

2002 Microwave Symposium Technical Program Schedule

Session TH1A Flip-Chip Techniques and Novel Application of Organic Materials in Packaging

8:00–9:40 am

Room 608–609

Thursday, June 6, 2002

Chair: W. Heinrich, Ferdinand-Braun-Institut (FBH)

Co-Chair: R. Franklin-Drayton, University of Minnesota

TH1A-1 8:00 am	Suppression of Multi-Path Couplings in MCM with a Flip-Chipped SiGe-MMIC T. Nishino, K. Maeda, M. Shimosawa, T. Ikushima, K. Sadahiro, T. Katsura, N. Suematsu, K. Itoh, H. Oohashi, T. Takagi, and O. Ishida	1385
TH1A-2 8:20 am	Flip-Chip Mounted, Ku Band Power Amplifier Compliant with Space Applications O. Vendier, J.-P. Fraysse, C. Schaffauser, M. Paillard, C. Drevon, J-L. Cazaux, D. Floriot, N. Caillas-Devignes, H. Blanck, P. Auxemery, W. de Ceuninck, R. Petersen, N. Haese, and P-A. Rolland	1389
TH1A-3 8:40 am	W-Band Flip-Chip Interconnects on Thin-Film Substrate F.J. Schmückle, A. Jentzsch, H. Oppermann, K. Riepe, and W. Heinrich	1393
TH1A-4 8:50 am	A Locally Matching Technique for Broadband Flip-Chip Transition Design C.-L. Wang and R.-B. Wu	1397
TH1A-5 9:00 am	Development of an Organic Wafer-Level Packaging Platform for Highly Integrated RF Transceivers R. Ramachandran and A. Pham	1401
TH1A-6 9:20 am	Design of Inductors in Organic Substrates for 1–3 GHz Wireless Applications S. Dalmia, F. Ayazi, M. Swaminathan, S.H. Min, S.H. Lee, W. Kim, D. Kim, S. Bhattacharya, V. Sundaram, G. White, and R. Tummala	1405
TH1A-7 9:30 am	Integrated Inductors in the Chip-to-Board Interconnect Layer Fabricated Using Solderless Electroplating Bonding Y.-H. Joung, S. Nuttinck, S.-W. Yoon, M.G. Allen, and J. Laskar	1409

Session TH1B

Low Noise Devices and Applications

8:00–9:40 am

Room 606–607

Thursday, June 6, 2002

Chair: M.S. Gupta, San Diego State University
Co-Chair: T.C. Cisco, Raytheon

TH1B-1	Intrinsic Noise Characteristics of AlGaIn/GaN HEMTs	1415
8:00 am	S. Lee, V. Tilak, K.J. Webb, and L.F. Eastman	
TH1B-2	A 2.4-GHz/5-GHz CMOS Low Noise Amplifier with High-Resistivity ELTRAN[®] SOI-Epi[™] Wafers	1419
8:20 am	J. Kodate, M. Ugajin, T. Tsukahara, T. Douseki, N. Sato, T. Okabe, K. Ohmi, and T. Yonehara	
TH1B-3	A Modified Cascode Type Low Noise Amplifier Using Dual Common Source Transistors	1423
8:40 am	S. Ock, K. Han, J.-R. Lee, and B. Kim	
TH1B-4	Ku-Band Low Noise MMIC Amplifier with Bias Circuit for Compensation of Temperature Dependence and Process Variation	1427
9:00 am	K. Yamanaka, K. Yamauchi, K. Mori, Y. Ikeda, H. Ikematsu, N. Tanahashi, and T. Takagi	
TH1B-5	A 7.9–9.7GHz On-Chip Radar Receiver Front-End for Future Adaptive X-Band Smart Skin Array Antennas	1431
9:20 am	R. Malmqvist, M. Alfredsson, A. Gustafsson, and A. Ouacha	

TH1C

Synthesis and Multi-Mode Techniques

8:00–9:40 am

Room 611–612

Thursday, June 6, 2002

Chair: W.C. Tang, Com Dev International
Co-Chair: J.W. Modelski, Warsaw University of Technology

TH1C-1	Synthesis of Advanced Microwave Filters without Diagonal Cross-Couplings	1437
8:00 am	R.J. Cameron, A.R. Harish, and C.J. Radcliffe	
TH1C-2	A Method for the Direct Synthesis of Cascaded Quintuplets	1441
8:20 am	T. Reeves and N. van Stigt	
TH1C-3	Parameter Extraction for Symmetric Coupled-Resonator Filters	1445
8:40 am	H.-T. Hsu, Z. Zhang, K.A. Zaki, and A.E. Atia	
TH1C-4	Design Procedure for Waveguide Filters with Cross-Couplings	1449
9:00 am	J. Kocbach and K. Folgerø	
TH1C-5	Dual-Mode Filters with Grooved Dielectric Resonators for Cellular-Radio Base Stations	1453
9:10 am	L. Accatino, G. Bertin, M. Mongiardo, and G. Resnati	
TH1C-6	A Dual Mode Filter with Trifurcated Iris and Reduced Footprint	1457
9:20 am	M. Yu, D.J. Smith, A. Sivadas, and W. Fitzpatrick	
TH1C-7	Method of Spurious Mode Compensation Applied to Manifold Multiplexer Design	1461
9:30 am	D. Bariant, S. Bila, D. Baillargeat, S. Verdeyme, P. Guillon, D. Pacaud, and J.-J. Herren	

Session TH1D

Ferroelectric, Ferrite, and Acoustic Components

8:00–9:40 am

Room 615–6–7

Thursday, June 6, 2002

Chair: C.C.W. Ruppel, EPCOS AG

Co-Chair: J. Owens, Boise State University

TH1D-1 8:00 am	A New X Band 180° High Performance Phase Shifter Using (Ba,Sr)TiO₃ Thin Films B. Acikel, T.R. Taylor, P.J. Hansen, J.S. Speck, and R.A. York	1467
TH1D-2 8:20 am	A Wide Bandwidth Monolithic BST Reflection-Type Phase Shifter Using a Coplanar Waveguide Lange Coupler D. Kim, Y. Choi, M.G. Allen, J.S. Kenney, and D. Kiesling	1471
TH1D-3 8:30 am	Bandwidth and Losses of 4-Port Ferrite Coupled Line Circulators C.K. Queck and L.E. Davis	1475
TH1D-4 8:50 am	Modeling and Optimization of Parallel Line Edge Mode Microstrip Isolators A.H. Aly and E.-B. El-Sharawy	1479
TH1D-5 9:10 am	SAW FEMs for GSM-Based Multi-Band Cellular Phones with Direct-Conversion Demodulation M. Hikita, N. Matsuura, K. Yokoyama, N. Shibagaki, and K. Sakiyama	1483
TH1D-6 9:30 am	Bulk Acoustic Wave Resonators and Filters for Applications Above 2 GHz K.M. Lakin, J.R. Belsick, J.P. McDonald, K.T. McCarron, and C.W. Andrus	1487

Session TH1E

(Joint ARFTG/IMS2002 Special Session)

High-Speed/Non-Contacting Electrical Probing

8:00–9:40 am

Room 602–3–4

Thursday, June 6, 2002

Chair: D. Williams, NIST

Co-Chair: P. Hale, NIST

TH1E-1 8:00 am	Contactless Probing of High-Frequency Electrical Signals with Scanning Probe Microscopy (Invited) W. Mertin	1493
TH1E-2 8:20 am	Millimeter-Wave Network Analyzers Based on Photonic Techniques (Invited) T. Nagatsuma, N. Sahri, A. Hirata, Y. Royter, and A. Sasaki	1497
TH1E-3 8:40 am	Optoelectronic Techniques for Improved High Speed Electrical Risetime (Invited) A.J.A. Smith, A.G. Roddie, and P.D. Woolliams	1501
TH1E-4 9:00 am	Picosecond Imaging Circuit Analysis of ULSI Microprocessors (Invited) M.K. Mc Manus and P. Song	1505
TH1E-5 9:20 am	Electric-Field Observation of Pico-Pulse Propagation on Right-Angle Bends by Miniature Photoconductive Near-Field Probe J. Lee and J. Kim	1509
TH1E-6 9:30 am	Field-Tunable Probe for Combined Electric and Magnetic Field Measurements R.M. Reano, J.F. Whitaker, and L.P.B. Katehi	1513

Session TH1F

Spatial Power Combining and Quasi-Optical Techniques

8:00–9:40 am

Room 613–614

Thursday, June 6, 2002

Chair: D. Palmer, U.S. Army Research Office
Co-Chair: A. Mortazawi, University of Michigan

TH1F-1	A Ka-Band Perpendicular-Fed Patch Array for Spatial Power Combining	1519
8:00 am	S. Ortiz, A. Al-Zayed, and A. Mortazawi	
TH1F-2	A Waveguide Mode-Converter Feed for a 5-W, 34-GHz Grid Amplifier	1523
8:20 am	C.-T. Cheung, J.B. Hacker, G. Nagy, and D.B. Rutledge	
TH1F-3	A 10-GHz High-Efficiency Active Antenna Sub-Array	1527
8:40 am	S. Paji and Z. Popovi	
TH1F-4	Quasi-Optical E-Band MEMS Switching Arrays	1531
9:00 am	W-K. Zhang, F. Jiang, C.W. Domier, and N.C. Luhmann, Jr.	
TH1F-5	A Circularly Polarized Rectifying Antenna Array for Wireless Microwave Power Transmission with Over 78% Efficiency	1535
9:20 am	B. Strassner and K. Chang	
TH1F-6	A Multi-Element 150/300 GHz Spatial Power Dividing/Combining Frequency Doubler	1539
9:30 am	B. Schumann, M. Höft, and R. Judaschke	

Session TH2A

Packaging

10:10–11:50 am

Room 608–609

Thursday, June 6, 2002

Chair: B.R. Allen, TRW
Co-Chair: M.A. Gouker, MIT Lincoln Lab

TH2A-1	Design of an LTCC Integrated Tri-Band Direct Conversion Receiver Front-End Module	1545
10:10 am	R. Lucero, A. Pavio, D. Penunuri, and J. Bost	
TH2A-2	An L-Band, LTCC Frequency Doubler Using Embedded Lumped Element Filters	1549
10:30 am	R. Hurley and G. Sloan	
TH2A-3	3D Integrated LTCC Module Using μBGA Technology for Compact C-Band RF Front-End Module	1553
10:40 am	S. Pinel, S. Chakraborty, M. Roellig, R. Kunze, S. Mandal, H. Liang, C-H. Lee, R. Li, K. Lim, G. White, M. Tentzeris, and J. Laskar	
TH2A-4	Low Temperature Cofired Ceramic: An Enabler of High Power RF Integrated Amplifiers	1557
11:00 am	P.-M. Piel, J. Estes, S. Marshall, G. Funk, and A. Pavio	
TH2A-5	High Performance RF Passive Integration on Si Smart Substrate	1561
11:10 am	D.-W. Kim, I.-H. Jeong, H.-S. Sung, T.-O. Kong, J.-S. Lee, C.-M. Nam, and Y.-S. Kwon	
TH2A-6	Micromachined Low Dispersion Interconnects for Optoelectronic Array Packaging	1565
11:30 am	S.R. Banerjee and R.F. Drayton	
TH2A-7	Use of a Transparent Conductive Thin-Film on a Glass Substrate in Active Integrated Antenna Arrays with Double Strong Coupling	1569
11:40 am	K. Oshima, N. Kidera, K. Niwano, K. Ikawa, R. Sonoda, and S. Kawasaki	

Session TH2B

Special Session on THz Technology and Applications

10:10–11:50 am

Room 606–607

Thursday, June 6, 2002

Chair: P.H. Siegel, Caltech JPL
Co-Chair: M. Afsar, Tufts University

TH2B-1	T-Ray Imaging: New Possibilities in the Far Infrared (Invited)	1575
10:10 am	D.M. Mittleman	
TH2B-2	THz Spectroscopy—Techniques and Applications (Invited)	1579
10:30 am	F.C. De Lucia	
TH2B-3	Submillimeter-Wave Polarimetric Compact Ranges for Scale-Model Radar Measurements (Invited)	1583
10:50 am	M. Coulombe, J. Waldman, R. Giles, A. Gatesman, T. Goyette, and W. Nixon	
TH2B-4	THz Techniques in Plasma Diagnostics (Invited)	1587
11:10 am	B.H. Deng, C.W. Domier, A.J.H. Donné, K.C. Lee, N.C. Luhmann, Jr., E. Mazzucato, T. Munsat, H. Park, and M. van de Pol	
TH2B-5	Remote Detection of Bioparticles in the THz Region (Invited)	1591
11:30 am	E.R. Brown, D.L. Woolard, A.C. Samuels, T. Globus, and B. Gelmont	

Session TH2C

Novel Filter Structures

10:10–11:50 am

Room 611–612

Thursday, June 6, 2002

Chair: S. Kanamaluru, Sarnoff Corporation
Co-Chair: A.E. Atia, Orbital Sciences Corporation

TH2C-1	Suspended Resonators for Filters—Reduced λ_g Excitation of Evanescent Cavities Using High Dielectric Constant Feedlines	1597
10:10 am	R.V. Snyder, E. Niver, K. Um, and S. Shin	
TH2C-2	Lumped-Element Conductor-Loaded Cavity Resonators	1601
10:30 am	H. Salehi, R.R. Mansour, and V. Dokas	
TH2C-3	Novel Coupling Schemes for Microwave Resonator Filters	1605
10:50 am	U. Rosenberg and S. Amari	
TH2C-4	Folded Quarter-Wave Resonator Filters with Chebyshev, Flat Group Delay, or Quasi-Elliptical Function Response	1609
11:10 am	C.-Y. Chang, C.-C. Chen, and H.-J. Huang	
TH2C-5	Stepped Impedance Resonator Bandpass Filters with Tunable Transmission Zeros and Its Application to Wide Stopband Design	1613
11:20 am	J.-T. Kuo and E. Shih	
TH2C-6	A Ku-Band Low-Loss Stripline Low-Pass Filter for LTCC Modules with Low-Impedance Lines to Obtain Plural Transmission Zeros	1617
11:30 am	T. Ohwada, H. Ikematsu, H. Oh-hashii, T. Takagi, and O. Ishida	
TH2C-7	Design and Analysis of Novel Compact Inductor Resonator Filter	1621
11:40 am	G.-A. Lee, M. Megahed, and F. De Flaviis	

Session TH2D

High Efficiency Amplifier Techniques

10:10–11:50 am

Room 615–6–7

Thursday, June 6, 2002

Chair: F. Raab, Green Mountain Radio Research

Co-Chair: J. Sevic, Tropian, Inc.

TH2D-1	Class E with Parallel Circuit—A New Challenge for High-Efficiency RF and Microwave Power Amplifiers	1627
10:10 am	A.V. Grebennikov and H. Jaeger	
TH2D-2	Demonstration of a Switchless Class E/F_{odd} Dual-Band Power Amplifier	1631
10:30 am	F. Bohn, S. Kee, and A. Hajimiri	
TH2D-3	Push/Pull Class-DE Switching Power Amplifier	1635
10:40 am	A. Alipov and V. Kozyrev	
TH2D-4	Harmonic Tuned PAs Design Criteria	1639
10:50 am	P. Colantonio, F. Giannini, G. Leuzzi, and E. Limiti	
TH2D-5	Finite DC Feed Inductor in Class E Power Amplifiers—A Simplified Approach	1643
11:10 am	D.K. Choi and S.I. Long	
TH2D-6	Active Cancellation of Switching Noise for DC-DC Converter-Driven RF Power Amplifiers	1647
11:20 am	H. Kobayashi and P.M. Asbeck	
TH2D-7	A Novel EER Transmitter Using Two-Point Delta-Sigma Modulation Scheme for WLAN and 3G Applications	1651
11:30 am	K.-C. Peng, J.-K. Jau, and T.-S. Horng	

Session TH2E

Microwave Measurements I

10:10–11:50 am

Room 602–3–4

Thursday, June 6, 2002

Chair: R. Henderson, Motorola Inc.

Co-Chair: R.D. Pollard, The University of Leeds

TH2E-1	Dielectric Sleeve Resonator Techniques for Variable-Temperature Microwave Characterization of Ferroelectric Materials	1657
10:10 am	R.G. Geyer, P. Kabos, and J. Baker-Jarvis	
TH2E-2	Error Analysis of the Unloaded Q-Factors of a Transmission-Type Resonator Measured by the Insertion Loss Method and the Return Loss Method	1661
10:20 am	Z. Ma and Y. Kobayashi	
TH2E-3	Comparing Unloaded Q-Factor of a High-Q Dielectric Resonator Measured Using the Transmission Mode and Reflection Mode Methods Involving S-Parameter Circle Fitting	1665
10:30 am	K. Leong, J. Mazierska, M.V. Jacob, and D. Ledenyov	
TH2E-4	Removal of Cable and Connector Dispersion in Time-Domain Waveform Measurements on 40Gb Integrated Circuits	1669
10:40 am	J. Scott, B. Behnia, M. Vanden Bossche, A. Cognata, J. Verspecht, F. Verbeyst, M. Thorn, and D.R. Scherrer	
TH2E-5	Solid-State 8GHz Transient Signal Digitizer Characterization	1673
11:00 am	A. Ghis, P. Ouvrier-Buffet, N. Rolland, A. Benlarbi-Delai, P.A. Rolland, D. Glay, and D. Jaeger	
TH2E-6	A Sampled-Line Reflectometer for Submillimeter-Wave Measurements	1677
11:20 am	S. Ülker and R.M. Weikle, II	
TH2E-7	Sampling Circuit on Silicon Substrate for Frequencies Beyond 50 GHz	1681
11:30 am	P. Abele, M. Birk, D. Behammer, H. Kibbel, A. Trasser, P. Maier, K.-B. Schad, E. Sönmez, and H. Schumacher	

Session TH2F

Microwave Photonics

10:10–11:50 am

Room 613–614

Thursday, June 6, 2002

Chair: D. Jaeger, Gerhard-Mercator-Universitaet Duisburg

Co-Chair: C. Cox, Photonic Systems Inc.

TH2F-1	Implementing Subcarrier-Based Control in Optical Networking	1687
10:10 am	A.E. Willner	
TH2F-2	Nonlinear Distortion and Crosstalk in Microwave Fiber-Radio Links	1691
10:30 am	E.E. Funk, A.L. Campillo, and D.A. Tulchinsky	
TH2F-3	Optical Delivery of Modulated Millimetre-Wave Signals Using Free-Running Laser Heterodyne with Frequency Drift Cancellation	1695
10:40 am	L.A. Johansson and A.J. Seeds	
TH2F-4	10- and 39-GHz-Band InP/InGaAs HPT Direct Optical Injection-Locked Oscillator ICs for Optoelectronic Clock Recovery Circuits	1699
11:00 am	H. Kamitsuna, T. Shibata, K. Kurishima, and M. Ida	
TH2F-5	A WDM Fiber-Radio Experiment Incorporating a Wavelength-Self-Tunable Single-Side-Band Filter	1703
11:20 am	E. Vourch, D. Le Berre, and D. Hervé	
TH2F-6	A Circuit Model of Traveling Wave Electroabsorption Modulator	1707
11:30 am	J. Lim, S. Jeon, J. Kim, and S. Hong	
TH2F-7	Predistortion Circuit Design for II and III Order Simultaneous Linearization in Multiservice Telecommunications Apparatuses	1711
11:40 am	L. Roselli, V. Borgioni, F. Zepparelli, M. Comez, P. Faccin, and A. Casini	

Session TH3A

Advanced V-Band Transceiver Technology

1:20–3:00 pm

Room 608–609

Thursday, June 6, 2002

Chair: E.C. Niehenke, Niehenke Consulting

Co-Chair: P. Saunier, TriQuint Semiconductor

TH3A-1	Compact LNA and VCO 3-D MMICs Using Commercial GaAs PHEMT Technology for V-Band Single-Chip TRX MMIC	1717
1:20 pm	K. Nishikawa, B. Piernas, K. Kamogawa, T. Nakagawa, and K. Araki	
TH3A-2	A 60 GHz Millimeter-Wave MMIC Chipset for Broadband Wireless Access System Front-End	1721
1:40 pm	Y. Mimino, K. Nakamura, Y. Hasegawa, Y. Aoki, S. Kuroda, and T. Tokumitsu	
TH3A-3	A 60GHz MMIC Chipset for 1-Gbit/s Wireless Links	1725
1:50 pm	K. Fujii, M. Adamski, P. Bianco, D. Gunyan, J. Hall, R. Kishimura, C. Lesko, M. Schefer, S. Hessel, H. Morkner, and A. Niedzwiecki	
TH3A-4	A Highly Integrated MMIC Chipset for 60 GHz Broadband Wireless Applications	1729
2:10 pm	O. Vaudescal, B. Lefebvre, V. Lehoué, and P. Quentin	
TH3A-5	A Compact 60GHz Sub-Harmonically Pumped Mixer MMIC Integrated with an Image Rejection Filter	1733
2:20 pm	A. Yamada, Y. Amano, Y. Motouchi, N. Takahashi, E. Suematsu, and H. Sato	
TH3A-6	GaAs HBT Operating as Integrated V- to W-Band Gunn Oscillator	1737
2:40 pm	M. Rudolph, R. Doerner, and P. Heymann	

Session TH3B

Biological Effects and Medical Applications

1:20–3:00 pm

Room 606–607

Thursday, June 6, 2002

Chair: A. Vander Vorst, Microwaves UCL

Co-Chair: R. Bansal, University of Connecticut

TH3B-1 1:20 pm	A Rugged Microstrip Tapered Balun Printed Dipole Reference for SAR System Verification M. Richard, M. Kanda, C. DiNallo, and C.K. Chou	1743
TH3B-2 1:40 pm	Evaluation of Human Exposure in the Vicinity of a Base-Station Antenna Using the Multiple-Region/FDTD Hybrid Method P. Bernardi, M. Cavagnaro, S. Pisa, and E. Piuze	1747
TH3B-3 1:50 pm	Theoretical Evaluation of UMTS/GSM Electromagnetic Fields on Neuronal Network Response F. Apollonio, M. Liberti, and G. D'Inzeo	1751
TH3B-4 2:00 pm	A Parallel FDTD Tool for the Solution of Large Dosimetric Problems: An Application to the Interaction Between Humans and Radiobase Antennas L. Catarinucci, P. Palazzari, and L. Tarricone	1755
TH3B-5 2:10 pm	Confocal Microwave Imaging for Breast Tumor Detection: Application to a Hemispherical Breast Model E.C. Fear and M. Okoniewski	1759
TH3B-6 2:30 pm	Study of the Activity of Neurological Cell Solutions Using Complex Permittivity Measurement M.R. Tofighi and A.S. Daryoush	1763
TH3B-7 2:40 pm	A Compact Low-Cost Add-On Module for Doppler Radar Sensing of Vital Signs Using a Wireless Communications Terminal V. Lubecke, O. Boric-Lubecke, and E. Beck	1767
TH3B-8 2:50 pm	Modeling of Planar Annular Applicators for Microwave Thermotherapy J. Carlier, V. Thomy, J.-C. Camart, L. Dubois, and J. Pribetich	1771

Session TH3C

Waveguide and Planar Filter Structures

1:20–3:00 pm

Room 611–612

Thursday, June 6, 2002

Chair: C. Wang, Radio Frequency Systems
Co-Chair: R.V. Snyder, RS Microwave Inc.

TH3C-1 1:20 pm	A Two Zero Fourth Order Microwave Waveguide Filter Using a Simple Rectangular Quadruple-Mode Cavity N. Boutheiller, P. Jarry, E. Kerhervé, J.-M. Pham, and S. Vigneron	1777
TH3C-2 1:40 pm	26 GHz TM_{118} Mode Dielectric Resonator Filter and Duplexer with High-Q Performance and Compact Configuration A. Enokihara, H. Nanba, T. Nakamura, T. Ishizaki, and T. Uwano	1781
TH3C-3 2:00 pm	Low-Spurious Coaxial-Line Bandpass Filter with Saucer-Loaded Stepped-Impedance Resonators H. Uchida, Y. Furukawa, T. Ohwada, N. Yoneda, and M. Miyazaki	1785
TH3C-4 2:20 pm	60-GHz-Band Dielectric Waveguide Filters with Cross-Coupling for Flip-Chip Modules M. Ito, K. Maruhashi, K. Ikuina, T. Hashiguchi, S. Iwanaga, and K. Ohata	1789
TH3C-5 2:20 pm	A Novel Compact Coplanar Filter T. Paillot, P. Blondy, D. Cros, and P.-Y. Guillon	1793
TH3C-6 2:30 pm	Novel Low-Pass Filter for Broad-Band Spurious Suppression M.-Q. Lee, K.-K. Ryu, I.-B. Yom, and S.-P. Lee	1797
TH3C-7 2:40 pm	Improvement of Microstrip Open Loop Resonator Filter Using Aperture S. Im, C. Seo, J. Kim, Y. Kim, and N. Kim	1801
TH3C-8 2:50 pm	Full Wave Optimization of Stripline Tapped-In Ridge Waveguide Bandpass Filters M.A. El Sabbagh, H.-T. Hsu, K.A. Zaki, P. Pramanick, and T. Dolan	1805

Session TH3D

Special Session on Wide Bandgap Devices and Their Application in High Power Circuits

3:30–5:10 pm

Room 615–6–7

Thursday, June 6, 2002

Chair: K. Webb, Purdue University
Co-Chair: S. Sheppard, Cree Inc.

TH3D-1	Experimental Power-Frequency Limits of AlGaIn/GaN HEMTs (Invited)	Paper not available at time of printing
TH3D-2 3:50 pm	AlGaIn/GaN HFET Amplifier Performance and Limitations (Invited) R.J. Trew	1811
TH3D-3 4:10 pm	A 36 W CW AlGaIn/GaN-Power HEMT Using Surface-Charge-Controlled Structure T. Kikkawa, M. Nagahara, T. Kimura, S. Yokokawa, S. Kato, M. Yokoyama, Y. Tateno, K. Horino, K. Domen, Y. Yamaguchi, N. Hara, and K. Joshin	1815
TH3D-4 4:30 pm	Applications of SiC MESFETs and GaN HEMTs in Power Amplifier Design (Invited) W.L. Pribble, J.W. Palmour, S.T. Sheppard, R.P. Smith, S.T. Allen, T.J. Smith, Z. Ring, J.J. Sumakeris, A.W. Saxler, and J.W. Milligan	1819
TH3D-5 4:50 pm	Trapping Effects in Wide-Bandgap Microwave FETs (Invited) S.C. Binari, P.B. Klein, and T.E. Kazior	1823

Session TH3E

Microwave Measurements II

1:20–3:00 pm

Room 602–3–4

Thursday, June 6, 2002

Chair: A. Ferrero, Politecnico di Torino

Co-Chair: L. Dunleavy, University of South Florida

TH3E-1 1:20 pm	Broadband Thermoelectric Microwave Power Sensors Using GaAs Foundry Process A. Dehé, K. Fricke-Neuderth, and V. Krozer	1829
TH3E-2 1:40 pm	Novel Method for Vector Mixer Characterization and Mixer Test System Vector Error Correction J. Dunsmore	1833
TH3E-3 2:00 pm	Compensating Differences Between Measurement and Calibration Wafer in Probe-Tip Calibrations G. Carchon, W. De Raedt, and E. Beyne	1837
TH3E-4 2:20 pm	A Study of the Effect of Envelope Impedance on Intermodulation Asymmetry Using a Two-Tone Time Domain Measurement System D.J. Williams, J. Leckey, and P.J. Tasker	1841
TH3E-5 2:40 pm	Simulations of Noise-Parameter Uncertainties J. Randa	1845

Session TH4A

W-Band Transceiver Components and Applications

3:30–5:10 pm

Room 608–609

Thursday, June 6, 2002

Chair: D. Choudhury, HRL Laboratories

Co-Chair: J.C. Wiltse, Georgia Tech

TH4A-1 3:30 pm	A 94 GHz Single-Chip FMCW Radar Module for Commercial Sensor Applications A. Tessmann, S. Kudzus, T. Feltgen, M. Riessle, C. Sklarczyk, and W.H. Haydl	1851
TH4A-2 3:50 pm	A 38/76 GHz Automotive Radar Chip Set Fabricated by a Low Cost pHEMT Technology A. Werthof, H.J. Siweris, H. Tischer, W. Liebl, G. Jaeger, and T. Grave	1855
TH4A-3 4:10 pm	A MMIC-Based 75–110 GHz Signal Source M. Morgan, S. Weinreb, N. Wadefalk, and L. Samoska	1859
TH4A-4 4:30 pm	A Gunn Diode Based Surface Mount 77GHz Oscillator for Automotive Applications N. Priestley, K. Newsome, I. Dale, and P. Norton	1863
TH4A-5 4:40 pm	A Comparison of W-Band Monolithic Resistive Mixer Architectures A.R. Barnes, P. Munday, R. Jennings, and M.T. Moore	1867
TH4A-6 4:50 pm	A Micromachined Finite Coplanar Line-to-Silicon Micromachined Waveguide Transition for Millimeter and Submillimeter Wave Applications Y. Lee, J.P. Becker, J.R. East, and L.P.B. Katehi	1871

Session TH4B

Frequency-Domain Techniques

3:30–5:10 pm

Room 606–607

Thursday, June 6, 2002

Chair: R. Sorrentino, University of Perugia
Co-Chair: A. Gopinath, University of Minnesota

TH4B-1 3:30 pm	Hybrid Analysis of Three-Dimensional Structures by the Method of Lines Using Novel Nonequidistant Discretization Ł.A. Gręda and R. Pregla	1877
TH4B-2 3:40 pm	3D Hybrid Finite-Difference Method for Lossy Structures Based on Quasi-Static Field Solutions M. Kunze and W. Heinrich	1881
TH4B-3 4:00 pm	Accuracy Limitations of Perfectly Matched Layers in 3D Finite-Difference Frequency-Domain Method T. Tischler and W. Heinrich	1885
TH4B-4 4:20 pm	Coupled Padé Approximation-Finite Element Method Applied to Microwave Device Design B. Thon, D. Bariant, S. Bila, D. Baillargeat, M. Aubourg, S. Verdeyme, P. Guillon, F. Thevenon, M. Rochette, J. Puech, L. Lapiere, and J. Sombrin	1889
TH4B-5 4:30 pm	Electromagnetic Modeling of Interconnects for Mixed-Signal Integrated Circuits from DC to Multi-GHz Frequencies A. Rong and A.C. Cangellaris	1893
TH4B-6 4:50 pm	An Efficient Integral Equation Solver for the Electromagnetic Modeling of Highly-Integrated Planar RF/Microwave Circuits V.I. Okhmatovski, J. Morsey, and A.C. Cangellaris	1897
TH4B-7 5:00 pm	Simulation of Resonant Modes of Rectangular DR in MIC Environment Using MPIE-MoM with Combined Entire-Domain and Sub-Domain Basis Functions Y. Liu, S. Safavi-Naeini, S.K. Chaudhuri, and R. Sabry	1901

Session TH4C

Active, Periodic and Planar Filters

1:20–3:00 pm

Room 611–612

Thursday, June 6, 2002

Chair: D. Swanson, Forem USA

Co-Chair: S. Ye, Conductus, Inc.

TH4C-1 3:30 pm	A Tunable Active MMIC Filter for On-Chip X-Band Radar Receiver Front-Ends R. Malmqvist, A. Gustafsson, M. Alfredsson, and A. Ouacha	1907
TH4C-2 3:50 pm	Active Impedance Inverter: Analysis and its Application to the Bandpass Filter Design Y.-H. Chun, S.-W. Yun, and J.-K. Rhee	1911
TH4C-3 4:10 pm	A Filter Synthesis Technique Applied to the Design of Multistage Broadband Microwave Amplifiers J.-P. Rooney, R. Parry, I. Hunter, and R.D. Pollard	1915
TH4C-4 4:20 pm	A Super-Compact Super-Broadband Tapered Uniplanar PBG Structure for Microwave and Millimeter-Wave Applications C. Caloz and T. Itoh	1919
TH4C-5 4:30 pm	A Novel Planar Silicon Waveguide Filter at 45 GHz Based on a Periodic Structure B. Lenoir, P. Blondy, D. Baillargeat, S. Verdeyme, P. Guillon, E. Zheng, C. Tavernier, and J. Papapolymerou	1923
TH4C-6 4:40 pm	A Folded Coupled-Line Structure and its Application to Filter and Diplexer Design C.-M. Tsai, S.-Y. Lee, C.-C. Chuang, and C.-C. Tsai	1927
TH4C-7 4:50 pm	Narrow-Band, Band-Pass Filters with Zig-Zag, Hairpin-Comb Resonators G.L. Matthaei	1931

Session TH4D

Special Session on Optical Processing of Antenna Signals

3:30–5:10 pm

Room 615–6–7

Thursday, June 6, 2002

Chair: R. Minasian, University of Sydney

Co-Chair: E. Rezek, TRW Velocium

TH4D-1 3:30 pm	Multiple Output Photonic RF Phase Shifters for Optically Controlled Radar Systems (Invited) H. Fetterman, J. Han, H. Zhang, H. Erilig, D. Chang, M.-C. Oh, and W. Steier	1937
TH4D-2 3:50 pm	Flexible Beamformer and Remoting Head for Optically Controlled Phased Array Antennas N.A. Riza, S.A. Khan, and M.A. Arain	1941
TH4D-3 4:10 pm	A Novel 2N Beams Heterodyne Optical Beamforming Architecture Based on $N \times N$ Optical Butler Matrices D. Madrid, B. Vidal, A. Martínez, V. Polo, J.L. Corral, and J. Martí	1945
TH4D-4 4:30 pm	Photonic True-Time Delay Beamformer for Broadband Wireless Access Networks at 40 GHz Band B. Vidal, D. Madrid, J.L. Corral, V. Polo, A. Martínez, J.H. den Besten, F. Soares, J. Martí, and M.K. Smit	1949
TH4D-5 4:50 pm	Optical Mixing of Antenna Signals in WDM Systems B. Cabon, V. Girod, and G. Maury	1953
TH4D-6 5:00 pm	Optimization of an Optical System Based on a Chirped Fibre Bragg Grating for Driving Phased Array Antennas	Paper not available at time of printing

Session TH4E

Superconducting Components and Technology

3:30–5:10 pm

Room 602–3–4

Thursday, June 6, 2002

Chair: C. Jackson, Ditrans

Co-Chair: J.F. Davis, Jet Propulsion Lab

TH4E-1 3:30 pm	Folded Dual-Mode HTS Microstrip Band Pass Filter K.F. Raihn and G.L. Hey-Shipton	1959
TH4E-2 3:50 pm	Ultra Selective 22-Pole, 10-Transmission Zero Superconducting Bandpass Filter Surpasses 50-Pole Chebyshev Rejection G. Tsuzuki, S. Ye, and S. Berkowitz	1963
TH4E-3 4:00 pm	A Low-Loss 5GHz Bandpass Filter Using HTS Coplanar Waveguide Quarter-Wavelength Resonators Z. Ma, H. Suzuki, Y. Kobayashi, K. Satoh, S. Narahashi, and T. Nojima	1967
TH4E-4 4:10 pm	Tuning Superconducting Microwave Filters by Laser Trimming N.J. Parker, S.W. Goodyear, D.J.P. Ellis, and R.G. Humphreys	1971
TH4E-6 4:40 pm	Design of Sapphire Rod Resonators to Measure the Surface Resistance of High Temperature Superconductor Films T. Hashimoto and Y. Kobayashi	1975
TH4E-7 5:00 pm	Shunt Capacitor Approximation for HTS Microstrip Circuit Design S. Ye	1979

Session IF-TH

Thursday Interactive Forum

1:30–4:30 pm

Room 6E

Thursday, June 6, 2002

Chair: K. Mays, TriQuint Semiconductor

IF-TH-01 1:30 pm	TE-Mode Propagation Properties of the Coupled Planar Kerr-Like Nonlinear Waveguides J.-G. Ma	1985
IF-TH-02 1:30 pm	Generation of Wideband Electromagnetic Response Through a Laguerre Expansion Using Early Time and Low Frequency Data T.K. Sarkar, J. Koh, and M. Salazar-Palma	1989
IF-TH-03 1:30 pm	New Design of High-Q Sapphire Resonator with Distributed Bragg Reflector O. Piquet, D. Cros, S. Verdeyme, P. Guillon, and M.E. Tobar	1993
IF-TH-04 1:30 pm	Ferrite Filled Reflector Mode Converter for Axially Corrugated Waveguides A.J. Viitanen and T.M. Uusitupa	1997
IF-TH-05 1:30 pm	New Transmission Line Structure with Suppressed Eddy Current Effects M. Peter, H. Hein, F. Oehler, and P. Baureis	2001
IF-TH-06 1:30 pm	An Analytical Method for the Microwave Imaging of Cylindrically Stratified Media M.J. Akhtar and A.S. Omar	2005
IF-TH-07 1:30 pm	Resonant Tunneling of Microwave Energy in Thin Film Multilayer Metal/Dielectric Structures A. Eriksson, A. Deleniv, and S. Gevorgian	2009
IF-TH-08 1:30 pm	High Functionality Mode Transformers with Bandwidth Control and Mode Selectivity M.-C. Yang and K.J. Webb	2013
IF-TH-09 1:30 pm	Frequency Parameterization of Open Structures by Modal Decomposition Using Finite Elements and Spherical Modes Y. Adane, A. Gati, M.F. Wong, and V.F. Hanna	2017
IF-TH-10 1:30 pm	Novel Wave Effects on Anisotropic and Ferrite Planar Slab Waveguides in Connection with Singularity Theory A.B. Yakovlev and G.W. Hanson	2021
IF-TH-11 1:30 pm	FEM-Based Reduced-Order Model for Steady-State Skin-Effect Analysis in Lossy Lines F. Bertazzi, F. Carbonera, M. Goano, and G. Ghione	2025
IF-TH-12 1:30 pm	Modified RWG Basis Functions for Analysis of Periodic Structures P.S. Simon	2029
IF-TH-13 1:30 pm	Line-Integral Formulation of the Hybrid MM/FEM Technique V. Crinò, C. Tomassoni, and M. Mongiardo	2033
IF-TH-14 1:30 pm	Efficient Calculation of Effective Material Parameters in Metamaterials Using FDTD and a Modal Approach R. Schuhmann and T. Weiland	2037
IF-TH-15 1:30 pm	An Efficient Technique for the Iterative Solution of Large Dense Matrices Arising in Method of Moments Simulation of MMIC Problems V.V.S. Prakash and R. Mittra	2041
IF-TH-16 1:30 pm	Multiple Scattering Among Vias in Planar Waveguides Using SMCG Method C.-C. Huang, L. Tsang, and C.H. Chan	2045
IF-TH-17 1:30 pm	Development of an Unconditionally Stable Full-Wave 2D ADI-FDTD Method for Analysis of Arbitrary Wave Guiding Structures C. Ma, Z. Chen, and A. Zhao	2049
IF-TH-18 1:30 pm	Direct EM Based Optimization of Advanced Waffle-Iron and Rectangular Compline Filters F. Arndt and J. Brandt	2053

IF-TH-19 1:30 pm	A New Time Domain Near Field to Far Field Transformation for FDTD in Two Dimensions F. Xu, W. Hong, and X. Zhu	2057
IF-TH-20 1:30 pm	2-D Envelope Finite Element (EVFE) Technique—Implementation of PML and Dispersive Medium W. Yao, Y. Wang, and T. Itoh	2061
IF-TH-21 1:30 pm	Efficient Transient Simulation of Transmission Lines M. Condon	2065
IF-TH-22 1:30 pm	Inductance Formula of a Square Spiral Inductor on Grounded Substrate by Duality and Synthetic Asymptote W.C. Tang and Y.L. Chow	2069
IF-TH-23 1:30 pm	Electromagnetic/Circuit Co-Optimization of Lumped Component and Physical Layout Parameters Using Generalized Layout Components J. Sercu and F. Demuynck	2073
IF-TH-24 1:30 pm	CAD of Multipactor-Free Waveguide Components for Communication Satellites M. Ludovico, L. Accatino, G. Zarba, and M. Mongiardo	2077
IF-TH-25 1:30 pm	CAD of Waveguide Structures with Production Based Radii at Arbitrary Double (E-H) Plane Steps and Junction Ports J.M. Reiter, R. Beyer, and U. Rosenberg	2081
IF-TH-26 1:30 pm	Electrothermal Modeling of Multi-Fingered PHEMTs Applying a Global Approach E. Byk, D. Lopez, D. Baillargeat, S. Verdeyme, R. Quéré, R. Sommet, P. Guillon, E. Laporte, and M. Soulard	2085
IF-TH-27 1:30 pm	Accurate Computer Aided Design of Interdigital Filters Applying a Coupling Identification Method C. Saboureau, S. Bila, D. Baillargeat, S. Verdeyme, and P. Guillon	2089
IF-TH-28 1:30 pm	Language Design Requirements for VHDL-RF/MW™ J. Willis and J. Johnson	2093
IF-TH-29 1:30 pm	CAD of Integrated Passives on Printed Circuit Boards Through Utilization of Multiple Material Domains P. Draxler	2097
IF-TH-30 1:30 pm	EM-Based Optimization Exploiting Partial Space Mapping and Exact Sensitivities J.W. Bandler, A.S. Mohamed, M.H. Bakr, K. Madsen, and J. Søndergaard	2101
IF-TH-31 1:30 pm	ANN and EM Based Models for Fast and Accurate Modeling of Excitation Loops in Compline-Type Filters A. Borji, D. Busuioc, S. Safavi-Naeini, and S.K. Chaudhuri	2105
IF-TH-32 1:30 pm	IC Package and Bonding Wire Modeling Software and Its Application to RFIC Design K. Goto, A. Dec, Y. Horio, K. Suyama, and H. Akima	2109
IF-TH-33 1:30 pm	Constrained EM-Based Modeling of Passive Components T. Dhaene, J. De Geest, and D. De Zutter	2113
IF-TH-34 1:30 pm	Microwave Noise Sources in AlGaAs/GaAs HBTs P. Sakalas, M. Schröter, P. Zampardi, H. Zirath, and R. Welsler	2117
IF-TH-35 1:30 pm	A Practical Small-Signal Equivalent Circuit Model for RF-MOSFETs Valid Up to the Cut-Off Frequency H. Kawano, M. Nishizawa, S. Matsumoto, S. Mitani, M. Tanaka, N. Nakayama, H. Ueno, M. Miura-Mattausch, and H.J. Mattausch	2121
IF-TH-36 1:30 pm	The Equivalent Circuit Modeling of Defected Ground Structure with Spiral Shape C.-S. Kim, J.-S. Lim, S. Nam, K.-Y. Kang, J.-I. Park, G.-Y. Kim, and D. Ahn	2125
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IF-TH-41 1:30 pm	Large-Signal Circuit-Based Time Domain Analysis of High Frequency Devices Including Distributed Effects M. Waliullah, S.M. El-Ghazaly, and S. Goodnick	2145
IF-TH-42 1:30 pm	The “Smoothie” Data Base Model for the Correct Modeling of Non-Linear Distortion in FET Devices V. Cuoco, M.P. v.d. Heijden and L.C.N. de Vreede	2149
IF-TH-43 1:30 pm	The Assessment of Output Digital Spectra in Quasi Enhancement-Mode pHEMTs by a Modified Large-Signal Model S.-C. Yang, C.-W. Wang, C.-K. Lin, H.-C. Chiu, and Y.-J. Chan	2153
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IF-TH-49 1:30 pm	Global Coupled EM-Electrical-Thermal Simulation and Experimental Validation for a Spatial Power Combining MMIC Array W. Batty, C.E. Christoffersen, A.B. Yakovlev, J.F. Whitaker, M. Ozkar, S. Ortiz, A. Mortazawi, R. Reano, K. Yang, L.P.B. Katehi, C.M. Snowden, and M.B. Steer	2177
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IF-TH-56 1:30 pm	Low-Cost Flip-Chip Alternatives for Millimeter Wave Applications J. Heyen, J. Schroeder, and A.F. Jacob	2205
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IF-TH-60 1:30 pm	Coupling Between Microstrip Lines with Finite Width Ground Plane Embedded in Polyimide Layers for 3D-MMICs on Si G.E. Ponchak, E. Dalton, E.M. Tentzeris, and J. Papapolymerou	2221
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