters	1317
11:00 a.m.	A.K. Rayit and N.J. McEwan	
NN-4:	Physically Based Circuit Model of GaAs MESFET as an Optical Port for Microwave	
11:10 a.m.	Systems	1553
	K.A.R. Razzooqi, N.J. Gomes and P.A. Davies	
NN-5:	Slot-Coupled Double-Sided Microstrip Interconnects and Couplers	1321
11:20 a.m.	C.-H. Ho, L. Fan and K. Chang	
NN-6:	A GHz-Band Ceramic Multi-Layer Substrate and Its Applications to a Hybrid IC	1325
11:30 a.m.	Y. Taguchi, K. Mayauchi, K. Eda and T. Ishida	
NN-7:	A 6.8-10.7 GHz EW Module Using 72 MMICs	1329
11:50 a.m.	G. Garbe, R. Becker, M. Patel, W. Guthrie, S. Moghe, R. Williams and G. Giacomino	

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Session OO

Microwave Probe Measurements Room 215

10:30 a.m. to 12:00 p.m.

Thursday, June 17, 1993

Chairman: M.A. Maury, Jr.—Maury Microwave Corp., Ontario, Canada

- | | | |
|-------------------|---|-------------|
| OO-1: | A New Probe for W-Band On-Wafer Measurements | 1335 |
| 10:30 a.m. | S.M.J. Liu and G.G. Boll | |
| OO-2: | Full Two-Port On-Wafer Vector Network Analysis to 120 GHz Using Active Probes | 1339 |
| 10:50 a.m. | R. Yu, M. Reddy, J. Pusi, S. Allen, M. Case and M. Rodwell | |
| OO-3: | Ka-Band Power PHEMT On-Wafer Characterization Using Prematched Structures | 1343 |
| 11:00 a.m. | A.K. Sharma, G.S. Dow, M. Aust, J. Canyon, B. Allen, S. Pak, D. Yang, Y. Hwang and K. Tan | |
| OO-4: | Non-Invasive Waveform Probing for Nonlinear Network Analysis | 1347 |
| 11:10 a.m. | C.J. Wei, Y.A. Tkachenko and J.C.M. Hwang | |
| OO-5: | Probe Tip Invasiveness at Indirect Electro-Optics Sampling MMIC | 1351 |
| 11:20 a.m. | W. Mertin, C. Roths, F. Taenzler and E. Kubalek | |
| OO-6: | 300-GHz-Bandwidth Network Analysis Using Time-Domain Electro-Optic Sampling | 1355 |
| 11:30 a.m. | H.-J. Cheng and J.F. Whitaker | |
| OO-7: | Time-Domain Network Analysis of MM-Wave Circuits Based on a Photoconductive Probe Sampling Technique | 1359 |
| 11:50 a.m. | J. Kim, J. Son, S. Wakana, J. Nees, S. Williamson, J. Whitaker, Y. Kwon and D. Pavlidis | |

Session PP

Transistor Power Amplifiers I Room 216/217

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: D. Cahana—Avantek, Santa Clara, CA

- | | | |
|------------------|---|-------------|
| PP-1: | C-X Band 14W Power Amplifier Having Flat Gain and Power Response | 1365 |
| 1:30 p.m. | M. Mochizuki, Y. Itoh, M. Kohn, H. Masuho and T. Takagi | |
| PP-2: | A Power Amplifier Yields 10 Watts Over 8–14 GHz Using GAAS MMICS in an LTCC Serial Combiner/Divider Network | 1369 |
| 1:50 p.m. | J.W. Gippich, L.E. Dickens, J.A. Faulkner | |
| PP-3: | Ku-Band Monolithic 7-Watt Power Amplifier Using AlGaAs/GaAs 0.25-μm T-GATE Heterostructure FET Technology | 1373 |
| 2:10 p.m. | D.T. Bryant, K. Salzman and R. Hudgens | |
| PP-4: | 20 GHz High Power High Efficiency HEMT Module | 1377 |
| 2:30 p.m. | C.H. Chen, H.C. Yen, K. Tan, L. Callejo, G. Onak, D.C. Streit, P.H. Liu and J.M. Schellenberg | |
| PP-5: | Four-Watt 20-GHz Partial Monolithic Amplifier | 1381 |
| 2:40 p.m. | R. Yarborough, P. Saunier, H.Q. Tserng, K. Salzman, B. Smith and D. Heston | |

Session QQ

Optical Characterization and Device Modeling Room 202

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: A. Paoletta—Army Research Laboratory, Ft. Monmouth, NJ

QQ-1:	Broadband and Real-Time Waveform Sampling Using Optic-Microwave	
1:30 p.m.	Phase-Locking	1387
	S.L. Huang, H.-L.A. Hung and C.H. Lee	
QQ-2:	Noninvasive Probing System for Ultra-High Speed Testing of MMIC's and MCM's	*
1:50 p.m.	M.K. Ravel, S.H. Pepper and M.D. Jones	
QQ-3:	Design and On-Wafer Testing of Millimeter-Wave External Optical Modulators	1391
2:00 p.m.	D. Polifko, K. Matsui and H. Ogawa	
QQ-4:	Picosecond Photoconductive Switches Designed for On-Wafer Characterization of	
2:10 p.m.	High Frequency Interconnects	1395
	L.P. Golob, S.L. Huang, C.H. Lee, W.H. Chang, K. Jones, M. Taysing Lara and T. DeAnni	
QQ-5:	MESFET as an Optically Activated Microwave Switch—Theory and Experiment	1399
2:20 p.m.	A. Madjar, A. Paoletta and P.R. Herczfeld	
QQ-6:	A Study on the Negative Photoresponse of AlGaAs/GaAs MODFETs	1403
2:40 p.m.	M.A. Romero and P.R. Herczfeld	
QQ-7:	A New Lightwave-Microwave Signal Conversion Method	1407
2:50 p.m.	T. Berceci, M. Izutsu and T. Sueta	

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*Paper not available at time of printing.

Session RR

Superconducting Sub-System Technology

Room 218/219

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: C.M. Jackson—TRW, Hawthorne, CA

- | | | |
|------------------|---|-------------|
| RR-1: | Superconductive Digital Instantaneous Frequency-Measurement Subsystem | 1413 |
| 1:30 p.m. | G.-C. Liang, C.F. Shih, R.S. Withers, B.F. Cole, M.E. Johansson and L.P. Suppan | |
| RR-2: | High-Temperature Superconducting Matching Networks for Electrically Short | 1417 |
| 1:50 p.m. | Monopole Antennas
A.Y. Piatnicia, S.H. Talisa, J.R. Gavalier, M.A. Janocko, J. Talvacchio, M.J. Buckley,
K.M. Leader, J.A. Moellers and M.R. Schrote | |
| RR-3: | Tunable High Temperature Superconductor Microstrip Resonators | 1421 |
| 2:00 p.m. | J.A. Beall, R.H. Ono, D. Galt and J.C. Price | |
| RR-4: | Parametric Interactions in High-Tc Superconducting Step Edge Junctions at X Band | 1425 |
| 2:10 p.m. | A.Z. Kain and H.R. Fetterman | |
| RR-5: | Noise Figure of HTS JJ MMIC Downconverter at 12GHz | 1429 |
| 2:20 p.m. | K. Suzuki, S. Yoshikawa, K. Yamaguchi, K. Hayashi, S. Fujino, T. Takenaka,
T. Mitsuzuka, Y. Enomoto, K. Imai, F. Suginooshita and N. Yazawa | |

Session SS

EM Analytical and Numerical Techniques I Room 215

1:30 p.m. to 3:00 p.m.

Thursday, June 17, 1993

Chairman: M. Goetz—Stratedge Corp., San Diego, CA

SS-1:	The FDTD Diakoptics Method	1435
1:30 p.m.	T.-W. Huang, B. Houshmand and T. Itoh	
SS-2:	Performance Study of One-Way Absorbing Boundary Equations in 3-D TLM for Dispersive Guiding Structures	1439
1:50 p.m.	C. Eswarappa and W.J.R. Hoefer	
SS-3:	A New Look at the 3D Condensed Node TLM Scattering	1443
2:00 p.m.	P.P.M. So and W.J.R. Hoefer	
SS-4:	Rigorous and Efficient Analysis of Hybrid T-Junctions	1447
2:10 p.m.	F. Alessandri, M. Barba, M. Mongiardo and R. Sorrentino	
SS-5:	A Rigorous Analysis of the Higher Order Modes and Attenuation of Stripline of Arbitrary Dimensions	1451
2:20 p.m.	M.H. Burchett, S.R. Pennock and P.R. Shepherd	
SS-6:	Two-Dimensional Transmission Line Matrix (TLM) Simulation of the Electromagnetic Fields in a Rectangular Section of a Discretized GaAs MESFET Channel with Arbitrary Doping Profile	1455
2:30 p.m.	S. Dindo and M. Ney	

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Session TT

Transistor Power Amplifiers II

Room 216/217

3:30 p.m. to 5:00 p.m.

Thursday, June 17, 1993

Chairman: L.J. Kushner—MIT Lincoln Labs., Lexington, MA

TT-1:	Low Voltage GaAs Power Amplifier for Personal Communications at 1.9GHz	1461
3:30 p.m.	D. Ngo, B. Bechwith, P. O'Neil and N. Camilleri	
TT-2:	3V Operation L-Band Power Double-Doped Double Heterjunction FETs	1465
3:50 p.m.	N. Iwata, K. Inosako and M. Kuzuhara	
TT-3:	4GHz High-Power High-Efficiency Pseudomorphic Power HEMT	1469
4:00 p.m.	S.T. Fu, W.F. Kopp, M.Y. Kao, K.H.G. Duh, P.M. Smith, P.C. Chao and T.H. Yu	
TT-4:	Broadband High-Efficiency HBT MMIC Power Amplifier Fabricated with	
4:10 p.m.	Re-Aligned Process	1473
	J.J. Komiak, L.W. Yang, R.S. Brozovich, S.T. Fu and D.P. Smith	
TT-5:	X-Band GaInP/GaAs Power Heterojunction Bipolar Transistor	1477
4:30 p.m.	W. Lui, A. Khatibzadeh, T. Henderson, S.-K. Fan and D. Davito	
TT-6:	Quarter-Micron WSi/Au Gate AlGaAs/InGaAs HJFETs for Q-Band Power	
4:50 p.m.	Applications	1481
	T. Matsumura, M. Kanamori, Y. Oikawa and S. Shinozaki	

Session UU

Simulation and CAD Frameworks

Room 202

3:30 p.m. to 5:00 p.m.

Thursday, June 17, 1993

Chairman: B.S. Perlman—Army Research Laboratory, Ft. Monmouth, NJ

UU-1:	An Introduction to MHD	1487
3:30 p.m.	D.L. Barton and D.D. Dunlop	
UU-2:	The Globalization of Microwave CAD	*
3:50 p.m.	L. Carmichaels and P. Dueme	
UU-3:	Object-Oriented Design of Microwave Circuit Simulators	1491
4:10 p.m.	P. Carvalho, E. Ngoya, J. Rousset and J. Obregon	
UU-4:	Electromagnetic Simulator Interfacing to a General CAD Framework: Automatic,	
4:30 p.m.	Electromagnetic-Based Mesh Generation	1495
	P. Draxler	

*Paper not available at time of printing.

Session VV

Acoustic Filters and Resonators

Room 218/219

3:30 a.m. to 5:00 a.m. **Thursday, June 17, 1993**

Chairman: T. Lukaszek—US Army Research Laboratory, Ft. Monmouth, NJ

VV-1:	A New Low Loss SAW Filter Structure with Extremely Wide Bandwidth for Mobile Communication Systems	1501
3:30 p.m.	J. Machui, G. Müller, W. Ruile, L. Reindl, R. Weigel and P. Russer	
VV-2:	Design and Performance of Wide-Band IIDT-Type SAW Filters with Low Loss and Improved Sidelobe Suppression	1505
3:50 p.m.	R. Weigel, B. Bader, G. Fischerauer and P. Russer	
VV-3:	Transverse and Longitudinal Modes in Waveguide-Coupled Resonators	1509
4:00 p.m.	W.D. Hunt, T. Cameron, J.C.B. Saw, Y. Kim and M.S. Suthers	
VV-4:	A Physically-Based Small-Signal Circuit Model for Heterostructure Acoustic Charge Transport Devices	1513
4:10 p.m.	J.S. Kenney and W.D. Hunt	
VV-5:	High Q Microwave Acoustic Resonators and Filters	1517
4:20 p.m.	K.M. Lakin, G.R. Kline and K.T. McCarron	

Session WW

EM Analytical and Numerical Techniques II

Room 215

3:30 p.m. to 5:00 p.m. **Thursday, June 17, 1993**

Chairman: W. Hoefer—University of Victoria, Victoria B.C., Canada

WW-1:	A Novel Treatment of Open Dielectric Waveguides	1523
3:30 p.m.	K. Sabetfakhiri and P.B. Katehi	
WW-2:	Full Wave Characterization of Microstrip Open End Discontinuities Patterned on Anisotropic Substrates Using Potential Theory	1527
3:50 p.m.	S.S. Toncich, R.E. Collin and K.B. Bhasin	
WW-3:	CPW Resonator Modelling on GaAs Using the Mixed Potential Integral Equation	1531
4:00 p.m.	S. Sattler, T. Felgentreff and P. Russer	
WW-4:	Vector Surface Integral Approach to Computing Inductances of General 3-D Structures	1535
4:10 p.m.	S. Kim, S. Ali and J. White	
WW-5:	A New Full-Wave Integral Equation Method for the Analysis of Coplanar Strip Circuit Using the Mixed-Potentials Eigenfunction Expansion Technique	1539
4:20 p.m.	W.-T. Lo and C.-K.C. Tzuang	
WW-6:	An Expression for the S-Parameters of Arbitrarily Oriented Microstrip Lines	1543
4:30 p.m.	L.C. Howard and J.M. Dunn	

