

TECHNICAL PROGRAM

Tuesday Morning, June 15, 1982

REUNION EF	REUNION GH	REUNION BC	REUNION A
WELCOME 0830 Steering Committee Chairman David N. McQuiddy, Jr., Texas Instruments, Inc., Dallas, TX 0840 MITT Society Administrative Committee President Richard A. Sparks, Raytheon Company, Bedford, MA A OPENING SESSION Chairman: S. L. March, Comsat General Integrated Systems, Garland TX 0850 Thirty Years of Microwaves (Invited) A-1 Theodore S. Saad, President, Sage Laboratories, Inc., Natick, MA 0935 Thirty Years of Microwaves in China (Invited) A-2 Dr. Huang Hung-Chia, Chairman, Society of Microwaves, Chinese Institute of Electronics, Shanghai, People's Republic of China 1015 Microwaves—The Years to Come (Invited) A-3 Dr. Leo Young, Director of Research and Technical Information, Office of the Undersecretary of Defense for Research and Engineering, Washington, DC			
C MICROWAVE MIXERS Chairman: G. R. Bazawapatna, Microsource, Inc., Santa Rosa, CA 1100 C-1 The Gap Diode: A New High Frequency Mixer and Detector S. J. J. Teng, P. Chen, F. J. Rosebaum, Department of Electrical Engineering, Washington University, St. Louis, MO, and R. E. Goldwasser, Central Microwave Co., St. Charles, MO 1120 C-2 Subharmonic Mixer Using Planar-Doped Barrier Diodes S. Dixon, R. J. Malik, T. R. Aucein, U.S. Army Electronics Technology and Devices Laboratory, Fort Monmouth, NJ, and J. Paul, P. Yen, L. T. Yuan, Hughes Aircraft Co., Torrance, CA 1140 C-3 Single-Sideband Mixers for Communications Systems B. R. Halford, Rockwell International, Dallas, TX 1200 C-4 A Novel Broadband Double Balanced Mixer for the 18-40 GHz Range A. Blaisdell, R. Geoffroy, H. Howe, Jr., M/A-COM, Inc., Burlington, MA 1220 C-5 The Image Rejection Harmonic Mixer D. Weiner, J. Griffin, L. McCarty, Texas Instruments, Inc., Dallas, TX			
B LOW NOISE TECHNIQUES Chairman: J. J. Taub, Eaton Corporation, Melville NY 1100 B-1 Low Noise Technology, 1982 State-of-the-Art (Invited) S. Weinreb, National Radio Astronomy Observatory, Charlottesville, VA 1130 B-2 Millimetre Wave Low Noise E-Plane Planar MBE GaAs Mixer Diodes R. N. Bates, R. K. Surridge, J. G. Summers, J. Woodcock, Philips Research Laboratories, Redhill Surrey, England 1150 B-3 A 30 GHz FET Receiver E. Watkins, J. M. Schellenberg, H. Yamasaki, Hughes Aircraft Company, Torrance, CA 1210 B-4 A 22-24 GHz Cryogenically Cooled Low Noise FET Amplifier in Coplanar Waveguide A. Capello, J. Pierro, Eaton Corp, Melville NY			
D MICROWAVE ACOUSTICS: DEVICES AND APPLICATIONS Chairman: T. Lukaszek, U.S. Army Electronics R&D Command, Ft. Monmouth, NJ 1100 D-1 A Review of Electronic Warfare (EW) Receivers with Acoustic Devices (Invited) J. B. Y. Tsui, W. T. Brumfield, J. F. Hoffman, AFWAL, Wright-Patterson Air Force Base OH 1130 D-2 A SAW Resonator Stabilized Oscillator for a CATV Set-Top Converter S. McIntosh, Scientific Atlanta, Inc., Atlanta GA 1150 D-3 800 MHz Low Loss SAW Filter Using New Phase Weighting M. Hikati, Y. Konoshita, H. Kojima, T. Tabuchi, A. Sumioka, Hitachi Ltd., Kokubunji, Tokyo, Japan 1210 D-4 Hybrid FET/SAW Programmable Transverse Filter C. Panasiuk, Texas Instruments, Inc., Dallas TX			

Tuesday Afternoon, June 15, 1982

REUNION EF		REUNION GH		REUNION BC		REUNION A	
H OPTICAL AND MICROWAVE TECHNIQUES FOR GUIDED WAVE STRUCTURES Chairman: A. A. Oliner, Polytechnic Institute of New York, Brooklyn, NY		I TWO TERMINAL DEVICES AND COMBINING TECHNIQUES Chairman: C. T. Rucker, Georgia Institute of Technology, Atlanta, GA		E HIGH POWER TECHNIQUES Chairman: H. Goldie, Westinghouse Electric Corp., Baltimore, MD		F MAGNETOSTATIC WAVES: DEVICES AND APPLICATIONS Chairman: R. S. Kagiwada, TRW Redondo Beach, CA	
1400 H-1	Microwave Circuit Models of Semiconductor Injection Lasers R. S. Tucker, D. J. Pope, University of Queensland, Brisbane, Queensland, Australia	1400 I-1	A 1 KW Peak, 300 W (AVG) IMPATT Diode Injection Locked Oscillator C. A. Drubin, A. L. Heiber, G. Jerinic, A. S. Marinilli, Raytheon Company, Waltham, MA	1400 E-1	High Power 2-9 GHz Solid State Switch D. Kintigh, W. K. Niblack, Frequency Sources, Inc., Chelmsford, MA	1400 F-1	An Epitaxial YIG 10-Channel Filter Bank J. D. Adam, Westinghouse Electric Corp., Pittsburgh, PA
1420 H-2	Comparison of Numerical and Effective Index Methods for a Class of Dielectric Waveguides A. Linz, J. K. Butler, Southern Methodist University, Dallas, TX	1420 I-2	A Dual Diode TM_{020} Cavity for IMPATT Diode Power Combining R. Laton, S. Simoes, L. Wagner, Raytheon Company, Bedford, MA	1420 E-2	A Linearized High Power Microwave Digital Phase Modulator M. Cuhaci, G. J. P. Lo, N. S. Hitchcock, Department of Communications, Ottawa, Ontario, Canada	1420 F-2	Simultaneous Pulse Separator P. Wahi, E. Turski, Litton Systems, College Park, MD
1440 H-3	Capacitively Loaded Transmission Line for Subnanosecond Stepped $A\beta$ Operation of an Integrated Optical Directional Coupler Switch U. Langmann, D. Hoffmann, Ruhr-Universität Bochum, Bochum, West Germany	1440 I-3	Multidiode Waveguide Power Combiners S. E. Hamilton, B. M. Fish, Hughes Aircraft Company, Canoga Park, CA	1440 E-3	A High Power W-Band (90-99 GHz) Solid State Transmitter for High Duty Cycles and Wide Bandwidth G. R. Thoren, M. J. Virostko, Raytheon Company, Bedford, MA	1440 F-3	Ion Implanted Oblique Incidence Magnetostatic Waves R. L. Carter, J. M. Owens, C. V. Smith, K. W. Reed, University of Texas at Arlington, Arlington, TX
1500 H-4	Proposal of an Analytical Technique Using Circularly Polarized Waves and its Application K. Kusano, Tohoku University, Sendai, Japan	1500 I-4	120-Gunn Diode Power Combining at 23 GHz S. Mizushima, M. Madhian, Shizuoka University, Hamamatsu, Japan	1500 E-4	Non-Linear Equivalent Circuit for Broadband GaAs MESFET Power Amplifier Design R. Soares, M. Goudellis, B. Liorou, Centre National d'Etudes des Telecommunications, Lannion Cedex, France, and E. de Los Reyes Davo, Eschella Tecnica Superior de Ingenieros de Telecomunicacion, Barcelona, Spain	1500 F-4	Magnetostatic Wave Propagation Within Obliquely Magnetized YIG Films T. Koike, Tamagawa University, Tokyo, Japan
1520 H-5	Phase Matched Optical Dielectric Waveguide Using "the Artificial Anisotropic Structure" T. Mizumoto, H. Arai, Y. Naito, Tokyo Institute of Technology, Tokyo, Japan	1520 I-5	Analysis and Use of Harkless Diode Mount for IMPATT Oscillators B. D. Bates, P. J. Allen, P. J. Khan, University of Queensland, Brisbane, Queensland, Australia	1520 E-5	Break	1520	Break
1610 H-6	Design of Chirped Grating Lenses in Planar Optical Waveguides W. S. C. Chang, S. Forouhar, J. M. Delavaux, R. X. Lu, University of California at San Diego, La Jolla, CA	1600 I-6	Power Combiners with Gunn Diode Oscillators J. J. Potoczniak, H. Jacobs, U.S. Army Electronics Research and Development Command, Fort Monmouth, NJ, and C. LoCasio, G. Novick, Fort Monmouth College, West Long Beach, NJ	1600 E-6	A 4.5 GHz 40 Watt GaAs FET Amplifier N. Fukuden, F. Ogata, M. Hayakawa, H. Sugawara, M. Takagi, Y. Arai, Fujitsu Limited, Kawasaki, Japan	1600 G-1	Flight Test Evaluation of a Noise Injection Dicke Microwave Radiometer Employing Digital Signal Processing R. W. Lawrence, R. F. Harrington, N. S. Higdon, NASA, Hampton, VA
1630 H-7	A Planar Electro-Optic Beam Splitter with a Sawtooth Electrode C. L. Lee, J. S. Hornig, C.H. Huang, National Chiao Tung University, Hsinchu, Taiwan, Republic of China HSIN CHU CHINA	1620 I-7	Gallium Arsenide IMPATT Diodes at 20 GHz M. G. Adlerstein, J. W. McClymonds, D. Masse, Raytheon Research Division, Lexington, MA	1620 E-7	An RF-Primed All-Halogen Gas Plasma Microwave High Power Receiver Protector H. Goldie, S. Patel, Westinghouse Electric Corp., Baltimore, MD	1620 G-2	An Experimental Millimetre-Wave Radiometric Tracker S. J. Nightingale, G. Payne, Philips Research Laboratories, Redhill, Surrey, U.K.
		1640 I-8	Pulsed Characterization of X-Band GaAs DDR IMPATT Diodes H. Harris, R. Laton, L. Wagner, Raytheon Company, Bedford, MA	1640 E-8	Potential Arc Hazard Produced by Handling Connectors While Operating Pulsed Microwave Equipment A. W. Friend, Naval Electronics Systems Command, Washington, DC, and S. L. Gartner, Naval Medical Research Institute, Bethesda, MD	1640 G-3	High Sensitivity, Accurate MMW Radiometers for Ground-Mapping Systems W. B. Day, E. Kraemer, R. S. Roeder, R. E. Wilt, Sperry Gyroscope Company, Clearwater, FL
						1640 G-4	Performance Simulator for a Wind Scatterometer P. Hans, D. Miller, Dorrier-System, GmbH, Friedrichshafen, West Germany



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J	GaAs FET AMPLIFIERS Chairman: H. Q. Tserng, Texas Instruments, Dallas, TX	L	MILLIMETER WAVE INTEGRATED CIRCUITS Chairman: J. B. Knorr, Naval Postgraduate School, Monterey, CA	K	PHASED ARRAY TECHNIQUES Chairman: L. R. Whicker, Naval Research Laboratories, Washington, DC	M	MICROWAVE SYSTEMS APPLICATION Chairman: J. B. Horton, TRW Redondo Beach, CA
0900 J-1	S-Band GaAs Power FET H. M. Macksey, H. Q. Tserng, G. H. Westphal, Texas Instruments, Dallas, TX	0900 L-1	New Structures for Impedance Transformation in Fin-Lines H. El Hennawy, K. Schunemann, Technische Universität Braunschweig, Braunschweig, Germany	0900 K-1	Solid State Radar's Path to GaAs (Invited) D. N. McQuiddy, Jr., Texas Instruments, Dallas, TX	0900 M-1	A 20-Watt C-Band BPSK Modulated FET Transmitter for Microwave Landing System S. R. Mazumder, T. Dao, T. L. Tsai, W. C. Tsai, Raytheon Company, Northborough, MA
0920 J-2	Internally Matched (IM) Plated Source Bridge (PSB) Power GaAs FET Achieving a High Performance Power Amplifier in X-Band S. Igi, M. Kobiki, T. Sakayori, M. Chashi, M. Wataze, T. Suzuki, K. Kusonoki, Mitsubishi Electric Corp., Itami, Hyogo, Japan	0920 L-2	Wideband Subharmonically Pumped W-Band Mixer in Single-Ridge Fin-Line P. J. Meier, Eaton Corp., Melville NY	0930 K-2	A High Phase Accuracy Active Phased Array Module for Multi-Function Radars C. J. Ward, J. R. Forrest, P. Malamis, A. A. Salles, University College London, London, England, and M. E. Brinson, L. Parsons, Polytechnic of North London, Holloway, England	0920 M-2	A 1 Watt GaAs Power Amplifier for the NASA 30/20 GAE Communication System J. Goel, G. Oransky, S. Yuan, P. O'Sullivan, J. Burch, TRW, Redondo Beach, CA
0940 J-3	K- and Ka-Band Power GaAs FETs T. Nogucal, Y. Aono, Nippon Electric Company Ltd., Kawasaki, Kanagawa, Japan	0940 L-3	Broadband Planar Balanced Mixers for Millimeter-Wave Applications L. Bui, D. Ball, Hughes Aircraft Company, Torrance, CA	0950 K-3	Dual Polarization Phased Array Diode Phase Shifter Module J. F. White, D. J. Fryklund, M/A-COM, Inc., Burlington, MA	0940 M-3	A 50 GHz MIC Transmitter/Receiver Using a Dielectric Resonator Oscillator Y. Tokumitsu, M. Ishizaki, T. Saito, Fujitsu Laboratories, Ltd., Kawasaki, Japan, and E. Matsumoto, Fujitsu Ten Company, Ltd., Kobe, Japan
1000 J-4	Design of Medium Power, 6-12 GHz GaAs FET Amplifier Using High Dielectric Networks S. D. McCarter, A. M. Pavio, Texas Instruments, Dallas, TX	1000 L-4	A Zero-Bias GaAs Millimeter Wave Integrated Detector Circuit C. C. Chang, D. L. Lynch, M. D. Schigian, G. F. Anderson, T. Schaffer, G. I. Roberts, Hewlett-Packard Company, Santa Rosa, CA	1010 K-4	Experimental Thin-film, Etched-Circuit Rectenna W. C. Brown, Raytheon Company, Waltham, MA, and J. E. Triner, NASA, Lewis Research Center, Cleveland, OH	1000 M-4	A Compact Low Cost 60 GHz Communicator A. Hillsop, Naval Ocean Systems Center, San Diego, CA
1020	Break	1020	Break	1030	Break	1020	Break
1040 J-5	A Network Modeling and Design Method for a 2-18 GHz Feedback Amplifier A. M. Pavio, Texas Instruments, Dallas, TX	1040 L-5	Widely Tunable Millimeter-Wave Mixers Using Beam-Lead Diodes S. Nussbaum, J. A. Calviello, E. Sardi, N. Arnoldo, Eaton Corp., Deer Park, NY	1100 K-5	A Commutative Spot Transmissive Lens Antenna C. Orr, Texas Instruments, Dallas, TX	1040 M-5	A Low Noise Frequency Agile X-Band Source Z. Galani, M. Blanchini, R. Di Biase, Raytheon Company, Bedford, MA
1100 J-6	A 26.5-40.0 GHz GaAs FET Amplifier J. Rosenberg, P. Chye, C. Huang, G. Policky, Avantek, Santa Clara, CA	1100 L-6	Microstrip Devices for Millimetric Frequencies M. J. Sisson, P. M. Briggins, P. N. Wood, P. R. Brown, A. M. Hanson, M. R. Nicholls, General Electric Company, Ltd., Wembley, Middlesex, England	1120 K-6	Substrate Optimization for Integrated Circuit Antennas N. G. Alexopoulos, P. B. Katehi, University of California at Los Angeles, Los Angeles, CA, and D. B. Rutledge, California Institute of Technology, Pasadena, CA	1100 M-6	A 14 GHz DCPSK Direct Demodulator for Satellite Applications L. Accatino, A. Angelucci, Centro Studi e Laboratori Telecomunicazioni, Torino, Italy
1120 J-7	Class B Operations of Microwave FETs for Array Module Applications M. Cohn, J. E. Degenford, R. G. Freitag, Westinghouse Electric Corp., Baltimore, MD	1120 L-7	Millimeter-Wave Hybrid-Open Microstrip Techniques T. X. Oxley, R. E. Scarmann, P. L. Lowbridge, Marconi Electric Devices, Ltd., Lincoln, England	1140 K-7	Extra Broad Band Phase-Shifter Modules D. Badoure, Thomson-CSF, Malakoff, France	1120 M-7	Coupler Crossbar Microwave Switch Metric P. T. Ho, J. R. Pelose, R. Malisawski, Ford Aerospace and Communications Corp., Palo Alto, CA
1140 J-8	Design and Fabrication Techniques for Lumped Element GaAs MESFET Power Amplifiers Using Automated Assembly Procedures J. B. Klatkin, R. L. Camisa, RCA Laboratories, Princeton, NJ, and D. Haggis, RCA Automated Systems, Burlington, MA	1140 L-8	Hybrid Coupled Microstrip Reflection Amplifiers D. Rubin, Naval Ocean Systems Center, San Diego, CA			1140 M-8	Direct Baseband to Microwave MSK Generation by Using Injection Locked Oscillator S. Myrillas, J. S. Wight, Carleton University, Ottawa, Ontario, Canada

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O NONLINEAR APPLICATIONS OF GaAs FETS Chairman: R. A. Pucel, Raytheon Company, Waltham, MA		Q AUTOMATED MICROWAVE MEASUREMENTS Chairman: G. F. Engen, National Bureau of Standards, Boulder CO		P MICROWAVE FIELD THEORY Chairman: C. M. Krowne, Naval Research Laboratory, Washington, DC		N FERRITE APPLICATIONS Chairman: J. E. Raue, TRW Redondo Beach, CA	
1400 O-1	GaAs FET Limiting Amplifier Designed for Low AM to PM Conversion C. R. Baughman, J. Y. Chin, Aertech Industries, Sunnyvale, CA	1400 Q-1	Aspects of the Calibration of a Single Six-Port Using a Load and Offset Reflection Standards G. P. Riblet, E. R. B. Hansson, Microwave Development Laboratories, Inc., Natick, MA	1400 P-1	A Unified Analysis for Planar Transmission Lines A. M. K. Saad, K. Schumemann, Technische Universität Braunschweig, Braunschweig, West Germany	1400 N-1	A Resonantly Coupled, Ferrite-Tuned Buncher-Cavity System for the Los Alamos Proton Storage Ring L. M. Earley, G. P. Lawrence, J. M. Potter, F. J. Humphry, Los Alamos National Laboratory, Los Alamos, NM
1420 O-2	BR FET: A Band Rejection FET for Amplifier and Mixer Applications C. Tsionmis, Laboratories d'Electronique et de Physique Appliquee, Limon-Brevannes, France	1420 Q-2	Diode Detector Characteristics for a 94 GHz Six-Port Application R. A. Fong-Tom, H. M. Cronson, Sperry Research Center, Sudbury, MA	1420 P-2	Analysis of Trapped Image Guides Using Effective Dielectric Constants and Surface Impedances W. B. Zhou, T. Itoh, University of Texas at Austin, Austin, TX	1420 N-2	Broadband Fin-Line Circulators U. Goebel, C. Schieblach, Technische Universität Braunschweig, Braunschweig, West Germany
1440 O-3	Varactor Tuned Dielectric Resonator GaAs FET Oscillator in X-Band K. W. Lee, W. R. Day, Varian Associates, Santa Clara, CA	1440 Q-3	Phase and Amplitude Characteristics of Dielectric Waveguide Coupler and Six-Port Network D. Radovich, J. Paul, Hughes Aircraft Company, Torrance, CA	1440 P-3	Coupling Through a Slot Between a Dielectric Image Line and a Parallel Plate Guide R. D. Nevils, Texas A&M University, College Station, TX, and C. M. Butler, University of Mississippi, University, MS	1440 N-3	Low-Loss 92-100 GHz Circulators W. Piotrowski, S. Schell, TRW, Redondo Beach, CA
1500 O-4	Efficient Low-Noise Three Port X-Band FET Oscillator Using Two Dielectric Resonators A. P. S. Khanna, J. Obregon, Y. Garault, Laboratoire d'Electronique des Microondes, Limoges Cedex, France	1500 Q-4	Break A Computer-Controlled Dielectric Constant Measurement System: The Moving Vane Dielectrometer G. E. Everett, J. W. Battles, Naval Weapons Center, China Lake, CA	1500 P-4	Bends in Nonradiative Dielectric Waveguides T. Yoneyama, S. Nishida, M. Yamaguchi, Tohoku University, Sendai, Japan	1500 N-4	Break Dielectric Waveguide Phase Shifter J. J. Green, Raytheon Company, Waltham, MA
1520 O-5	Frequency Doublers with GaAs FETS C. Rauscher, Naval Research Laboratory, Washington, DC	1520 Q-5	A Two-Tier Deembedding Technique for Packaged Transistors R. Vaitkus, D. Scheitlin, Motorola, Inc., Phoenix, AZ	1520 P-5	Break Variational Methods for Nonstandard Eigenvalue Problems in Microwave Field Analysis I. V. Lindell, Helsinki University of Technology, Espoo, Finland	1520 N-5	A 60 GHz Dual-Mode Ferrite Phase Shifter C. R. Boyd, Jr., Microwave Applications Group, Santa Maria, CA
1600 O-6	A 45 GHz GaAs FET MIC Oscillator-Doubler T. Saito, M. Iwakuni, T. Sakane, Y. Tokumitsu, Fujitsu Laboratories, Ltd., Kawasaki, Japan	1610 Q-6	Computer-Aided Determination of Resonator Characteristics Based on Expansion in Normal Modes and Using Automatic Network Analyser Data D. W. Griffin, University of Adelaide, Adelaide, South Australia	1600 P-6	New Aspects Concerning the Definition of Microstrip Characteristic Impedance as a Function of Frequency R. H. Jansen, N. H. L. Koster, Universität Gesamthochschule Duisburg, Duisburg, West Germany	1600 N-6	High Power, Low Phase Distortion, Electronic Ferrite Attenuator L. Dubrowsky, J. Cohen, G. Kern, W. Milberger, R. Porter, J. Van Damme, Westinghouse Electric Company, Baltimore, MD
1620 O-7	X-Band Burnout Characteristics of GaAs MESFETS J. J. Whalen, State University of New York at Buffalo, Amherst, NY, and R. T. Kemerly, AFWAL, Wright-Patterson Air Force Base, OH	1640 Q-7	A Microprocessor Controlled Phase Measurement System for 2856 MHz Pulses J. D. Fox, H. Schwarz, Stanford University, Stanford, CA	1600 P-7	Planar Transmission Lines R. Chadra, K. C. Gupta, Indian Institute of Technology, Kanpur, India	1620 N-7	Design and Performance of a K-Band Yig Tuned Multiplier L. Stark, Hewlett-Packard Co., Palo Alto, CA
1640 O-8	Monolithic Microwave Integrated GaAs FET Oscillators Y. Ye, F. Wang, Nanjing Solid State Devices Research Institute, Nanjing, People's Republic of China			1620 P-8	Analytical Expressions for the Parameters of Finned and Ridged Waveguides W. J. R. Hoefer, M. Burton, University of Ottawa, Ottawa, Ontario, Canada		

Thursday Morning, June 17, 1982

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U	MICROWAVE INTEGRATED CIRCUITS Chairman: C. Buntschuh, Narda Microwave Corp., Hauppauge NY		S	MILLIMETER-WAVE SOLID-STATE DEVICES Chairman: J. C. Wiltse, Georgia Institute of Technology, Atlanta, GA		R	MICROWAVE MEASUREMENTS Chairman: H. G. Oltman, Jr., Hughes Aircraft Company, Canoga Park, CA		T	FILTERS AND MULTIPLEXERS Chairman: A. E. Williams, Comsat Laboratories, Clarksburg MD	
0900 U-1	Phase Velocity Compensation in Parallel-Coupled Microstrip S. L. March, Comsat General Integrated Systems, Garland, TX		0900 S-1	141 GHz Generation by a GaAs Gun-Oscillator-Up-Converter Chain H. Barth, AEG-Telefunken, Ulm, West Germany		0900 R-1	Microstrip Measurements T. C. Edwards, Royal Military College of Science, Swindon, Wiltshire, England		0900 T-1	Miniature Filters and Equalizers Utilizing Dual Mode Dielectric Resonator Loaded Cavities S. J. Fiedziusako, R. C. Chapman, Ford Aerospace and Communications Corp., Palo Alto, CA	
0920 U-2	The EQUAD: A Flat Amplitude, Octave Bandwidth Planar Quadrature Network R. V. Snyder, R. S. Microwave Company, Inc., Butler, NJ		0920 S-2	Millimeter-Wave BARITT Diode Mixers and Detectors J. Chen, J. East, R. Grondin, G. I. Haddad, University of Michigan, Ann Arbor, MI, and L. Mang, Y. Anond, S. Ellis, D. Densenouci, M/A-COM, Inc., Burlington, MA		0920 R-2	Measurement of the Characteristic Impedance of Microstrip Over a Wide Frequency Range W. J. Geisinger, Communications Satellite Corp., Clarksburg, MD		0920 T-2	Mode Suppressor for Dielectric Resonator Filters C. L. Ren, Bell Telephone Laboratories, North Andover, MA	
0940 U-3	MIC Directional Filters Using Dielectric Resonators M. L. Majewski, N. A. McDonald, Royal Melbourne Institute of Technology, Melbourne, Victoria, Australia		0940 S-3	A W-Band Wideband Crossbar Mixer K. Louie, TRW, Redondo Beach, CA		0940 R-3	Large-Signal Characterization of Two-Port Nonlinear Active Networks D. C. Yang, D. F. Peterson, University of Michigan, Ann Arbor, MI		0940 T-3	Coupling Coefficient Between Magnetic Loop and a Dielectric Resonator in an Evanescent Waveguide P. Guillon, Y. Garault, Laboratoire d'Electronique des Microondes, Limoges Cedex, France	
1000 U-4	Variable Coupling Directional Couplers Using Varactor Diodes S. Toyoda, Osaka Institute of Technology, Asahi-Ku, Osaka, Japan		1000 S-4	Beam Lead Dielectric Crossbar Mixers from 80 GHz to 140 GHz J. Paul, L. Yuan, P. Yen, Hughes Aircraft Company, Torrance, CA		1000 R-4	A Programmable Load for Power and Noise Characterization B. W. Leake, Raytheon Company, Wayland, MA			The Generalised Integrated-Pole Direct Coupled Cavity Filter D. S. G. Chambers, J. D. Rhodes, Filtronic Components, Ltd., Shipley, West Yorkshire, England	
1020	Break		1020	Break		1020	Break		1000 T-4	Improved Selectivity in Cylindrical TE ₀₁₁ Filters by TE ₂₁₁ /TE ₃₁₁ Mode Control D. E. Kreinheder, T. D. Lingren, Hughes Aircraft Company, Canoga Park, CA	
1040 U-5	An Improved PIN Diode Attenuator for High Reliability MIC Applications P. Horkin, Martin Marietta Aerospace, Denver, CO		1040 S-5	140 GHz Quasi-Optical Planar Mixers L. Yuan, J. Paul, P. Yen, Hughes Aircraft Company, Torrance, CA		1040 R-5	Noise Waves, A Concept Leading to Deep Insight and Very Accurate Noise Characterization R. Meys, Laboratoire D'Electronique et Radioelectricite, Brussels, Belgium, and M. Milecan, Etudes Techniques et Constructions Aeronautiques, Charleroi, Belgium		1020 T-5	Break	
1100 U-6	An Analytic Design Approach for 2-18 GHz Planar Mixer Circuits R. B. Culbertson, A. M. Pavio, Texas Instruments, Dallas, TX		1100 S-6	Quasi-Optical Polarization-Duplexed Balanced Mixer K. D. Stephan, N. Camilleri, T. Itoh, University of Texas at Austin, Austin, TX			De-embedding the Capacitance of a Resonant Circuit Using Time-Domain Reversal and Subtraction H. E. Stinehelfer, Sr., Made-It Associates, Burlington, MA		1100 T-6	Varactor Tuned Microwave Filters I. C. Hunter, Aercom Industries, Sunnyvale, CA, and J. D. Rhodes, Filtronic Components, Ltd., Shipley, West Yorkshire, U.K.	
1120 U-7	A Compact Broadband Multifunction MIC Module E. C. Niehenke, Westinghouse Electric Corp., Baltimore, MD		1120 S-7	A Ka-Band Orthogonal Hybrid Fin-Line Mixer J. S. Wong, K. I. Chung, General Dynamics, Pomona, CA		1100 R-6	An Automated Power Meter Calibration System R. C. Powell, H. Banning, J. Byloff, Weinschel Engineering Co., Inc., Gaithersburg, MD			Synthesis of Low-Pass Elliptic Filters for MIC as a Class of Non-Commensurate Distributed Circuits M. Salerno, R. Sorrentino, Universita di Roma, Roma, Italy	
1140 U-8	The Use of Sampling Techniques for Miniaturized Microwave Synthesis Applications B. E. Gilchrist, R. D. Fildes, J. G. Galli, Watkins-Johnson Co., Palo Alto, CA		1140 S-8	Numerical Analysis of Subharmonic Mixers Using a Bilinear Diode Model R. G. Hicks, P. J. Khan, University of Queensland, Brisbane, Queensland, Australia		1120 R-7	A Better Waveguide Short Circuit R. L. Eisenhart, R. C. Monzello, Hughes Aircraft Company, Canoga Park, CA		1120 T-7	An 11 GHz Contiguous Band Output Multiplexing Network for Intelsat VI Spacecraft R. Tong, J. Dorey, P. Mabson, W. C. Tang, E. Klein-Lebbink, C. M. Kudsia, Com Dev Limited, Cambridge, Ontario, Canada	

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V MICROWAVE BIOLOGICAL EFFECTS Chairman: A. Rosen, R.C.A. Laboratories, Princeton, NJ			Y SOLID STATE MILLIMETER WAVE SOURCES Chairman: H. J. Kuno, Hughes Aircraft Company, Torrance, CA		W COMPUTER-AIDED DESIGN Chairman: S. F. Adam, Hewlett-Packard Co., San Jose, CA		Z FILTERS AND PASSIVE NETWORKS Chairman: R. Levy, Microwave Development Laboratories, Inc., Natick, MA
1400 V-1	Changes in Cardiac-Cell Membrane Noise During Microwave Exposure R. L. Seaman, R. K. Ayer, Jr., R. L. DeHaan, Georgia Institute of Technology, Atlanta, GA	1400 Y-1	A Broadband, Solid State, Millimeter-Wave Synthesizer M. P. Furtunato, K. Y. Ishikawa, Hughes Aircraft Company, Torrance, CA	1400 W-1	Large Signal GaAs FET Amplifier CAD Program A. Platzker, Raytheon Company, Bedford, MA, and Y. Tajima, Raytheon Company, Waltham, MA	1400 Z-1	Equivalent Transformations for Mixed Lumped and Distributed Circuits (Invited) R. Sato, Y. Nemoto, Tomoku University, Sendai, Japan, and K. Kobayashi, Yamagata University, Yonezawa, Japan
1420 V-2	A Self-Balancing Microwave Radiometer for Non-Invasively Measuring the Temperature of Subcutaneous Tissues During Localized Hypothermia Treatments of Cancer F. Stierzer, R. Paglione, F. Wozniak, RCA Laboratories, Princeton, NJ, and J. Mendecki, E. Friedenthal, C. Bolstein, Montefiore Hospital and Medical Center, Bronx, NY	1420 Y-2	41 GHz 10 Watt Solid State Amplifier D. W. Mooney, F. J. Bayuk, TRW, Redondo Beach, CA	1420 W-2	A Computer-Aided Approach to the Nonlinear Design of Microwave Transistor Oscillators V. Rizzoli, A. Lipparini, Universita Degli Studi Di Bologna, Bologna, Italy	1430 Z-2	Octave-Wide Matched Symmetrical, Reciprocal, 4- and 5-Ports F. C. de Ronde, Laboratoires d'Electronique et de Physique Appliquee, Limeil-Brevannes, France
1440 V-3	Thermal Drift in Microwave Thermography J. Sheaffer, A. M. El-Mahdi, Eastern Virginia Medical School, Norfolk, VA, and R. J. Bielawa, J. F. Regan, K. L. Carr, M/A-Com, Inc., Burlington, MA	1440 Y-3	A Medium Power Solid State Amplifier for V-Band P. H. Wolfert, J. D. Crowley, F. B. Fank, Varian Associates, Inc., Santa Clara, CA	1440 W-3	An Optimization Technique for Lumped-Distributed Two-Ports K. W. Lobst, NASA Goddard Space Flight Center, Greenbelt, MD, and K. A. Zaki, University of Maryland, College Park, MD	1450 Z-3	Passive Superconducting Microwave Circuits for 2-20 GHz Bandwidth Analog Signal Processing J. T. Lynch, A. C. Anderson, R. S. Withers, P. V. Wright, S. A. Reible, Massachusetts Institute of Technology, Lincoln Laboratory, Lexington, MA
1500 V-4	Dynamic In Vivo Performance of Temperature Controlled Local Microwave Hypothermia at 2.45 GHz R. Kriochel, W. Meyer, Philips GmbH, Hamburg, West Germany, and F. Zyweitz, University of Hamburg, Hamburg, West Germany	1500 Y-4	CW InP Gunn Diode Power Combining at 90 GHz J. J. Sowers, J. D. Crowley, F. B. Fank, Varian Associates, Inc., Santa Clara, CA	1500 W-4	Odd Order Impedance Matching Networks for Low Cost Microwave Integrated Circuits A. N. Riddle, R. J. Trew, North Carolina State University, Raleigh, NC	1510 Z-4	Waveguide Power Divider Using Metallic Septum with Resistive Coupling Slot F. Takeda, O. Ishida, Y. Isoda, Mitsubishi Electric Corp., Kamakura, Kanagawa, Japan
1520 X	GaAs MONOLITHIC CIRCUITS Chairman: D. W. Maki, Hughes Aircraft Company, Torrance, CA	1520 Y-5	On the Harmonic Operation of Millimeterwave Gunn Diodes W. H. Haydl, Fraunhofer Institut fur Angewandte Fest Korperphysik, Friburg, West Germany	1520 W-5	Processing System for Design and Analysis of Microwave-Integrated-Circuits Layout S. S. Saviani, A. J. Giarola, Universidade Estadual de Campinas, Campinas, Sao Paulo, Brazil	1530 Z-5	Break
1540 X-1	X-Ku-Band GaAs Monolithic Amplifier Y. Tajima, E. Tong, R. Mozzi, L. Hanes, B. Wrona, Raytheon Company, Waltham, MA, and T. Tsukii, Raytheon Company, Goleta, CA	1540 Y-6	Performance Capabilities of Indium Phosphide n ⁺ -n-n ⁺ Transferred Electron Devices at Millimetre Wave Frequencies I. G. Eddison, I. Davies, Plessey Research (Casswell) Ltd., Towcester, Northants, England	1600 W-6	A Novel Approach to Computer Automated Microwave Circuit Mask Design T. Dowling, J. Birch, S. Temple, S. Monaghan, H. E. Stineheiser, Sr., N. Cavallaro, A. Davis, Raytheon Company, Bedford, MA	1600 Z-6	A Simplified "Real Frequency" Technique Applicable to Broadband Multistage Microwave Amplifiers B. S. Yarman, RCA Laboratories, Princeton, NJ, and H. J. Carlin, Cornell University, Ithaca, NY
1600 X-2	GaAs Monolithic Wideband (2-18 GHz) Variable Attenuators Y. Tajima, R. Mozzi, E. Tong, L. Hanes, B. Wrona, Raytheon Company, Waltham, MA, and T. Tsukii, Raytheon Company, Goleta, CA	1620 Y-7	High Frequency Limitation of GaAs Transit-Time Diodes N. Lee, D. S. Pan, University of California at Los Angeles, Los Angeles, CA	1600 W-7	Automatic Artwork Generation for Microwave Integrated Circuits W. H. Childs, J. L. McGregor, Comsat General Integrated Systems, Rockville, MD	1620 Z-7	CAD of Rectangular and Ridged Waveguide Band Pass Filters Li Si-Fan, Chen Yi-yuan, Nanjing Institute of Technology, Nanjing, Jiangsu, People's Republic of China
1620 X-3	Monolithic Voltage Controlled Oscillator for X- and Ku-Bands B. N. Scott, G. E. Brehm, Texas Instruments, Dallas, TX	1640 Y-8	V-Band InP Gunn Diode Y. Deng, H. Zhang, Y. Sheng, J. Fang, Nan Jing Solid State Devices Research Institute, Nanjing, People's Republic of China	1620 W-8	Computer-Aided Design of Millimeter-Wave E-Plane Filters Y. C. Shih, T. Itoh, University of Texas at Austin, Austin, TX, and L. Q. Bui, Hughes Aircraft Company, Torrance, CA	1640 Z-7	Sub-Miniature, Microwave Printed Circuit Filters with Arbitrary Passband and Stopband Widths B. J. Minnis, Philips Research Laboratories, Redhill, Surrey, England
1640 X-4	Monolithic X-Band Foul Bit Phase Shifter Y. Ayasli, A. Platzker, J. L. Vorhaus, L. D. Reynolds, Raytheon Company, Waltham, MA						
1700 X-5	A Multi-chip GaAs Monolithic Transmit Receive Module for X-Band R. A. Pucel, Y. Ayasli, D. Wandrei, J. L. Vorhaus, Raytheon Company, Waltham, MA, and S. Temple, R. Waterman, A. Platzker, C. Cavicchio, Raytheon Company, Bedford, MA						