

1998 Microwave Symposium Technical Program Schedule

Session TH1A Active and Planar Filters

8:00 am–9:40 am

Room 307/308

Thursday, June 11, 1998

Chair: Y.-C. Shih, MMCOMM, Inc.

TH1A-1 8:00 am	Frequency Hopping Evanescent Mode Filter J. Sherman	1169
TH1A-2 8:20 am	Optimization of Noise Performance for Various Topologies of Microwave Active Recursive Filters H. Ezzedine, M. Delmond, L. Billonnet, B. Jarry and P. Guillon	1173
TH1A-3 8:40 am	A GaAs MMIC Active Filter With Low Noise and High Gain F. Sabouri-S.	1177
TH1A-4 8:50 am	Low Loss Micromachined Filters for Millimeter-Wave Telecommunication Systems P. Blondy, A.R. Brown, D. Cros and G.M. Rebeiz	1181
TH1A-5 9:10 am	Micromachined Filters on Synthesized Substrates R.F. Drayton, S. Pacheco, J.-G. Yook and L.P.B. Katehi	1185
TH1A-6 9:20 am	A Design of Novel Asymmetrically Coupled CPW Bandpass Filter Using TEM Analysis J.-S. Park, J. Kim, D. Ahn, J.-B. Lim and T. Itoh	1189
TH1A-7 9:30 am	A New Miniature Uniplanar Lowpass Filter Using Series Resonators K. Hettak and G. Delisle	1193

Session TH1B

(Joint ARFTG and IMS Session)

Commercial and Industrial Microwave Systems

8:00 am–9:40 am

Room 309/310

Thursday, June 11, 1998

Chair: R.G. Ranson, Filtronic COMTEK, UK

Co-Chair: D. Meharry, Sanders a Lockheed Martin Company

TH1B-1 8:00 am	Miniature P-Code GPS Translator J. Smuk, P. Blount, C. Trantanella and M. Shifrin	1199
TH1B-2 8:20 am	A Broadband Linearizer for Ka-Band Satellite Communication W-M. Zhang and C. Yuen	1203
TH1B-3 8:30 am	Procedure for Measurements and Statistical Processing of Upstream Channel Noise in HFC-Networks K. Haelvoet, J. Vandenbruaene, E. Claus, K. De Kesel and L. Martens	1207
TH1B-4 8:50 am	Novel Microwave Vibration Monitoring System for Industrial Power Generating Turbines M. Wagner, A. Schulze, M. Vossiek, C. Stephelbauer, R. Weigel, N. Vortmeyer and P. Heide	1211
TH1B-5 9:10 am	Integrated 5.8 GHz Phased Array Antenna for Electronic Toll Collection G. Villino, C. Passmann, D. Mansen, C. Brenzel and T. Wixforth	1215

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Session TH1C

Devices for Microwave Photonic Systems

8:00 am–9:40 am

Room 314/317

Thursday, June 11, 1998

Chair: C. Gee, Ortel Corp.

Co-Chair: A. Gopinath, University of Minnesota

TH1C-1	High Spectral Purity Millimetre-Wave Modulated Optical Signal Generation Using Fibre	
8:00 am	Grating Lasers	1221
	F.N. Timofeev, S. Bennett, R. Griffin, P. Bayvel, A.J. Seeds, R. Wyatt, R. Kashyap and M. Robertson	
TH1C-2	Optically Powered Remote Optical Field Sensor System Using an Electroabsorption-	
8:20 am	Modulator	1225
	R. Heinzelmann, A. Stöhr, M. Groß, D. Kalinowski, T. Alder, M. Schmidt and D. Jäger	
TH1C-3	Third-Order Intermodulation Distortion in an Optical Downconverter	1229
8:30 am	P.D. Biernacki, L.T. Nichols and R.D. Esman	
TH1C-4	Distributed Velocity-Matched 1.55 μm InP Travelling-Wave Photodetector for Generation	
8:40 am	of High Millimeterwave Signal Power	1233
	M. Alles, U. Auer, F.-J. Tegude and D. Jäger	
TH1C-5	High Power, High Frequency Traveling Wave Heterojunction Phototransistors with Integrated	
9:00 am	Polymide Waveguide	1237
	D.C. Scott, D.P. Prakash, H. Erlig, D. Bhattacharya, M. Ali, H.R. Fetterman, and M. Matloubian	
TH1C-6	Tapered Slot Antenna Integrated with Velocity-Matched Distributed Photodetector	1241
9:20 am	B.-s. Ke, T. Chau, Y. Qian, M.-c. Wu and T. Itoh	
TH1C-7	InP-Based Gilbert Cell Phase Detector for Generation of Stable Dense Wavelength Division	
9:30 am	Multiplexing Channel Offsets Using an Optical Phase-Locked Loop	1245
	P.G. Goetz, H. Eisele, K.C. Syao, K. Yang and P. Bhattacharya	

Session TH1D

Application Oriented Techniques in Field Theory

8:00 am–9:40 am

Room 318/323

Thursday, June 11, 1998

Chair: F. Arndt, University of Bremen, Germany

Co-Chair: A. Beyer, University of Duisburg, Germany

TH1D-1	A Wavelet Based Time Domain Moment Method for the Analysis of Three-Dimensional	
8:00 am	Electromagnetic Fields	1251
	M. Werthen and I. Wolff	
TH1D-2	Electromagnetic Propagation into Reinforced-Concrete Walls	1255
8:20 am	E. Richalot, M. Bonilla, M.F. Wong, V. Fouad-Hanna, H. Baudrand and J. Wiart	
TH1D-3	Design of Photonic Band-Gap Substrates for Surface Waves Suppression	1259
8:40 am	R. Coccioli and T. Itoh	
TH1D-4	Electromagnetic Field Coupling to Multiconductor Transmission Lines in Multi-Layered	
8:50 am	Media	1263
	I. Erdin, R. Khazaka and M. Nakhla	
TH1D-5	Efficient Analysis of Microstrip Radiation by the TLM Integral Equation (TLMIE) Method	1267
9:00 am	L. Pierantoni, S. Lindenmeier and P. Russer	
TH1D-6	Fast Subgrid FD-TD Matrix Pencil Technique for the Rigorous Analysis of Resonant 3D	
9:10 am	Microwave Structures	1271
	J. Ritter and F. Arndt	
TH1D-7	Efficient Hybrid Mode-Matching/-Finite-Element (MM/FE) Method for the Design	
9:20 am	of Waveguide Components and Slot Radiators	1275
	R. Beyer and F. Arndt	

Session TH1E

Multilayer and 3D Hybrid Technology

8:00 am–9:40 am

Room 327/329

Thursday, June 11, 1998

Chair: C. Buntschuh, Microwave Engineering Services
Co-Chair: J. Pierro, AIL Systems, Inc.

TH1E-1	Design of Embedded Passive Components in Low-Temperature Cofired Ceramic on Metal (LTCC-M) Technology	1281
8:00 am	A. Fathy, V. Pendrick, G. Ayers, B. Geller, Y. Narayan, B. Thaler, H.D. Chen, M.J. Liberatore, J. Prokop, K.L. Choi and M. Swaminathan	
TH1E-2	Design and Performance of UHF Band Inductors, Capacitors and Resonators Using LTCC Technology for Mobile Communication Systems	1285
8:20 am	W. Eurskens, W. Wersing, S. Gohlke, V. Wannenmacher, P. Hild and R. Weigel	
TH1E-3	3D Microwave Modules for Space Applications	1289
8:40 am	P. Monfraix, P. Ulian, C. Drevon, S. George, A. Coello Vera, C. Tronche, J.L. Cazaux, O. Llopis and J. Graffeuil	
TH1E-4	An Embedded Transmission Line Micro-Ball Grid Array X-Band Power Amplifier	1293
8:50 am	T. Budka, L. Stiborek, L. Heinrich and C. Kyhl	
TH1E-5	Methodology for Creating Embedded Transmission Line 90° Bend and Shunt Capacitor Models	1297
9:10 am	B. Heimer and T. Budka	
TH1E-6	NRD Guide Couplers Combined with Microwave Integrated Circuits in Side-by-Side Alignment	1301
9:20 am	T. Goi, S. Kawasaki, T. Itoh and T. Yoneyama	

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Session TH2A

High Q Filters

10:10 am–11:50 am

Room 307/308

Thursday, June 11, 1998

Chair: M. Guglielmi, European Space Agency, The Netherlands

TH2A-1	A New Planar Type Dielectric Resonator for Microwave Filtering	1307
10:10 am	S. Moraud, S. Verdeyme, P. Guillon, P. Ulian and B. Theron	
TH2A-2	K-Band Planer Type Dielectric Resonator Filter with High-ε Ceramic Substrate	
10:30 am	T. Hiratsuka, T. Sonoda, K. Sakamoto and Y. Ishikawa	
TH2A-3	Dielectric Combine Resonators and Filters	1315
10:40 am	C. Wang, K.A. Zaki, A.E. Atia and T. Dolan	
TH2A-4	High-Temperature Superconductor-Shielded High Power Dielectric Dual-Mode Filter for Applications in Satellite Communications	1319
11:00 am	S. Schornstein, I.S. Ghosh and N. Klein	
TH2A-5	Novel Helical Resonator Filter Structures	1323
11:20 am	S.J. Fiedziuszko and R.S. Kwok	
TH2A-6	Synthesis of Delay Filters	1327
11:40 am	D. Chambers and Y. Huang	

Session TH2B

Microwave Measurements

10:10 am–11:50 am

Room 309/310

Thursday, June 11, 1998

Chair: C. Weil, National Institute of Standards and Technology
Co-Chair: M. Solomon, Mitre Corp.

TH2B-1	DC-to-MM-Wave Absolute Potential Measurements Inside Digital Microwave ICs	
10:10 am	Using a Micromachined Photoconductive Sampling Probe	1333
	G. David, J.F. Whitaker, T.R. Weatherford, K. Jobe, S. Meyer, M. Bustamante, W. Goyette, S. Thomas III and K. Elliott	
TH2B-2	Mapping the Thickness of Conducting Layers by a MM-Wave Nearfield Microscope	1337
10:30 am	A.F. Lann, M. Golosovsky, D. Davidov and A. Frenkel	
TH2B-3	Localized Circuit Probing with a Combined Schottky Diode/Scanning Force Microscope	1341
10:40 am	D.W. van der Weide, V. Agrawal, T. Bork and P. Neuzil	
TH2B-4	Accurate Extraction Method for 1/f-Noise Parameters Used in Gummel-Poon Type Bipolar Junction Transistor Models	1345
11:00 am	F.X. Sinnesbichler, M. Fischer and G.R. Olbrich	
TH2B-5	W Band Silicon Dielectric Resonator for Semi Conductor Substrate Characterization	1349
11:10 am	P. Blondy, D. Cros, P. Guillon, F. Balleras and C. Massit	
TH2B-6	Measurement of the Broadband Microwave Absorption and Shielding Characteristics of a Conductive Polymer	1353
11:20 am	K. Naishadham and P. Chandrasekhar	
TH2B-7	Analytical Expressions of Transient Thermal Response of Self-Heating Semiconductor Devices	1357
11:30 am	Y. Zhu, J.K. Twynam, M. Yagura, M. Hasegawa, Y. Eguchi, A. Yamada, E. Suematsu, K. Sakuno, H. Sato and N. Hashizume	

Session TH2C

(Focused Session)

Optical Beam Forming for Phased Arrays

10:10 am–11:50 am

Room 314/317

Thursday, June 11, 1998

Chair: A. Seeds, University College, London, UK

Co-Chair: D. Zimmerman, Raytheon TI Systems

TH2C-1	New Array Capabilities By Photonic Beamforming (Invited)	1363
10:10 am	R.D. Esman, M.Y. Frankel and P.J. Matthews	
TH2C-2	Optically Controlled Serially Fed Phased Array Radar	1367
10:30 am	Y. Chang, H.R. Fetterman, B. Tsap, A.F.J. Levi, D.A. Cohen, and I.L. Newberg	
TH2C-3	Beam-Forming Network Characteristics of Spatial Optical Signal Processing Array	
10:50 am	Antenna for Multibeam Reception	1371
	O. Shibata, K. Inagaki and Y. Karasawa	
TH2C-4	Ultimate Beam Capacity Limit of Fibre Grating Based True-Time-Delay Beam-Formers	
11:10 am	For Phased Arrays	1375
	R.A. Minasian and K.E. Alameh	
TH2C-5	Optical Beamforming Network Based on Chirped Fiber Gratings Continuously Variable	
11:20 am	True-Time-Delay Lines	1379
	J.L. Corral, J. Martí and J.M. Fuster	
TH2C-6	All-Optically Controlled Beam-Scanning Array for Antenna Remoting Applications	1383
11:30 am	W.R. Deal, T. Jung, M.C. Wu and T. Itoh	
TH2C-7	Microwave Phase Conjugation Using Optically Interconnected Phased Arrays	1387
11:40 am	Y. Chang, H.R. Fetterman, I.L. Newberg, and S.K. Panaretos	

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Session TH2D

Time Domain Methods II

10:10 am–11:50 am

Room 318/323

Thursday, June 11, 1998

Chair: A.C. Cangellaris, The University of Illinois at Urbana-Champaign

Co-Chair: W.J.R. Hoefer, University of Victoria

TH2D-1	Formulation of a Haar-Wavelet-Based Multi-Resolution Analysis Similar to the 3-D FDTD	
10:10 am	Method	1393
	M. Fujii and W.J.R. Hoefer	
TH2D-2	Nonlinear Circuit Characterization Using a Multiresolution Time Domain Technique (MRTD)	1397
10:30 am	L. Roselli, E.M. Tentzeris and L.P.B. Katehi	
TH2D-3	Time Domain Characterization of Coupled Electromagnetic/Thermal Phenomena	
10:50 am	for Material Processing	1401
	M. Righi, J.L. Herring and W.J.R. Hoefer	
TH2D-4	A Fully Integrated Multiconductor Model for TLM	1405
11:00 am	A. Wlodarczyk, V. Trenkic, R. Scaramuzza and C. Christopoulos	
TH2D-5	A Systematic Approach to the Problem of Equivalent Circuit Model Generation	1409
11:10 am	T. Mangold and P. Russer	
TH2D-6	Analysis of MQW and Anisotropic Guided Wave Structures Using a Full-Wave 2D	
11:30 am	TLM-Based FD-TD Method	1413
	Z. Chen, M.L. Lui, P. Berini and K. Wu	
TH2D-7	Partially Prism-Gridded FDTD Analysis for Layered Structures of Transversely Curved	
11:40 am	Boundary	1417
	C.-T. Hwang and R.-B. Wu	

Session TH2E

Frequency Conversion Technology

10:10 am–11:50 am

Room 327/329

Thursday, June 11, 1998

Chair: A.P.S. Khanna, Hewlett Packard

TH2E-1	A Modified Feed-Forward Technique for Mixer Linearization	1423
10:10 am	T.J. Ellis	
TH2E-2	A New FET Frequency Multiplier	1427
10:30 am	M. Jonsson, H. Zirath and K. Yhland	
TH2E-3	Distributed Broadband Frequency Translator	1431
10:50 am	P. Akkarackthalin, S. Kcc and D.W. van der Weide	
TH2E-4	A Compact Subharmonically Pumped MMIC Self Oscillating Mixer for 77 GHz	
11:00 am	Applications	1435
	M.J. Roberts, S. Iezekiel and C.M. Snowden	
TH2E-5	Low Cost Coplanar 77 GHz Single-Balanced Mixer Using Ion-Implanted GaAs Schottky	
11:20 am	Diodes	1439
	R. Shimon, D. Caruth, J. Middleton, H. Hsia and M. Feng	
TH2E-6	A Millimeter-Wave Broadband Monolithic Even Harmonic Image Rejection Mixer	1443
11:30 am	K. Kawakami, M. Shimozaawa, H. Ikematsu, K. Itoh, Y. Isota and O. Ishida	
TH2E-7	Microwave Regenerative Dividers with Low Phase Noise	1447
11:40 am	E.S. Ferre-Pikal and F.L. Walls	

Session TH3A

Quasi-Optical Amplifier Arrays

1:20 pm–3:00 pm

Room 307/308

Thursday, June 11, 1998

Chair: M. De Lisio, University of Hawaii

TH3A-1	A Ka-Band Monolithic Quasi-Optic Amplifier	1453
1:20 pm	E.A. Sovero, J.B. Hacker, J.A. Higgins, D.S. Deakin and A.L. Sailer	
TH3A-2	20 Watt Spatial Power Combiner in Waveguide	1457
1:40 pm	N.-S. Cheng, A. Alexanian, M.G. Case and R.A. York	
TH3A-3	A 10-GHz High-Efficiency Lens Amplifier Array	1461
2:00 pm	E.W. Bryerton, M.D. Weiss and Z. Popović	
TH3A-4	A CPW Fed Microstrip Patch Quasi-Optical Amplifier Array	1465
2:20 pm	S. Ortiz, T. Ivanov and A. Mortazawi	
TH3A-5	Analysis and Measurement of Hard Horn Feeds for the Excitation of Quasi-Optical Amplifiers	1469
2:30 pm	M.A. Ali, S. Ortiz, T. Ivanov and A. Mortazawi	
TH3A-6	An Integrated Electromagnetic and Nonlinear Circuit Simulation Environment for Spatial Power Combining Systems	1473
2:40 pm	M.A. Summers, C.E. Christoffersen, A.I. Khalil, S. Nakazawa, T.W. Nuteson, M.B. Steer and J.W. Mink	

Session TH3B

Network Measurements

1:20 pm–3:00 pm

Room 309/310

Thursday, June 11, 1998

Chair: L. Dunleavy, University of South Florida

Co-Chair: E. Strid, Cascade Microtech

TH3B-1	W-Band On-Wafer Load-Pull Measurement System and its Application to HEMT Characterization	1479
1:20 pm	E. Alekseev, D. Pavlidis and C. Tsironis	
TH3B-2	Characterization of W-Band MMIC Power Amplifier Using On-Wafer Pulsed Power Test	1483
1:40 pm	D.C. Yang, J.M. Yang, H. Wang and P. Huang	
TH3B-3	Accuracy of Lumped-Element Calibrations for Four-Sampler Vector Network Analyzers	1487
1:50 pm	R.B. Marks, J.A. Jargon and D.K. Rytting	
TH3B-4	Complete 3-Port Measurement of Microwave Mixers Using a Non-Linear Vectorial Network Analyser	1491
2:00 pm	Y. Rolain, P. Vael, W. Van Moer and A. Barel	
TH3B-5	Measuring Transistor Dynamic Loadlines and Breakdown Currents Under Large-Signal High-Frequency Operating Conditions	1495
2:10 pm	J. Verspecht and D. Schreurs	
TH3B-6	A Microwave Multisine with Known Phase for the Calibration of Narrowbanded Nonlinear Vectorial Network Analyzer Measurements.	1499
2:30 pm	A. Barel and Y. Rolain	
TH3B-7	A Single Six-Port Based Automated Network Analyzer	1503
2:40 pm	S. Khouaja and F.M. Ghannouchi	

Session TH3C

Photonics for Wireless and Radar Systems

1:20 pm–3:00 pm

Room 314/317

Thursday, June 11, 1998

Chair: A. Paoletta, Lockheed Martin

Co-Chair: R. Esman, The Naval Research Laboratory

TH3C-1	Broadband Millimeter-Wave Fiber-Radio Network Incorporating Remote Up/Downconversion	1509
1:20 pm	G.H. Smith and D. Novak	
TH3C-2	A Wireless Lan At 60 GHZ - Novel System Design and Transmission Experiments	1513
1:40 pm	K. Kojucharow, H. Kaluzni, M. Sauer and W. Nowak	
TH3C-3	Intrinsic Microwave Phase Noise of Fiber-Optic Links	1517
2:00 pm	P.J. Matthews and R.D. Esman	
TH3C-4	Photonic Remoting of the Receiver of an Ultra-High Dynamic Range Radar	1521
2:20 pm	J.E. Román, L.T. Nichols, K.J. Williams, R.D. Esman, G.C. Tavik, M. Livingston, and M.G. Parent	
TH3C-5	New Carrier Generation Approach for Fiber-Radio Systems to Overcome Chromatic Dispersion Problems	1525
2:40 pm	A. Hilt, A. Vilcot, T. Berceci, T. Marozsák and B. Cabon	
TH3C-6	Compensation of Fiber Dispersion in an Optical MM-Wave System in the 60 GHz-Band	1529
2:50 pm	C.G. Schäffer, R.P. Braun, G. Grosskopf and F. Schmidt	

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Session TH3D

Frequency Domain Techniques

1:20 pm–3:00 pm

Room 318/323

Thursday, June 11, 1998

Chair: R. Vahldieck, Swiss Federal Institute of Technology

Co-Chair: H.-Y.D. Yang, University of Illinois at Chicago

TH3D-1	Propagation in a Circular Waveguide Periodically Loaded with Dielectric Disks	1535
1:20 pm	S. Amari, R. Vahldieck, J. Bornemann and P. Leuchtman	
TH3D-2	High-Q Rectangular Cavities and Waveguide Filters Using Periodic Metal-Dielectric Slabs	1539
1:40 pm	H. Contopanagos, N.G. Alexopoulos and E. Yablonovitch	
TH3D-3	MoL-Mode Analysis with Precise Resolution by an Enhanced and Generalized Line Algorithm	1543
1:50 pm	R. Pregla	
TH3D-4	Analysis of MMIC Junctions and Multiports by the Method of Lines	1547
2:10 pm	L. Vietzorreck and R. Pregla	
TH3D-5	Mesh Grading and Cutoff Frequencies in the Frequency-Domain TLM Method	1551
2:20 pm	J. Hesselbarth and R. Vahldieck	
TH3D-6	A Full-Wave Approach to the Modeling of Discontinuities of Real Conductors in Planar Lossy Lines for MMIC Applications	1555
2:30 pm	M. Farina and T. Rozzi	
TH3D-7	An Impedance Matrix Transformation for Planar Circuit Integral Equation Solvers	1559
2:40 pm	F. Cervelli, M. Mongiardo and L. Tarricone	
TH3D-8	A Simplified MPIE Analysis for Planar Circuits with N-Fold Rotational Symmetry and Lumped Elements	1563
2:50 pm	Y.-J. Chen, Y.-H. Pang and R.-B. Wu	

Session TH3E

Signal Generation and Control Devices

1:20 pm–3:00 pm

Room 327/329

Thursday, June 11, 1998

Chair: M. Odyniec, Hewlett Packard

TH3E-1	Micromechanical Electrostatic K-Band Switches	1569
1:20 pm	S. Pacheco, C.T. Nguyen and L.P.B. Katehi	
TH3E-2	An MMIC Active Phase Shifter Using a Variable Resonant Circuit	1573
1:40 pm	H. Hayashi and M. Muraguchi	
TH3E-3	Digital Vector Control Chip Set at Q Band for Communication Phased Array	1577
2:00 pm	M. Lajugie, H. Brouzes and F. Villain	
TH3E-4	An Analogue Frequency-Division Approach for Subharmonic Generation in Microwave VCOs	1581
2:20 pm	X. Zhang and I. Gresham	
TH3E-5	Subharmonically Injection Locked 94 GHz MMIC HEMT Oscillator Using Coplanar Technology	1585
2:40 pm	S. Kudszus, W.H. Haydl, M. Neumann, A. Bangert and A. Hülsmann	
TH3E-6	The Dielectric Resonator Power Combiner Oscillator: A New Design for Micro- or Millimeter-Wave Development	1589
2:50 pm	A.A. Sayyah and D.W. Griffin	

Session THIF

Interactive Forum II

2:30 pm–5:00 pm

Camden Lobby

Thursday, June 11, 1998

Chair: H. Newman, The Naval Research Laboratory

THIF-01	A Method for Computing Adjacent-Channel Spectral Energy in Cellular Power Amplifiers S. Pinsky	1595
THIF-02	Signal and Noise Analysis of Large Microwave Front-Ends by the Inexact-Newton Harmonic-Balance Technique V. Rizzoli, F. Mastri and C. Cecchetti	1599
THIF-03	A Nonlinear Model of the Power MESFET Including Temperature and Breakdown Effects V. Rizzoli, A. Costanzo, C. Cecchetti and A. Chiarini	1603
THIF-04	A Simplified Large-Signal HBT Model for RF Circuit Design K. Lu, X. Zhang and G.N. Henderson	1607
THIF-05	Effect of Input Harmonic Terminations on High Efficiency Class-B and Class-F Operation of PHEMT Devices. P.M. White	1611
THIF-06	Sample-Balance Analysis of Nonlinear Autonomous Circuits P.J.C. Rodrigues and D. Mendes Jr.	1615
THIF-07	A Novel Distortion Analysis Method for Amplifiers Considering Frequency Characteristics K. Horiguchi, K. Yamauchi, K. Mori, M. Nakayama and T. Takagi	1619
THIF-08	Improvements on a GaAs MESFET Model for Nonlinear RF Simulations F. Ellinger, J. Kucera and W. Baechtold	1623
THIF-09	A Simple and Systematic Method for the Design of Tapered Nonlinear Transmission Lines A. Jrad, P. Ferrari, C. Fuchs, A. Dominjon, J.W. Tao, B. Fléchet and G. Angénieux	1627
THIF-10	Improved Analytical Analysis of Noise Figures in HEMT Mixers W. Ko and Y. Kwon	1631
THIF-11	Characterizing the Gate to Source Nonlinear Capacitor Role on Fet Imd Performance J.A. García, A. Mediavilla, J. Carlos Pedro, N.B. Carvalho, A. Tazón and J.L. García	1635
THIF-12	A Fully-Distributed Heterostructure-Barrier-Varactor Nonlinear-Transmission-Line Tripler M. Li and R.G. Harrison	1639
THIF-13	Record Power Added Efficiency, Low Voltage GOI (GaAs On Insulator) MESFET Technology for Wireless Applications P. Parikh, J. Ibbetson, U. Mishra, D. Docter, M. Le, K. Kiziloglu, D. Grider, and J. Pusi	1643
THIF-14	Increased Efficiency in QAM Power Amplifiers D.R. Conn and R.H. Hemmers	1647
THIF-15	A 2.4V Single Supply Pseudomorphic Modfet MMIC Power Amplifier for Digital Cordless Phones T. Yokoyama, M. Nishijima, T. Kuniyama, S. Yamamoto and O. Ishikawa	1651
THIF-16	An Improvement of IM and Power of High Power Amplifiers Using RC-Paralleled Circuits with Frequency Selectivity Y. Tarui, S. Ogura, K. Seino and Y. Itoh	1655
THIF-17	1 Watt Compact Ka-Band MMIC Power Amplifiers Using Lumped Element Matching Circuits M. Komaru, H. Hoshi, H. Kurusu, Y. Notani, T. Katoh, T. Ishida, T. Oku, T. Ishikawa and Y. Mitsui	1659
THIF-18	Development of Cryogenic Load-Pull Analysis: Power Amplifier Technology Performance Trends E. Gebara, J. Laskar, M. Harris and T. Kikel	1663

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THIF-19	Improvement of Efficiency and Linearity of a Harmonic Control Amplifier by Envelope Controlled Bias Voltage D. Smely, B. Ingruber, M. Wachutka and G.Magerl	1667
THIF-20	X-Band InGaP PHEMTs with 70% Power-Added Efficiency M.-Y. Kao, E.A. Beam III, P. Saunier and W.R. Frensley	1671
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Session TH4A

Active Antennas and Arrays

3:30 pm–5:10 pm

Room 307/308

Thursday, June 11, 1998

Chair: J.F. Harvey, US Army Research Office

TH4A-1	Phase-Locking of Grid Oscillators	1879
3:30 pm	W. Wang and L.W. Pearson	
TH4A-2	Spatial Power Combining of Gunn Diodes Using an Overmoded Waveguide Resonator at Millimeter Wavelengths	1883
3: 50 pm	J. Bae, T. Uno, T. Fujii and K. Mizuno	
TH4A-3	Grid Oscillators with Photonic-Crystal Reflectors	1887
4:10 pm	Q. Sun, K.W. Miyashiro, J.B. Horiuchi and W.A. Shiroma	
TH4A-4	Surface-Wave Coupling of Active Antennas for Homodyne Sensor Systems	1891
4:20 pm	R.H. Rasshofer and E.M. Biebl	
TH4A-5	Broadband Power Amplifier Integrated with Slot Antenna and Novel Harmonic Tuning Structure	1895
4:30 pm	V. Radisic, Y. Qian and T. Itoh	
TH4A-6	Cavity Induced Polarisation Switching in a Slot-Loop Active Antenna	1899
4:40 pm	Q. Chen, M. Zheng, V.F. Fusco and P.S. Hall	
TH4A-7	Submillimeter-Wave Sideband Generation Using a Planar Diode Array	1903
4:50 pm	D.S. Kurtz, J.L. Hesler, J.B. Hacker, T.W. Crowe, D.B. Rutledge and R.M. Weikle, II	
TH4A-8	A Planer Active Lens Oscillator on a Dielectric Slab	1907
5:00 pm	A.R. Perkons and T. Itoh	

Session TH4B

(Joint ARFTG and IMS Session)

Digital Interconnection Techniques and Characterization at GHz Frequencies

3:30 pm–5:10 pm

Room 309/310

Thursday, June 11, 1998

Chair: D. Williams, National Institute of Standards and Technology, Colorado

Co-Chair: K. Wong, National Institute of Standards and Technology, Colorado

TH4B-1	50-GHz Interconnect Design in Standard Silicon Technology	1913
3:30 pm	B. Kleveland, T.H. Lee and S.S. Wong	
TH4B-2	Accurate Characteristic Impedance Measurement on Silicon	1917
3:50 pm	D.F. Williams, U. Arz and H. Grabinski	
TH4B-3	A Test Board for Multiport Immittance Measurement and Characterization of RF-IC Packages	1921
4:10 pm	A. Tripathi, R. Lutz, V.K. Tripathi, H.H. Wu, J.W. Meyer and B. Hutchison	
TH4B-4	Analysis of Microvia Interconnects	1925
4:30 pm	R. Abhari and T.E. van Deventer	
TH4B-5	Multi-wire Microstrip Interconnections: a Systematic Analysis for the Extraction of an Equivalent Circuit	1929
4:50 pm	F. Alimenti, P. Mezzanotte, L. Roselli and R. Sorrentino	

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Session TH4C

Microwave System and Applications

3:30 pm–5:10 pm

Room 314/317

Thursday, June 11, 1998

Chair: R. Dixit, TRW - Transportation Electronics

Co-Chair: B. Spielman, Washington University, St. Louis, Missouri

TH4C-1 Automotive Radar

3:30 pm M. Russell

(Paper not available at time of printing)

TH4C-2 Applications of Microwave Radar to Improving Aviation Safety and Efficiency

1935

3:50 pm J.E. Evans

TH4C-3 Remote Control Functions

4:10 pm E. Pacsai

(Paper not available at time of printing)

TH4C-4 Navigation Systems

4:30 pm E. Rodemsky

(Paper not available at time of printing)

TH4C-5 ITS Sensors

4:50 pm B. Hurley

(Paper not available at time of printing)