1988 MTT-S NY EXHIBITION GUIDE

The following list is complete as of press time and may not list all companies.

Accumet Engineering Corp. **1339**
Hudson, MA

C. Haering, H. Muffoletto

Lapped and polished ceramic, BeO, silica, and other dielectric substrates for the entire microelectronic industry.

Acrian Inc. **800A**
San Jose, CA

D. Smith, D. Wotton, D. Strange, S. Mason, G. Hollingsworth, L. Leighton, S. Block, G. Irvine, R. Kaswen, R. Thornton

RF power transistors, amplifiers and passive products from 1 MHz to 4 GHz. A new line of hermetically sealed broadband transistors.

Adams-Russell Electronics **1027**
SDI Microwave Inc. Division
N. Billerica, MA

A. Lemay, D. Perez, J. Bukowski, T. Marmiani, R. Cayer, E. Higham, G. Gray

Microwave diodes featuring low cost beam-lead PINS, high performance beam-lead PINs, and Schottky barrier diodes. Tuning varactor, hyperabrupt tuning varactor, step recovery diodes, multiplier and limiter diodes. Control components featuring new ultra fast ECL switches, switch modules, detectors, attenuators and phase shifters, high powered limiters, and PIN diode switches.

Adams-Russell Electronics **1027**
Antenna and Microwave Division
Amesbury, MA

H. Adjemian, K. Akerley, G. Barney, D. Crocker, F. Kaczor, R. Schwartz, D. Smith, D. Snader

Manufacturers of test cables to 40 GHz, phase stable cable assemblies, coaxial adapters, DuraPro flexible coaxial cable assemblies, GPS antennas, multi-port (SL) RF connectors.

Adams-Russell Electronics **1027**
Anzac Division
Burlington, MA

M. Smith, J. Berger, D. Grandmaison, D. Ritchie

RF and microwave signal processing components and subassemblies, frequency multipliers, amplifiers, GaAs switches, logarithmic amplifiers, mixers, and digital attenuators.

Adams-Russell Electronics **1027**
Hermetronics
United Kingdom

J. Dunne

European source of supply of hermetic enclosures for RF and microwave circuits. The company manufacturers "power chip" packages with brazed copper base, kovar microwave cases and an "all glass" dual in-line package for RF and logic applications. Hermetronics provides total capability from design, fabrication and plating for short run prototype thru large volume production.

Adams-Russell Electronics **1027**
Micro-Tel Division
Hunt Valley

J. Spero

Micro-Tel develops and produces a broad line of sophisticated microwave surveillance receivers and signal generation/measurement equipment. Their surveillance receiving equipment covers the electromagnetic spectrum fom 30 MHz to 40 GHz and includes computer programmable units.

Adams-Russell Electronics **1027**
Microwave Products Division
Chatsworth, CA

J. Cole, D. Esau

Designer and manufacturer of high efficiency slotted planar array antennas and related electronics for missile, aircraft, satellite and ground based requirements.

Adams-Russell Electronics **1027**
Modpak Division
Burlington, MA

M. Smith

RF shielded enclosures providing access to both sides of PC boards, standard and custom designer and manufactuer.

Adams-Russell Electronics **1027**
RHG Electronics Laboratory Inc.
Deer Park, NY

D. Krautheimer, S. Wolin, B. Berman, B. Yuruckso, D. Weaver

RGH plans to introduce our new 4 to 40 GHz coaxial MM MIC mixer, GFM GaAs FET mixer, a 2 GHz microwave log amp. Low voltage wideband log amps, low cost multicotave double balanced mixers, a new series of miniature starved LO double-balanced mixers. Ultraminiature log amplifiers and an ultraminiature wideband FM receiver for airborne color TV reception.

Adams-Russell Electronics **1027**
Semiconductor Center
Burlington, MA

D. Barlas, D. Ritchie

Design and fabrication of analog low noise, medium and high power GaAs MMICs thru 20 GHz. Foundry services, custom design services, training, packaging, MIL-STD-883C screening thru Class "S".

Adams-Russell Electronics **1027**
Space Center
Waltham, MA

B. Reardon

Dedicated to the production of space qualified RF and microwave components and subassemblies (designed by Adams-Russell's division). Component and subassemblies qualified to MIL-M-38510, MIL-STD-883C Level "S" and SAM80-77-7. Space level program management and traceability.

Advanced Milliwave **1380**
Laboratories Inc.
Westlake Village, CA

J. Inbar, E. McAvoy, T. Mazilu, F. Morrison

Displaying microwave and mm-wave components, including amplifiers (LNA, medium power and high dynamic range), mixers, variable attenuators and phase shifters, hybrid couplers, hybrid networks, custom PIN switches, and subsystems for telemetry and communications applications.

Advance Reproductions Corp. **1212**
North Andover, MA

T. Nigrelli, C. Losanno, S. Alaimo

CAD and photomask making services to the microwave industry.

Aegis Inc. **838**
Olin-Ageis Interconnect Technologies
New Bedford, MA

M. LoFrumento, T. Bianchi, R. Hughes

Microcircuit packages for microwave and hybrid applications. Packages are fabricated and machined in both metal and ceramic designs. Also Laser-trimmed substrates including 99.6 alumina for thin-film applications.

Aerowave **303**
Medford, MA

Airpax Corp. **1133**
Cambridge Division
Cambridge, MD

R. Buckley, C. Tinley, W. Lenihan, D. Fisher, J. Lucci, W. Wright, J. Favinger

Metal enclosures for microwave devices, including precision machined and custom designs. Also, TO-types, plug-ins and all metal flat packages.

Airtron/Hyletronics Group **1301A**
Division of Litton Systems
Morris Plains, NJ

J. Loschiavo, M. Grosso, J. Michalski, N. Hansen, E. Landau, E. Strong, J. Knapp, J. Perkins, E. Smith

Antennas, isolators, circulators, couplers, filters, double ridge components, leads, mixers duplexers, switches, RF subassemblies, stripline packages, amplifiers, waveguide seamless and rigid, switch driver assemblies, microwave attenuators, solid-state verbal attenuators (absorptive).

A.J. Tuck Co. **1378**
Brookfield, CT

A. Tuck, D. Tuck, L. Hunt

Precision electroformed components built to customer requirements. Specialize in WG transitions, filters, cavities, polarizers, OMTs, horns, corrugated horns and WG, miniature bends, miniature double ridge, and millimeter components.

AKON Inc. **1015**
Santa Clara, CA

Alan Industries Inc. **1050**
Columbus, IN

B. Kennedy, M. Burton, S. Kennedy, B. Kennedy

Attenuators, including programmable, con-

tinuously variable, rotary, fixed, toggle switch, rocker switch, pushbutton; also terminations, RF fuses, resistive dividers, impedance matching pads.

Alpha Industries Inc. **1149**
Woburn, MA

N. Bishop, M. Reid, A. Blankenship, B. Harris, W. Dwyer, R. Goldwasser, M. Antell, D. Barker

Microwave semiconductor devices, components, subsystems and ceramic materials.

Alpha Industries Inc. **1149**
Woburn, MA

R. Goldwasser, I. Crossley, L. Raffaelli

GaAs monolithic devices and circuits based on diode and FET technology for microwave and mm-wave applications.

Alpha Industries Inc. **1149**
Advanced Products Division
Methuen, MA

W. Dwyer, B. Jewett, J. Cortelli, D. Barker, R. Hicks, C. Gupta

Millimeter-wave antennas/passive components, subsystems, antennas, multi-function assemblies. Microwave switches, limiters and attenuators.

Alpha Industries Inc. **1149**
Central Microwave Co.
Maryland Heights, MO

B. Harris, D. Emerick, D. Bengfort, B. Ruff

Microwave and mm-wave solid-state sources, power Gunn devices, power GaAs FET amplifiers and Gunn diodes.

Alpha Industries Inc. **1149**
Semiconductor Division
Woburn, MA

M. Reid, N. Bishop, A. Sakelarios, G. Llewellyn

Schottky, Gunn, PIN, abrupt and hyperabrupt, SRD and multipliers, limiter diodes, chip capacitors, Gunn modules and sources.

Alpha Industries Inc. **1149**
Trans-Tech Inc.
Adamstown, MD

A. Blankenship, B. Stiles, R. West, J. Alberici

Microwave ferrites, garnets, dielectrics, dielectric resonators, ceramic substrates, and technical ceramic powders.

American Electronic Laboratories **1270**
Lansdale, PA

A. Gross, J. Wadkowski, M. Nussbaum, D. Ihasz, R. Shillady, J. Iervolino

Microwave and hybrid integrated subsystems; antenna and receiving, radar warning systems; corporate defense systems design and production capability.

American Technical Ceramics **1235**
Huntington Station, NY

D. Davis, B. Murphy, R. Blumkin, L. Brown

UHF and microwave multilayer- and single-layer capacitors.

AMP Inc. **615**
Harrisburg, PA

G. Marino, S. Bair, E. Forney, B. Couper, M. Wamsley, J. Greene, T. Cunniff, C. Nikoloff, J. Murphy, D. Cox, G. Sites

Military and aerospace connectors, crimp SMA, 26 GHz blindmate, RF/signal hybrids, 50 GHz product, triax, TNC, BNC, N-series, SMC, SMB and LCM connectors.

Amperex Electronic Corp. **607**
Hicksville, NY

J. Salvey, P. Fochi, G. Bobin, J. Dowdle, K. Pickett, J. Hanse, J. Ramaekers, T. Hilbers, H. Hench, J. Cagle

RF power MOSFETs, microwave transistors, RF power transistors, transmitting modules, UHF broadcast klystrons, magnetrons, and power tubes.

Ampex Inc. **1317**
Ferrite and Technical Ceramic Division
Sunnyvale, CA

A. Grace

Ferrites (toroids), ceramics, and DRO materials.

Amphenol RF/MW Operations **1010**
Danbury, CT

Amplica Inc. **517**
Newbury Park, CA

C. Carnegie, F. Amt, G. Keithley, E. Nyiri

Microwave low noise amplifiers. Narrowband, broadband and ultra broadband, covering the frequency range from 50 MHz to 22 GHz. Integrated subassemblies, including amplifiers, switches, mixers, filters, etc. Construction depending on frequency and size, including soft board, MIC and coplanar technologies.

Amplifier Research **1327**
Sounderton, PA

D. Shepherd, D. Roth, S. Roth, H. Ligthart

Broadband RF power amplifiers and accessories, 10 KHz to 1 GHz. For laboratory and industrial uses including, NMR/MRI, particle accelerators, RFI susceptability testing, EMP simulation, wattmeter calibration, RF plasma research, RF heating and other medical, biological and physical research applications.

Amplifonix Inc. **1127**
Langhorne, PA

R. Dubois, D. Lucas, T. Miller, A. Riben, R. Leodore

Small signal, medium to low power bi-polar amplifiers from KHz to 2000 MHz. Diode switches and attenuators up to 2,000 MHz.

Anadigics Inc. **507**
Warren, NJ

J. Patel, M. Gagon, J. Smith, R. Rosenzweig, C. Huang, P. Wallace, S. Bharj

Manufacturers of catalog and custom ICs and GaAs MMIC based hybrids and subsystems for defense and telecommunications (microwave and fiber optic) applications. Products include amplifiers, switches, mixers, attenuators, frequency dividers, VCOs, etc., up to 18 GHz. Custom multifunction IC design and 0.5 μm foundry services also available.

Anaren Microwave **834**
East Syracuse, NY

M. Snow, C. Chapman

Mixers, modulators, couplers, power dividers, attenuators, bulter matrices, interfermeters, correlators, IFMs, DRFMs, MICs, and receivers.

Andersen Laboratories **1232**
Bloomfield, CT

E. Hodur, J. Nemecek, R. Nyulassy, D. Lowcavage, J. Ainley, M. Robitaille

SAW filters, oscillators and dispersive delay lines, non-dispersive delay lines, bulk acoustic wave devices, filter banks, compressive receivers and microwave delay lines.

Anghel Laboratories Inc. **918**
Fairfield, NJ

S. Anghel, R. Pechfelder, V. Hazner, W. Miller, J. Mills, E. Petruzelli

Custom microwave components and subsystems for military and commercial requirements from 10 MHz to 22 GHz, including digital phase shifters, digital attenuators, voltage-controlled oscillators, phase-locked oscillators, frequency multipliers, switches, frequency converters and integrated assemblies.

Anritsu America Inc. **1114**
Oakland, NJ

H. Felger, R. Warrick, Z. Pepe, B. Kauffman, M. Heck, D. Bednarzik, E. McDonald

Microwave, RF and fiber optic test equipment, including spectrum analyzers, power meters, frequency counters, microwave system analyzers and signal generators.

Ansoft Corp. **420**
Pittsburgh, PA

Z. Cendes, D. Sun, N. Frye

Five analysis CAE software programs will be demonstrated. These microwave analysis modules allow you to capture the full power of finite element analysis for the cost-effective engineering design of microwave ICs, waveguide components, connectors, transmission lines, resonant cavities and other similar devices.

Apollo Microwaves Ltd. **1013**
St. Laurent, Quebec, Canada

N. Vouloumanos, L. Schatt, Y. Lapointe

Standard and custom-engineered components and subsystems for satellite earth terminals, electronic warfare, radar and communications up to 60 GHz.

Applied Dielectrics **922**
San Francisco, CA

J. Firmin, E. Bond, R. Paine, R. Trine

Fabricate Teflon® based circuitry for the microwave and communications industries, including fine line fabrication; plated-thru-

holes, including aluminum ground planes; machining of the heavy aluminum ground plane; and multilayer fabrication.

Applied Engineering Products **1337**
New Haven, CT

C. Goff, B. Trivelli, R. Morgan, A. Garrett

Subminiature coaxial connectors in series SMA, SMB, SMC (MIL-C-39012 QPL), flexible and semi-rigid cable assemblies.

Armatek **907**
Richardson, TX

Artech House **1140**
Norwood, MA

W. M. Bazzy, M. Walsh, E. Mokas

Technical books on microwave, radar and telecommunications technology, theory and applications.

ASM Lithography Inc. **1078**
Tempe, AZ

R. Melief, M. Zoppoth

Philips EBPG-4 Beamwriter® and GaAs direct write and mask making lithography.

Aspe Inc. **311**
Towaco, NJ

R. Sachs, A. Sachs, L. Tao, E. Emery, F. McIver, K. Pilarz

A complete line of glass-to-metal seals.

Astrolab Inc. **301**
Warren, NJ

M. Toma, J. Toma, S. Toma, O. Johnson

Manufacturers and designers of microwave cable assemblies, cable, connectors and other passive components.

A. T. Wall Co. **818**
Warwick, RI

C. Gibbs, C. Deinert, R. Huntsman, R. Hudson, B. Diggett, J. Matzen, S. McCalley, M. McCalley

A full range of precision rigid waveguide tubing manufactured from aluminum, copper, brass, copper-coated invar, coin silver, and many other alloys. Also, a complete range of flexible waveguide core stock.

Austron Inc. **1317**
Austin, TX

W. Wordsworth

Loran-C based time and frequency standards, and oven-controlled crystal oscillators.

Automatic Testing & Networking **518**
Woburn, MA

V. Adamian, K. Rochford, A. Papetti, C. Giambarresi

A complete on-wafer probing station for automatic noise and "S" parameter characterization. The system will determine F_{min}, Y_{opt}, R_n and S_{11}, S_{12}, S_{21}, S_{22} of the devices under test simultaneously. Model NP4 electronic tuner noise parameter test set automatically measures noise and gain parameters of RF and microwave transistors for the source-pull market. Model VZ16 load-pull test set automatically measures the power gain parameters of RF and microwave transistors for the load-pull measurement market.

Avantek Inc. **502**
Santa Clara, CA

Avcom of VA Inc. **718**
Richmond, VA

A. Hatfield, P. Gaglio, T. Bullock, L. Powers, V. Perratore, K. Nolan

Spectrum analyzers, test equipment and accessories for the satellite communication and microwave industries, including the PSA-35A portable spectrum analyzer, sweep generators, tracking generators and others. Also, SCPC, audio subcarrier and video satellite receivers for domestic and international reception, including commercial, broadcast, SMATV, institutional and private use receivers.

AVX Corp. **804**
Myrtle Beach, SC

R. Phillips, D. Lightweis

MLC microwave chips BP, BG; CORII-14; SLC single layer chips; Accu/F thin-film capacitors; leaded commercial MLC (AQ21 style); ACCU-GAP; SLC extend cap range.

Aydin Microwave Division **104**
San Jose, CA

J. Harris

Ball **315**
Efratom Division
Irvine, CA

C. Moyer, E. Yrisarri, Jr., Terry Brandt, W. Smith

Atomic clocks, rubidium frequency standards and test equipment modular systems.

Balo Hermetics Inc. **401**
Butler, NJ

E. Rapoza, R. Soberman, A. Dudas, M. O'Keefe, R. Morgner, D. White

Microwave kovar glass-to-metal hermetic packages, high rel 50 ohm I/O ports for high frequency applications (30 GHz). We specialize in custom configurations for demanding applications, including copper-tungsten-moly heat conducting ports, glass-free 50 ohm air launches and injection molded kovar bodies.

Barry Industries **1324**
Attleboro, MA

H. Smith, R. Barry, J. Karp

Microwave chip resistors, attenuators and terminations. Microstrip and stripline soft dielectric substrates and circuits. Introducing new broadband termination and surface mountable attenuator.

Bertram D. Aaron & Co. Inc. **1022**
Plainview, NY

B. Aaron, E. Pores, G. Murphy, R. Rubin

Microwave engineering representatives

Bolriet Technologies Inc. **942**
Carleton Place, Ontario, Canada

M. Leitner, H. Leitner, A. Nellestyn, S. Nellestyn, A. Mohr, J. Ruxton, R. Tomar

Passive and active microwave and mm-wave components, including antennas, planar circuits, power dividers, filters, radomes, phase shifters and printed circuits.

Boonton Electronics **914**
Randolph, NJ

R. Morrell, M. Struble, R. Anlas

Power meters, RF/FMS voltmeters, impedance measuring instruments, audio test instruments, modulation meters and analyzers, signal generators, calibrators and IEEE-488 interface and accessories.

Buckbee-Mears **1307**
St. Paul, MN

J. Confer, F. Grimm, P. Koosmann, P. Meagher, T. Stevens, C. Over

Specialty circuits including microwave antenna circuits boards, 48" x 36" PTH capabilities, multilayer boards, 40 oz. cu. copper circuits.

Cabot Electronic Ceramics **1364**
Greenville, RI

B. Joly, B. Shaw, M. Seely, K. Thurston

Hermetic and non-hermetic ceramic packages for small signal diodes and transistors, MMICs, and RF power bipolars and FETs.

California Amplifier **1311**
Camarillo, CA

D. Nichols, F. Brown, R. West, J. Ramsey

Microwave integrated subsystems, low noise medium power amplifiers, DROs, VCOs.

California Eastern Laboratories **307**
Santa Clara, CA

J. Swan, L. Lea, R. Tyson, R. Chou, D. Apte, T. Cummings, K. Dixit, A. Armstrong, G. Davenport, J. D'Agostino, J. Kellett

Full line of GaAs and silicon semiconductors, including GaAs analog MMICs, silicon MMICs, high speed GaAs digital logic ICs, GaAs and silicon prescalers, low noise hetero junction and MES FETs, power GaAs FETs, small signal bipolars, power bipolars, hybrid ICs, GaAs and silicon varactor, Schottky and impatt diodes.

California Micro Devices **317**
Milpitas, CA

CANCAD Technology **1406**
Winnipeg, MB Canada

Cascade Microtech Inc. **962**
Beaverton, OR

D. Carlton, E. Strid, K. Jones, B. Hopkins, T. Hanna-Smith, J. Marron

Microwave and mm-wave wafer probing equipment and CAT tools.

CDB Enterprises Inc. **1317**
Huntington, NY

C. Berger, J. Hackett, R. Holifield, G. Tahlmore, R. Roman, N. Cheshire

Represented products of: Adams-Russell (A&M Div)*, Ampex, Austron, C-Ran, CTT*,

Ditom, Dynatech Microwave*, Dynawave*, Efratom*, Fenwal (APD), KDI Electronics*, Krytar*, Metelics*, MEC, MSE, MSI, Millitech*, NSL, Omni-Wave, Omohundro, Premier Microwave, Rantec, Rotary. *See separate exhibition.

Celeritek Inc. **1036**
San Jose, CA

R. Jones, G. Koker, S. Fujisaka, T. Herdt

GaAs solid-state amplifiers, MMICs and subsystems.

Ceramic Devices **1402**
San Diego, CA

Ceramics Process Systems **1207**
Watertown, MA

F. Bachner. E. Barringer, R. Block, R. Cook, B. Foster, G. Neil

Microstrate® ceramic thin-film substrates with gas-fired 99.8% aluminia surfaces less than 2 microinches CLA. Viastrate™ ceramic thin-film substrates with solid metal vias for electrical feed throughs and thermal paths in 99.5% alumina. 99% alumina/tungsten multilayer ceramic packages and substrates with thin film compatible surfaces.

Circuit Busters **1216**
Stone Mountain, GA

Coleman Microwave Co. **703**
Edinburg, VA

K. Coleman, J. Coleman, G. Brinkley, D. Braithwaite

Microwave filters from 0.1 to 26 GHz lowpass, highpass, bandpass, band-reject, tunable, fixed-tuned waveguide coax. Aluminum dip brazing, waveguide bends, twists, and straight section.

Coleman Microwave Co., West **703**
San Diego, CA

K. Coleman Jr., N. Coleman, M. Emswiller

Precision machining and fabrication. Milling and tuning, quality system IAW MIL-I-45208. Engineering design and support for CMC and related products.

Communication Techniques Inc. **1103**
Whippany, NJ

M. Markson, H. Faust, J. Payne, B. Badami, L. Payne

Solid-state microwave signal sources, low phase noise phase-locked sources, including dielectric-stabilized oscillators, and frequency synthesizers in discrete bands in the range of 30 MHz to 23 GHz. Also, 70 and 140 MHz modulators and demodulators, frequency test translators, and COHO/Stalo subsystems to add MTI capability to pulsed magnetron radars.

Compac Development Corp. **1210**
Holbrook, NY

C. Groves, P. Rao, V. Valenti, T. Molinaro

RFI/EMI shielded enclosures, standard and custom. RF connectors, filters to filter feedthrough, coaxial attenuators, RF transfer switches and power relays.

Compact Software **1250**
Paterson, NJ

U. Rohde, J. Brocklehurst, P. Mikil, R. Gilmore, K. Serven, T. Kwan, J. Lees, L. Perez, M. Eron, L. Carlin, J. Brown, J. Schepps

From concept to final circuit layout, Compact Software provides all the tools necessary to realize your designs. A wide range of synthesis programs are available in addition to both linear and nonlinear analysis and optimization programs. Schematic capture, layout masking, time domain, and network analyzer communications capabilities also are available.

Compex Corp. **1335**
Medford, MA

G. Gordon, C. Ennis

Single layer ceramic parallel plate microwave chip capacitors available with gold or tin finish, as well as metalized and unmetalized Class I and II substrates. Split electrode, binary, arrays and custom electrode configuration available in all dielectrics.

Complete Hybrid Parts Supply **1175**
Fairfield, NJ

P. Kelleher, J. Aliperta, M. Lawless

Distributor of chip capacitors, resistors, inductors, semiconductors, diodes, transistors, linear, digital (IC) connectors SMA-SMB-SMC type.

Component General Inc. **1366**
Tampa, FL

J. Cook, R. Davo, L. Cook

Power base mounted components, including resistors, terminations and attenuators. SMA terminations, conduction cooled loads, power chips, including resistors, terminations, attenuators. Coaxial components, including rods, discs, and T-Pads. Flange teminations.

Composite Technical Alloys **802**
Attleboro, MA

Comstron Corp. **409**
Melville, NY

L. Borow, B. Papaieck, S. Rosenfield, F. Carretta, B. Meditz, J. Leccese

Switched filters with linear phase and constant delay design for use in systems where contiguous, variable bandwidth with good time domain response is required. Frequency range is from DC to 12 GHz plus any number of channels can be accommodated. Also FS-2000 family of frequency synthesizers

Connecting Device Inc. **304**
Long Beach, CA

J. Dunbabin, C. Wirtz, R. Black, W. Carpenter

Microwave connectors and cable assemblies, including radius right angle SMA, SSMA, TNC, N and special connectors. Semi-rigid, handi-form and flexible cable assemblies. Adapters, hermetic connector, assembly and measurement tools.

Coors Ceramics Co. **711**
Golden, CO

T. Glass, J. Knight, K. Heimbrock, R. Langman, B. Flock, B. White, D. Federschneider, E. Biltz

Glass-to-metal hermetic packages, thick- and thin-film substrates, multi-layer ceramic packages.

Copper and Brass Sales Inc. **1336**
Detroit, MI

D. Eberle, L. Buhl, G. Clark, B. Doran

OFE copper electronic grade cupro nickel, electronic grade nickel, specialty non-ferrous alloys, glass sealing nickel alloys.

Cougar Components **876**
Sunnyvale, CA

D. Cheadle, N. Atherton, J. Musquez

Hybrid RF cascadable amplifiers and associated signal processing components.

C-Ran Corp. **1317**
Largo, FL

R. Wenner, A. Kruger

CNI test equipment, hi-rel power supplies, omega antennas.

CTT Inc. **308**
Santa Clara, CA

B. O'Connor, J. Meyers, D. Tai, C. Burger, G. Talmore, J. Hacket, D. Hollyfield, B. Romen

Solid state GaAs FET amplifiers from 10 MHz to 40 GHz. Low noise and power up to 16 W.

Daden Associates Inc. **1356**
Laguna Hills, CA

L. Jones, D. Hook, D. Henry

RF and microwave filters from 1 MHz to 26.5 GHz bandpass, bandstop and lowpass, highpass.

Daico Industries **958**
Compton, CA

P. Nooteboom, W. Grunau, G. Anderson, D. Kleven

RF switches, digitally-controlled attenuators, voltage-controlled attenuators and phase shifters.

David Sarnoff Research Center **937**
Princeton, NJ

R. Camisa, Y. Naryan, W. Slusark, V. Korsun, J. Schepps, S. Perlow, B. Epstein, J. Brown, D. Brown, E. Belohoubek, E. Denlinger, C. Catanese, F. Marlowe

III-V compound research, MMICs, materials growth, CAE/CAD/CAT, optoelectronics, reliability assessment and failure analysis, technology assessment, EW subsystems and components, hybrid circuits, electroformed interconnects, affordable packaging.

Diamond Antenna & Microwave **214**
Winchester, MA

A. Hovannesian, T. Glaze, G. Aquaviva

Passive microwave components, including

coaxial and waveguide rotary joints.

Dielectric Laboratories Inc. **912**
Cazenovia, NY

P. Kip, D. Lupfer, G. Vorlop, J. Stauring, P. Koglmeier

Single layer microwave ceramic capacitors, QPL approved porcelain capacitor test fixtures, high dielectric constant substrates, high voltage and energy storage capacitors.

Digital RF Solutions Corp. **310**
Santa Clara, CA

E. McCune, M. O'Deady, D. Hammed, A. Olson, R. Zavrel, B. McCune

The DRFS-3250 is a number controlled modulated oscillator with 12-bit phase output resolution. It has a clock frequency up to 35 GHz with sinusoid synthesizers from DC to 17.5 MHz. Input interface circuitry is included to simplify application in the basic tuning modes: 24-bit direct parallel, 8-bit bus, and quadrature clocked serial. CMOS and surface mount technology is employed.

Ditom **1317**
San Jose, CA

R. Hassett

Wide-band junction circulators and isolators.

Dorado Co. **1276**
Seattle, WA

DuPont Electronics **806**
Wilmington, DE

M. Houser, A. Mones, G. Rotsch, J. Lyles, J. Menaugh, A. Marrow, C. Wilker

Du Pont Electronic will introduce metalizated microwave circuit substrates providing electrical performance comparable to thin film at the cost structure of thick film. For applications from 1 to 20 GHz, photodefined circuitry can offer you levels of resolution, density, and conductivity typically associated with thin film and yet provide the economies associated with thick film materials.

Dynatech Microwave Technology **411**
Calabasas, CA

J. Wleklinski, M. Okano, M. Pressler, B. Lyman, T. Jamias, B. Wise, K. Charti, S. Fischer

DC to 40 GHz coaxial switches, passive microwave components, couplers, power dividers, hybrids, and filters.

Dynawave Inc. **1362**
Georgetown, MA

R. Iwanicki, C. Lewis, D. Gartzke, R. McLaughlin, A. Scanelli

RF coaxial connectors, cable assemblies, interconnects and various connection accessories.

Eaton Corp. **936**
Electronic Instrumentation Division
Los Angeles, CA

J. Zack, J. Cacciola, R. Rapant, A. Brown, B. Vancata

Fast switching frequency synthesizers with modulation capabilities and wide frequency range, noise figure measurement instrumentation, and various RF and microwave test and measurement equipment.

Eaton Corp. **508**
Microwave Product Division
Sunnyvale, CA

EDO Corp. **1169**
Barnes Engineering Division
Shelton, CT

R. Stetson

A complete range of analytical instruments providing true temperature mapping of powered up microelectronic devices for applications in design, failure analysis and reliability engineering.

EEsof Inc. **950**
Westlake Village, CA

C. Abronson, W. Childs, J. Lindaver, F. Hof, P. Wilhelmsen, R. Patston, D. Mutch, K. Henderson, R. Rivera, B. Dunn, M. Bush-Weller

Touchstone® for the analysis, simulation and optimization of linear microwave circuits. Libra™ performs harmonic balance simulation; microwave SPICE™ for nonlinear, time-domain circuit simulation; E-Syn™ for synthesis of complex networks; ANACAT™ for computer-added tests; Mi-CAD II™ for computer-aided design and layout.

EEV Inc. **1042**
Elmsford, NY

P. Plurien, T. Soldano, F. Oakes, A. Sayers, A. Markiewicz

State-of-the-art traveling-wave tubes, magnetrons, microwave devices, mm-wave components.

EIP Microwave Inc. **1170**
San Jose, CA

L. Johnson, J. Khazman, B. Loft, D. Mulder, M. Roos

Modular vector network analyzer, CW and pulse microwave counters, and sources.

Electro-Films Inc. **1368**
Warwick, RI

B. Black, F. Urrico, R. Smith, T. Loprosti

Thin-film metalized plates, patterned substrates, fine line range couplers, metalized through holes and patterned wrap around edges, microwave chip resistors and inductors, thin-film attenuators.

Electro Impulse Lab. Inc. **1018**
Red Bank, NJ

T. McNicholas, M. Rubin

Dry, forced-air cooled, FM dummy loads, RF calorimeters, wattmeters and attenuators and introducing our new model DPTC-75KFM (replaces our DPTC-65KFM).

Electromagnetic Sciences Inc. **1019**
Norcross, GA

S. Schaefer, B. Hudson, J. Donehoo, D. Deck, B. Alverson, J. Leddy, J. Fuller, T. Sharon, R. Bertrum, J. Tavormina, G. Harrison, H. Prather

Design and produce microwave components, microwave subsystems, and radio-linked data terminals for communications and related industries. Our products are integral parts of satellite and land-based communications systems, radar and EW systems, and computer-controlled materials handling systems.

EMC Technology Inc. **1300A**
Cherry Hill, NJ

P. Semitschew, S. Rollin, M. Steidlitz, L. Catalina, M. Bergh, M. Ready, B. Hawn

Attenuators, connectors, DC blocks, loads, resistors, terminations; in chip flange, pill and coax. Programmable attenuators and custom hybrids.

Emerson & Cuming Inc. **1348**
Canton, MA

Microwave absorbers, anechoic chambers, RF attenuation materials, absorber for antenna control, surface current attenuation materials, RCS reduction materials.

EMF Systems Inc. **512**
State College, PA

J. Chernega, J. Chernega, M. Cleland

EMF designs, develops and manufactures solid-state oscillators and associated circuity from 10 MHz to 18 GHz.

Engelhard-Precision **716**
Microwave Circuits
Milford, MA

T. Petit, E. Loeswick, S. Carty, D. Moody, E. Arnold, L. Loeswick

Technology in metalized patterned substrates, large couplers, patterned ferrites, glass lids and microwave hybrid assembly capabilities.

Epitronics Corp. **702**
Phoenix, AZ

R. Peters, D. Davito, L. Santos, R. Adams

GaAs and GaAlAs III/V epitaxial materials and services.

EPSCO Inc. **1061**
Microwave Div.
Westwood, MA

W. Coffin, J. Langley, R. Posner, R. Ranslow, J. Dhimos, J. Shalhoub, B. Frazier

GaAs FET power amplifiers from 2 to 16.5 GHz, output power levels from 30 dBm. RF modules at power levels up to 40 W and frequency ranges from 20 MHz to 3 GHz. High power amplifiers from 2 to 1000 MHz and output power levels over 1000 W. High power CW and pulse signal sources with cavity oscillator and magnetron plug-in heads. CW frequencies from 50 to 2000 MHz and power to 250 W. Pulse power up to 1000 kW and frequency ranges from 150 MHz to Ku-Band.

Epsilon Lambda Electronics **603**
Geneva, IL

R. Knox, W. Cavallo

Millimeter wave, electronically tuned and

mechanically tuned, Gunn diode oscillators. Millimeter wave subsystems research and development.

FEI Microwave **504**
Sunnyvale, CA

M. Adamo, B. Bridge, D. Bush, P. Clark, B. Clarke, G. Korb, F. Lemmon, W. Patton, T. Rosas, P. Thesing

Microwave devices, components and vertically integrated assemblies for the EW, radar, missile, satellite, test equipment and telecommunications markets.

Ferranti **1334**
Dundee and Stockport, UK

J. Lowe, M. Wood, B. Lee, D. James

Circulators and isolators up to 40 GHz. Filters and multiplexers, receiver protectors and loads. Transmitter tubes radar for D, E/F, I and J band. Power supplies. LNA, PLO, VCO and YIG oscillators, and GaAs FET power amplifiers.

Ferretec Inc. **403**
Milpitas, CA

A. Rosenzweig, F. Kuttner, W. Keane, W. Chan

Microwave test instrumentation, including a demonstration of a new dynamic range extender providing owners of scalar network analyzers with 100 dB on-screen dynamic range from 2 to 20 GHz. Also shown will be automatic tracking filters, YIG oscillators and filters covering 0.5 to 26.5 GHz, and receiver subsystems.

Filtran Microcircuits Inc. **216**
Ottawa, Ontario, Canada

C. Sutton, K. Ramachandran

Microwave circuits on PTFE and ceramic are manufactured to customer specifications.

Flann Microwave Inc. **970**
Los Angeles, CA

G. Heane, I. Crane

A rotary vane attenuator will be on show for the first time. The displayed unit will operate in the "MILSTAR" band; the series will cover 26.5 to 140 GHz. New Q-band ultra high directivity multi-hole couplers, and waveguide switches with drivers.

Flexco Microwave Inc. **1314**
Port Murray, NJ

W. Pote, J. Borja, R. Tappen, R. Walker, K. Eidson, B. Sellitto, L. Dakis, B. Beck, B. Kamras, K. Nolan, B. Patterson, C. Mulvihil

Passive components and signal processing circuits to custom, engineering intense multi-function assemblies. Qual-Tech offers a complete line of digital phase shifters, attenuators, and bi-phase modulators. Additional products available include couplers, power dividers, duplexers, hybrids, detectors, bias tees and DC blocks.

Florida RF Labs Inc. **934**
Stuart, FL

D. Sampson, G. Fenex

Thin-film microwave resistor products including resistor, terminations and attenuators; stripline, microstrip, high power, coaxial and waveguide components. RF coaxial cable assemblies, including flexible, semi-rigid and phase matched. Coaxial delay lines.

Frequency-West Inc. **1158**
San Jose, CA

J. Tarvin, L. Becker, B. Stookey, B. Swartz, N. Gri

Free-running and phase-locked microwave sources and dielectric resonator oscillators. Microwave transmitter sources. Manually-tuned and auto-locking low noise microwave synthesizers.

FSY Microwave Inc. **1239**
Rockville, MD

J. Yania, W. Forrestel, J. D'Ostilio, R. Siushansian

RF and microwave filters, diplexers, multiplexers, integrated assemblies, cavity filters, waveguide filters, internally terminated diplexers, microstrip, stripline and suspended substrate filters, interdigital and combline filters.

Fujitsu Microelectronics Inc. **1242**
Santa Clara, CA

S. Rupp, N. Corpron, B. Patrick, B. Utter, M. Hanna, T. Saito, Y. Hirano, M. Fukuta, K. Yano, K. Tamaki

Microwave low noise and power FETs, microwave bipolar transistors, microwave power amplifiers, HEMT devices, GaAs MMICs, power FETs for pulsed applications, and power FETs for linear applications.

Gain Electronics **901**
Somerville, NJ

Gamma Microwave Inc. **1109**
Los Gatos, CA

T. Brinkoetter, G. Gianatasio

Microwave phase-locked oscillators and synthesizers.

Gel-Pak/Vichem Corp. **1135**
Stanford, CA

V. Althouse, S. Graves

Trays, carriers, and shipping systems for handling die, substrates, hybrid subassemblies and packaged devices.

General Microwave Corp. **1201**
Amityville, NY

M. Wind, J. Schindler, A. Caggiano

Microwave components and instruments, including hermetically-sealed and drop-in module voltage, current and digitally-controlled PIN diode attenuators, freuqency translators, phase shifters, PIN diode switches, and average and peak (single- and dual-channel) power meters.

Gennum Corp. **1344**
Burlington, Ontario, Canada

E. Fankhauser, C. Marshall, G. Purves, R. Amorosi, M. Yaw, D. Roussel

ICs for RF applications, including broadband high linearity amplifiers and RF custom and semicustom ICs.

GHz Technologies Inc. **1115**
Montreal, Canada

Z. Huszar, D. Geller, J. Lindover, L. Lindover, M. Gendron, N. Geller

Ferrite devices, filters, couplers, terminations and adapters.

GigaBit Logic **1303**
Newbury Park, CA

Giga-tronics Inc. **900**
Pleasant Hill, CA

P. Edwards, J. Scheck, H. Mette

Multi-band and single-band microwave and mm-wave sources, signal generators and sweepers.

Gilbert Engineering Co. Inc. **1222**
Glendale, AZ

M. Covino, J. Zorzy, D. Burris

Microwave connectors, including SMA, TNC, N and special designs. Between and within-series precision adapters. G874 and G900 connectors and components.

Harris Microwave Semiconductor **408**
Mipitas, CA

V. Kovacevic, S. Hecker, N. Pressel, L. Perry, G. Smith, K. Jones, K. Thomas, K. Zabel

GaAs products and services, including GaAs FETs, GaAs MMICs, GaAs digital ICs, including custom and semicustom ranging from full custom to foundry.

Haverhill Cable & Mfg. Corp. **1332**
Haverhill, MA

T. Kneeland, D. Kneeland

Semi-rigid coaxial cable. Various types, finishes and sizes, Mil-Spec and commercial.

Herotek Inc. **900A**
Sunnyvale, CA

C. Lai, P. Lau, C. Lai, H. Yang

Microwave detectors from 0.01 to 40 GHz, limiters, comb generators, PIN switches, filters, solid-state amplifiers. MIC products and microwave subsystems.

Hewlett-Packard Co. **858**
Microwave Semiconductors Division
San Jose, CA

GaAs Schottkies featuring low noise figure at 44 GHz of 6.5 dB, low capacitance of 0.05 pf and 9 gram beam pull. Available in single, series pair, antiparallel pair, bridge and ring quad configurations.

Hewlett-Packard Co. **858**
Network Measurement Division
Santa Rosa, CA

HP 8720A 20 GHz vector measurement system. 40 GHz coaxial vector/scalar network analyzer systems. Pulsed RF testing with the HP 8510B. 6 GHz vector network analysis using the HP 8753B. HP 8508A vector voltmeter for high frequency voltage/phase measurements. Measure optical/optoelectronic/electrical components with the

HP 8702A lightwave component analyzer. Demonstration of current CAE software offerings.

Hewlett-Packard Co. **858**
Santa Clara Division
Santa Clara, CA

The HP 5371A makes measurements in the modulation domain, frequency vs time. The 5371A is well suited to demodulation of FM, FSK, PSK and similar signals. It can characterize agile sources on a single-shot basis. Additional applications include studies of frequency stability and characterizing components such as VCOs.

Hewlett-Packard Co. **858**
Signal Analysis Division
Rohnert Park, CA

B. Owens, M. Pahls, D. Derickson, V. McOmber

HP71400A lightwave signal analyzer measures lightwave modulation from 1200 to 1600 nm on carrier signal from 100 Hz to 22 GHz with sensitivity of 60 dBm (optical). HP8562A option 026-portable, MIL-rugged microwave spectrum analyzer preselected to 26.5 GHz.

Hewlett Packard Co. **858**
Spokane Division
Spokane, WA

J. Richardson

The HP8645A agile signal generator from 252 kHz to 2060 MHz. The HP8645A has 15 μs switching speed, an SSB phase noise of -127 dBc at 500 MHz at offsets of 20 KHz and external FM modulation of 20 MHz deviation.

Hewlett-Packard Co. **858**
Stanford Park Division
Palo Alto, CA

Complex modulation simulator from 10 to 3000 MHz for modern radar test. Noise figure measurement system from 10 MHz to 18 GHz with ATN model NP4. Pulsed component testing for phase parameters in the transition mode. New economy single-channel power meter and 3 new sensors to 50 GHz in 2.4 mm coax.

Horizon House Microwave Inc. **1140**
Norwood, MA

W. Bazzy, B. Bossard, C. Ayotte

Microwave Journal and *Journal of Electronic Defense* publications and Artech House books.

Huber & Suhner Inc. **218**
Woburn, MA

D. Binch, H. Manser

RF and microwave cables, special cables including super-screened versions with a 150 dB screening efficiency.

Hughes Aircraft Co. **200**
Microwave Products Division
Torrance, CA

C. Breeze, J. Nichols, R. Larson, R. Brownell, M. Smith, K. Conklin, S. Edberg

Millimeter-wave and solid-state components, devices, test equipment, subsystems. Commercial and instrumentation TWTAs. Radar cross-section measurement systems and imaging systems.

Hypres Inc. **1407**
Elmsford, NY

Innowave **1211**
Morgan Hill, CA

R. Sanders, S. Virk

Isolators and circulators, gain equalizers, Schottky, PIN and tunnel diodes, MOS capacitors, and detectors and limiters.

Insulated Wire **316**
Ronkonkoma, NY

Integra Microwave **411**
Milpitas, CA

E. Macomber, I. Andres

Sweep generators to 60 GHz, synthesized sweep generator to 20 GHz, scalar network analyzer, panoramic receivers and YIG filters.

Integrated Microwave **976**
San Diego, CA

D. Clark, R. Mouber, M. Monte

RF/microwave micro-miniature filters, multiplexers and integrated subsystems in the DC to 26.5 GHz frequency range.

Inter-Continental Microwave **318**
Santa Clara, CA

W. Schuerch, R. Wolfe, M. Gardner, S. Law

Microwave test fixtures to 26.5 GHz for microwave semiconductors (chips or packaged devices), thin-film assembly test fixtures for amplifiers, oscillators, calibration kits for deembedding, and custom made test fixtures.

Isotronics Inc. **122**
New Bedford, MA

D. Hanley, K. Sullivan, A. Kirkaldy, L. Vitale

Isotronics is a specialist in manufacturing hi-rel, all metal microwave packages that meet MIL-STD-883 specs. Available with patented military armor glass®, microwave packages also can be injection molded, a process that can shorten delivery, reduce costs and improve yields on complex designs.

ITT Gallium Arsenide **1412**
Roanoke, VA

JFW Industries Inc. **1241**
Indianapolis, IN

J. Walker, D. Whisler

JFW model S-50-005, SPDT IF/RF switch, internally terminated with integral TTL driver from 10 to 500 MHz, VSWR of 1.4:1, +5 Vdc at 80 mA. Switching is accomplished by the TTL logical signal. Also build attenuators, terminations, detectors, power dividers and many styles of switches.

Johanson Dielectrics Inc. **929**
Burbank, CA

F. Luhrs, D. O'Toole, S. Cole

Ceramic chip capacitors, multiple capacitor arrays, high-Q capacitors, single layer capacitors.

Johanson Manufacturing **927**
Boonton, NJ

E. Fagerlund, G. Wilson, B. Kappner, T. Rowan

Variable air capacitors, dielectric resonator oscillators, phase-trim, Giga-trims.

John Fluke Mfg. Co. **1358**
Everett, WA

R. Goodall, R. Davison, J. Martins, E. Olson

Test and measurement equipment to include a full-line of RF programmable synthesized signal generators up to 2 GHz, and a line of timer/counters and digital storage oscilloscopes.

Journal of Electronic Defense **1140**
Norwood, MA

H. Gershanoff, B. Tobey, D. Herskovitz, T. Bossard, J. Hinojosa

The monthly publication of the AOC (Association of Old Crows), focuses on electronic warfare, command control, communication and intelligence, avionics, military computing and other military electronics technologies.

Kaman Instrumentation **516**
Colorado Springs, CO

S. Perry, T. Dillahunty, D. Philips, J. Smith

RF cable assemblies, including semi-rigid, stainless-steel jacketed mineral (SiO_2) or teflon insulated cable assemblies. They feature tight bend radii, minimum phase change with temperature and low insertion loss change.

Kay Elemetrics Corp. **908**
Pine Brook, NJ

V. Hixson

Step attenautors, programmable attenuators, voltage-controlled attenuators, rotary attenuators, continuously variable and audio attenuators.

KDI Electronics Inc. **1038**
Engelmann, Pyrofilm,
Triangle Division
Whippany, NJ

D. McConnell, C. Schraufnagl, M. Snyder, H. Bailey, H. Shinn, V. Caruso

Microwave resistors, components, oscillators and subassemblies. Featuring MIC-DRO oscillators and thick-film switches, digital attenuators and microwave ICs with internal C-MOS TTL compatible drivers.

Keene Technologies **1231**
Bear, DE

K. Gryger, R. Tull, D. Watt, J. Taylor, H. Duus, M. Carlson, B. Bieschke, R. Lasage, A. Williams, R. Petrick, D. delToro, D. Welch, T. Zawislack

Low loss laminates and EMI-RFI shielding thermabond.

Kings Electronics Co. **1328**
Tuckahoe, NY

F. Pack, S. Jackson

RF coaxial, twinaxial, and triaxial connectors; broadcast products, video patch panels and patch cords; MIL-1553 databus connectors; connectors for data transmission; RF printed circuit board connectors; attenuators and terminations; new GBR video patching systems; RF, BNC, TNC, N SMA, C, connector adapters, isolated ground types, with crimp and crimp captive contacts; M39012 Mil Spec types; custom cable assemblies. Connectors and tools for 0.141 and 0.085 semi-rigid cable.

K&L Microwave Inc. **1102**
Salisbury, MD

R. Bernstein, P. Leo, K. Jenkins, D. Chambers, J. Price, C. Schaub, G. Carmean, J. Tinkler

Microwave and RF components from 500 KHz to 40 GHz. This broad range of components includes miniature filters, cavity and waveguide filters, crystal filters, tunable filters, frequency agile and integrated subassemblies as well as coaxial switches to 26.5 GHz and RF switching matrices.

Kopin Corp. **112**
Taunton, MA

R. Bates, J. Salerno, P. Smith, J. Fan, J. Lee

Epitaxial III-V layers grown on bulk GaAs substrates, epitaxial III-V layers grown on bulk Si substrates, silicon on insulator wafers, GaAs photovoltaic products.

Krytar Inc. **909**
Sunnyvale, CA

T. Russell, M. Molley, C. Gentile

Ultra broadband components including directional detectors, directional couplers, zero bias Schottky detectors, crystal detectors, 180° 3 dB hybrids, 90° 3 dB hybrids. Components cover frequency range from .01 to 40 GHz and have ultra-flat frequency response.

Kyocera America Inc. **1209**
San Diego, CA

A. Buck, L. Gibson, B. Gatta, C. Gallo, B. Heritage, J. Bartholomew, J. Dooley, B. Osmun

Ceramic packages for microwave and RF devices, ceramic substrates, thin-film ceramic substrates.

Lasertron Inc. **114**
Burlington, MA

E. Brody, R. Plastow, D. Hardwick, W. Diamond

Recently introduced QLM-MW series of laser modules, QLXS-MW laser transmitters, and QDE-MWS series of microwave bandwidth GaInAs detectors designed for operation at microwave frequencies up to 10 GHz.

Lectronic Research Labs **100**
Camden, NJ

Litton Electron Devices **919**
San Jose, CA

C. Bohland, D. Boyd, B. Franke, P. Mellen, J. McPherson, D. Merkley, M. Miller, D. Soshea, A. Woo

Manufacturer of GaAs FETs, amplifiers, oscillators and subsystems.

Locus Inc. **514**
State College, PA

S. Dance, E. Brem, J. Dixon

Low noise amplifiers, redundant and triple redundant LNAs, GaAs FET power amplifiers, high dynamic range multicouplers, converters, image reject mixers and microwave oscillators.

Log Metrics Inc. **1214**
Plainview, NY

E. Blum

Traveling-wave tube amplifiers including microprocessor based A230/330 series, suceptability, test sets 40 to 200 V/M, communications HPA's boresight test carts, EMI/RFI electronic warfare systems.

Loral Microwave **1158**
Frequency Sources
Chelmsford, MA

J. Rabbitt, R. Cory, D. Langan, T. Antonellis

Silicon abrupt junctions, GaAs and frequency linear TVARs, PINs, beam-lead PINs, spiral inductors, MNS chip capacitors, UHF/VHF hyperabrupt TVARs, limiters and noise diodes.

Lorch Electronics Corp. **1131**
Englewood, NJ

J. Lorch, R. Sproul, W. Taylor, M. Gilbert, A. Briggs, R. Felsenheld, N. Ellen

RF, IF and microwave signal processing components, including mixers, filters, electronic switches and switch matrices, digital attenuators, digital phase shifters, variable attenuators, phase comparators, amplifiers, hybrid junctions, power splitters, directional couplers, transformers and quadrature hybrids.

Luxtron **1011**
Mountain View, CA

H. Berek

Luxtron will exhibit its model 750 Fluoroptic Thermometer along with selected probes and accessories which allow its use in RF and microwave application, vacuum processing, IC and other microwave devices.

M/A-Com **1001**
Active Assemblies Division
Tempe, AZ

J. Powell, D. DeGear, B. Hucklebury, R. Rupt, R. Perco, J. Lembert

Design and manufacture microwave amplifiers, oscillators and multi-function active assemblies for the worldwide military marketplace.

M/A-Com **1001**
Advanced Semiconductor Operations
Lowell, MA

L. Ward, J. Dalton, R. Cavelieri, D. Frickland

GaAs MMICs and substrates which include switches, attenuators, phase shifters, semi-insulating substrates. Development: narrowband and broadband MMIC amplifiers, 0.25 and 0.5 micron process capabilities, and MMIC mixers.

M/A-Com **1001**
Commercial Sources Division
Burlington, MA

D. LaPerrier

Oscillators. K-Band doppler transceiver. The MA86859 is a K-Band doppler transceiver. Each unit consists of a Gunn diode oscillator and a Schottky barrier diode mixer assembled into a compact waveguide package. This unit provides an output signal whose frequency is proportional to the velocity of an object moving toward or away from the antenna. Alternate frequencies, power out, operating voltage, and frequency/temperature coefficients are available upon request. Application: CW doppler radar systems, speed radars, intrusion alarms, door openers, process controls and other motion detecting systems.

M/A-Com **1001**
Custom Hybrids
Burlington, MA

V. Milano

Custom hybrids, microwave PIN diode switch drivers and linearizers.

M/A-Com Ltd. **1001**
England Manufacturing Facility
Dunstable, England

RF, microwave and mm-wave semiconductors, components, subsystems and equipment for commercial and military applications. Feature product: Noise measurement equipment that is designed for noise measurements at 1st, 2nd, and 3rd line on airborne, shipborne and land radar installations. The equipment allows fast, accurate assessment of radar performance under adverse operational conditions at 1st line and also allows more sophisticated measurement parameters at 2nd and 3rd line. Electronically tuned YIG oscillators for test instrumentation and EW applications. Two distinct package styles satisfy octave-plus bandwidths in the 2 to 20 GHz frequency range. Our miniature oscillators offers the smallest size, the lowest mass, consume less DC power and are available with renewable SMA connectors for microstrip compatability.

M/A-Com **1001**
Microwave Power Device Division
Hauppauge, NY

P. Cox

High power solid-state RF/microwave amplifiers and subsystems that include; EW/ECN subsystems, military communications airborne/groundbased, radar amplifiers, satellite, space and ground amplifiers RFI/EMI test amplifiers, laboratory instrumentation and high efficiency power supplies. Air-cooled kilowatt power amplifiers. All solid-state, 1000 W or more power output, low distortion AB linear, fully protected,

built-in test, AM, FM, CW, pulse signal inputs, wide bandwidth, field replaceable modules, self cooled.

M/A-Com **1001**
Omni Spectra
Merrimack, NH

T. Parker, J. Mann, J. Morrelli, J. Thomas, V. Borase, S. Raucci

Microwave connectors and adapters, stripline and coaxial passive components and electromechanical switches. New series of coaxial connectors and components designated OS-50™ and based on the 2.4 mm interface that offers mode-free operation from DC to 50 GHz. This new family of products is intended for industry-wide use in components, integrated MIC packages and cabling operations.

M/A-Com **1001**
Power Hybrids Operation
Torrance, CA

F. McAdara, E. Young, D. Feeney

RF and microwave transistor products – 2 MHz to 3.5 GHz, products include RF power transistors, RF power MOSFET transistors, RF power amplifiers, hybrid integrated amplifiers (CATV)

M/A-Com **1001**
Radar Products Division
Burlington, MA

J. Corvino, R. Novello, R. Koons, A. Dobson, R. Beeber, E. Skolins, H. Landers, J. Ledger, S. McLaughlin

Microwave and mm-ferrite devices, control assemblies and components, waveguide components and magnetron tubes.

M/A-Com **1001**
Semiconductor Products Operations
Burlington, MA

C. Howell, K. Murphy, J. Bowen

Silicon and GaAs semiconductor products for RF, microwave and mm-wave applications that include; PIN, varactor, mixer, detector, Schottky barrier, Gunn, point contact diodes, transistors and varactors. High power diode array waveguide switch element "bulk windows"™ switch devices for a Ka-Band (26.5 to 40 GHz) are capable of switching up to 1 kW peak power with 25 to 30 dB isolation for a single window. Insertion loss is less than 1 dB in a 26.5 to 40 GHz switch.

M/A-Com **1001**
Solid State Products Operations
Hudson, NH

P. Gale, G. Porter, I. Gifford, F. Jenkins

Solid-state microwave components, including mixers, detectors, and control components. Miniature 6 to 18 GHz image rejection mixer. Broadband, double-balanced, image-rejection mixer in a low profile, hermetically sealed package. SMA connectors are removable for drop-in applications. Typical conversion loss is 7.5 dB. Typical image rejection is 25 dB. IF frequencies of 30, 60, 120, and 150 MHz are standard, others are available upon request. May also be used as a single sideband modulator.

M/A-Com **1001**
Subsystem Division
Burlington, MA

J. Langevin, B. Petri, R. Kalvaitis, N. Brown

Complex, broadband integrated subsystems that support EW, radar and missile defense requirements worldwide.

MAC Technology Inc. **1237**
Klamath Falls, OR

M. Bailey, J. Branigar, M. Egbert

Stripline couplers, detectors, 90° hybrids and high power airline couplers. A wide variety of components are offered covering the 0.5 to 18 GHz range in octave and multioctave bandwidths.

Magnum Microwave Corp. **1121**
Fremont, CA

L. Earl

RF and microwave mixers, voltage-controlled oscillators, mixer and VCO subsystems, complete signal processing blocks.

Marconi Electronic Devices **417**
Hauppauge, NY

J. Evans, P. Lowbridge, E. Smith, D. Williams, S. Neylon

Silicon and GaAs semiconductors, including new GaAs back diode detector modules. Very stable SAW oscillators for applications, including I.F.F. and clock references, plus SAW filters using quartz and lithium niobate structures. Millimeter-wave components based on rugged quartz microstrip technology, plus mm-wave subsystems for seeker applications. Rotary joints for applications up to 94 GHz. Iso-circulators for low cost and military applications. High power loads for industrial heating applications.

MAST Microwave **1331**
Billerica, MA

D. Flanders, C. Theophile, F. Cooper, S. Cooper, E. Youth

Rotary joints, double-ridge waveguide components, coaxial connectors, coaxial cable assemblies.

Matcom Inc. **511**
Palo Alto, CA

B. Jones, L. Hoynh, E. Jones, K. Akada, S. Hori

Low noise and power GaAs FETS and HEMTs, new products; 1W series at 20 GHz. 10 W series from 8.5 - 13.2 GHz.

Materials Research Corp. **1054**
Orangeburg, NY

T. Stensgard, J. Walker

Ceramic substrates, metallized substrates and pattern etched substrates.

Maury Microwave **1057**
Cucamonga, CA

MECA Electronics Inc. **1012**
Denville, NJ

R. Davo, G. Impink, D. Bosco

Coaxial couplers, attenuators, terminations and adapters.

Merrimac Industries **1352**
West Caldwell, NJ

J. Jackson, C. Potzer, T. Braviak, B. Fiordalisi, S. Schneider, J. Blahosky, J. Cappucci, R. Easton, T. Ramsden, E. Niemiec, W. Furchak

IF and microwave devices, components and subsystems using lumped element and stripline designs, power amplifiers, IF integrated assemblies and hi-rel networks.

Metelics Corp. **1138**
Sunnyvale, CA

R. Christensen, R. Dorilag, J. Tatum, R. Dorilag

Microwave PIN, Schottky, varactor, step recovery and planar tunnel diodes in chip, beam-lead and a variety of package configurations. MNOS chip- and beam-lead capacitors hi-rel screened versions to MIL-STD-19500 or customer requirements are available for all types.

Mica Microwave Corp. **1228**
San Jose, CA

F. Mills, A. Campbell, A. Fata, A. Berberich, C. Avis, T. Nguyen

Ultra stable ferrite components, including stripline coaxial and drop-in isolators, circulators and isodapters in narrow, standard and broadbands with frequencies ranging from 0.150 GHz to 30 GHz.

Micro-Chem Inc. **1177**
Santa Clara, CA

L. Matts, C. Matts, V. Todaro, D. Natz, L. Tooker

Microwave circuits and microwave PFTE circuit boards, chemical milled metal parts, high resolution glass plates and films.

Micro-Coax Components Inc. **1200**
Collegeville, PA

R. Schafer, L. Deery, J. Lewis

Semi-rigid cable; in-a-cable lowpass, bandpass, and highpass filters; coaxial connectors; semi-rigid cable assemblies; flexible microwave cable assemblies; coaxial and waveguide delay lines; rectangular and double-ridged waveguide; EMP and lightening protectors.

Micro-Dynamic Inc. **1076**
Woburn, MA

R. Jacobson, T. Haley, M. Sweet, D. Blacquier, J. Grollman, J. Boucher

Microwave switches, switch filters, limiters, attenuators, integrated subassemblies.

Microelectronics Technology Inc. **1215**
Mountain View, CA

C. Hsieh, P. Chen, T. Liang, K. Wu

Microwave telecommunication components and subsystems; C/Ku-Band LNA and LNB for TVRO/DBS; LNA and LNC up to 24 GHz; AGC IF amp; C-Band FET power amp up to 10 W; Ku-Band FET power amp up to 1 W; and transceiver up to 23 GHz.

Microlab/FXR **911**
Livingston, NJ

R. Vincent, M. Bruno, B. Baker, J. Bramick, M. Ferrand

Passive waveguide and coaxial components, couplers, filters, power dividers, dummy loads and waveguide switches.

Micronetics Inc. **1052**
Norwood, MA

M. Epstein, R. Farrell

Noise generators, noise modules, noise diodes, switches (coaxial and waveguide), dummy loads (coaxial and waveguide) bolometer and detectors.

Micro-Now Instrument Co. Inc. **975**
Skokie, IL

C. Arnow, R. Janyia

Model 716 mm-wave programmable fundamental frequency from 2 to 110 GHz source has guaranteed CW calibration accuracy of ±5 MHz. YIG powered heads provide octave or waveguide bandwidths from 2 to 50 GHz, while Gunns cover from 40 to 110 GHz. A self-calibrating smart sweeper, the Model 716 stores 10 front panel setups and provides built-in interface with other GPIB compatible instruments.

Microphase **618**
Norwalk, CT

F. Parin, J. Hoffman, H. Schumacher, R. Crocco, M. Giarratano, S. Temel, J. Chiappotta, G. Badoyannis

Detector log video amplifiers, multiplexers, filters, detectors, limiters, channelizers, detector modules, threshold detector amplifiers, video receivers, thin-line filters and multiplexers, combline filters and multiplexers, channelized receivers and integrated assemblies.

Microsonics Inc. **213**
Weymouth, MA

J. Crehan, J. Pavao, K. Peck, P. Beesla

Frequency control components, BAW delay lines, crystal filters and ultrasonic delay lines.

Microsource Inc. **928**
Santa Rosa, CA

G. Basawapatna, M. Cheong, M. Shandas, S. Layton, M. Lampenfeld, T. Quigley

YIG filters (bandpass and band-reject), oscillators from 0.5 to 26.5 GHz, analog and digital drivers, YIG filtered oscillators from 2.0 to 18.0 GHz digitally-tuned oscillators, integrated front ends, downconverters, synthesizers and subsystems.

Microtech Inc. **704**
Cheshire, CT

J. McGregor, J. Radder, A. Bitzarakis, S. Lovely, T. MacCallum

Rectangular and double-ridged waveguide, and components from 1.2 - 50 GHz, including catalog and custom flexible and rigid assemblies, directional couplers, waveguide to coax adapters, pressure windows and tees. Also on exhibit will be high speed, low phase noise VCOs, high efficiency frequency multipliers, and state-of-the-art phase lock oscillators.

Microtel Pacific Research **1308**
Burnaby, BC, Canada

Microwave Applications Group **1346**
Santa Maria, CA

D. Prigge, W. Hord

Design, fabrication and test of microwave ferrite components and antenna subsystems along with related electronic drive circuits. Specific components include reciprocal phase control modules for electronic scanning antennas.

Microwave Circuit Machining **1177**
Santa Clara, CA

L. Matts, C. Matts, V. Todaro, D. Natz, L. Tooker

Machining manufacturer of heavy ground plane microwave PFTE circuit boards, aluminum housings and chassis.

Microwave Development Co. Inc. **910**
North Andover, MA

J. Cook, C. Tomes, P. Hocknell, M. Crittenden

Magic tees, couplers, circulators, adapters, waveguide calibration kits.

Microwave Development Labs Inc. **1341**
Natick, MA

R. Tucker, E. Bannister, M. Hale

Adapters, assemblies, attenuators, bends, twists, corporate feeds, couplers, crystal holders, circulators, diplexers, filters, flanges, gaskets, SSB generators, hybrids, isolators, mixers, mixer duplexers, monopulses, comparators, ridge guide, rotary joints, phase shifters, power dividers, rotary and shutter switches, tees, terminations, transitions, waveguide tubing, window and suspended substrates.

Microwave Distributors Co. **1315**
Commack, NY

D. Leiman, A. Leiman, R. Judd, D. Reisfield

Connectors, adapters, cable assemblies, attenuators, terminators, circulators, isolators, couplers and more.

Microwave Engineering Corp. **1317**
North Andover, MA

M. Aghion

Ridged waveguide components, custom-formed waveguide runs.

Microwave Exhibitions & **1370**
Publishers Ltd.
Tunbridge Wells, Kent, UK

R. Marriott, N. Barrett, J. McPhail, A. Latter

Organizers of the European Microwave and Military Microwave Series of conventions. Full details of both events, including conference programs, information on conference proceedings and reprint volumes will be available.

Microwave Journal **1140**
Norwood, MA

H. Ellowitz, E. Johnson, C. Sheffres, W. Cook, M. Stiglitz, C. Donohue, L. Resnick, T. Richards, K. Feltmate, J. White

Microwave Journal magazine: subscription and editorial information.

Microwave Laboratories Inc. **1017**
Raleigh, NC

C. Everleigh, D. Zavadil, G. Allen, A. Schram

Medium and high power broadband TWTs and solid-state oscillators.

Microwave Power Inc. **931**
Santa Clara, CA

E. Mendel, J. Tiso, F. Sechi

Solid-state power amplifiers for electronic warfare, radar and communications applications. The product line extends from 5 to 20 GHz and from 1 W and higher, in both narrow and wideband models. Also, LH105 and other wideband units with varying bandwidths and power levels.

Microwave Semiconductor **941**
Somerset, NJ

M. Morris, R. Ricciuti, P. Skelnick, B. Hoffman

Power and small signal GaAs FETs, silicon bipolar microwave and RF transistors, GaAs large signal and small signal MMIC foundry service for power, linear and non-linear high performance circuits, silicon and GaAs power amplifiers and subsystems, analog and microwave ICs, noise sources, custom GaAs epitaxial wafers.

Microwaves & RF **715**
Hasbrouck Heights, NJ

G. Martinelli, B. Blake, M. Carey, M. Bachman, J. Rowe, G. Roberts, P. Arndt, M. Kachmar, J. Browne

Microwaves & RF serves engineers and engineering management involved with RF, microwaves and optical devices across a broad spectrum of applications. Published monthly, the magazine provides a mix of articles focusing on practical, timely information within the high frequency field. Stories are written by staff members and industry leaders.

Microwave Systems Engineering **1317**
Phoenix, AZ

R. Mehrmann, R. McCollouge

Block converters, V-Sat subsystems.

Microwave Systems Inc. **1317**
Syracuse, NY

M. Busse

Digitally-controlled low noise microwave synthesizers and miniaturized RF assemblies.

Microwave Technology Corp. **1009**
Bangkok, Thailand

Microwave Technology Inc. **604**
Fremont, CA

T. Baruch, D. Gray, K. Kawakami, W. Kennan, J. Lee, W. Ou, J. Steward, R. Yee, B. Zeiser

GaAs FETs, GaAs FET amplifiers, MMICs, thin-film subassemblies.

MIC Technology Corp. **108**
Richardson, TX

D. Chapman, L. Ingham, B. Chapman, A. Kuelzow, B. Mitchell

Thin-film manufacturing services, thin-film coating and etching, artwork production, laser trimming and machining, alumina-by-rillia-quartz substrates.

Millitech Corp. **1161**
South Deerfield, MA

Mini-Circuits Laboratories **1111**
Brooklyn, NY

H. Kaylie, G. Kaylie, R. Kaylie, A. Kaylie, A. Nova, M. Geaneas

1000 RF/microwave signal processing components for the design engineer: mixers power splitters/combiners, directional couplers, filters, attenuators, switches, amplifiers, frequency doublers, phase detectors, limiters, and termintions.

Mitec Electronics Ltd. **709**
Pointe Claire, Quebec, Canada

M. Bentob, M. Monzon, C. Lorenc, J. Robinson, G. Simays, G. Cappelli, A. Martin

Design and manufacture microwave components, subsystems and integrated networks for use in telecommunications and defense systems operating in the 1 to 60 GHz range.

MITEQ Inc. **828**
Hauppauge, NY

S. Eisenmesser, A. Faverio, P. Kalisiak, H. Kiiss, D. Knudsen, S. Padmanabhan, R. Pflieger, J. Siddiqui

Octave-band amplifiers, phase-locked oscillators, frequency synthesizers, dielectric resonator oscillators, active frequency doublers, RF front ends, miniaturized image reject mixers, miniaturized mixer and preamplifiers.

Mitsubishi Electronics **1310**
Sunnyvale, CA

W. Bechtold, S. Child, S. Carver

Microwave components, GaAs FETs, MMICs and related products.

Modular Components **1401**
Forest Hill, MD

Motorola Semiconductors **207**
Phoenix, AZ

N. Dye, S. O'Shea, F. Klarer, D. Fowler, P. Holmes, R. Hunter, D. Murray, L. Wilson, M. Williams, R. Keasler

RF bipolar transistors - small signal and power microwave bipolar transistors - low noise, short/long pulse power, CW power RF linear and Class C amplifier hybrids and amplifier systems.

MPC Inc. **933**
Lowell, MA

M. Casper, M. Casper, Jr., M. Boyle, S. Newbegin, D. McCarthy, R. Morrissette

Microstrip and stripline fabrication using precision etching, machining, drilling, laminating, plating and sputtering. PTH, multilayer, single- and double-sided soft substrates. Custom sputter coating of both conductive and resistive substrates, including tantalum-nitride and nichrome chip resistors. MPC Polyguide bonding film.

MSN & CT **1338**
Palo Alto, CA

M. Napier, C. Meiter, W. Hickey, D. Markhouse, B. Giller, G. Sutton

Publisher of Microwave Systems News and Communications Technology Magazine, the Journal of Monolithic Technology Quarterly magazine, Defense Electronics, Defense Computing and Military Forum magazines, Defense Electronics C^3I handbook and the International Countermeasures handbook.

Murata Erie North America Inc. **960**
Smyrna, GA

J. Marano, T. Sudo, D. Kelly, T. Makino, M. Blickstein, R. Charos, T. Charos, P. Diglio, R. Meyer, T. Pate, A. Komar, D. Callahan, B. Smith

MA series products, CLA series products, dielectric resonators, DRO and VCO resonator base filters, microwave and machine ceramics, and power capacitors.

NCI **1243**
Hackensack, NJ

D. Sydnor, M. Sassler

Broadband linearized oscillators, digitally tuned oscillators and frequency synthesizers.

Narda **1158**
Hauppauge, NY

J. Coppola, J. Kirsch, B. Leibowitz, J. Frohmann, R. Damiano, W. Crofut, R. Koelzer

40 GHz attenuators, terminations power dividers, couplers, adapters, drop-in switches and DROs. Isolators, RF mechanical switches, plus new radiation hazard monitors, power monitors and catalogs.

Narda **1158**
San Jose, CA

J. Tarvin, L. Becker, B. Stookey, B. Swartz, N. Gri

Microwave integrated assemblies, filters, gain equalizers, isolators, circulators and amplifiers.

Neico Microwave **1062**
Hopkinton, MA

C. Warrington, R. Ranslow, E. Beers, V. Babigian, D. Fulton

Antennas, passive waveguide and coaxial components, variable ratio power combiners, mm- and double-ridge waveguide components.

New England Microwave Corp. **1112**
Hudson, NH

L. Nielsen, K. Buchanan, L. Hofling, T. Coppola, R. Robbins, R. Wynkoop

PIN diode switches, GaAs FET switches, PIN attenuators, phase shifters, switch drivers, MOS capacitors, PIN diodes, varactor diodes, limiter diodes.

Noise Com Inc. **1243**
Hackensack, NJ

D. Sydnor, M. Sassler

Solid-state noise sources, diodes, modules, instruments and subsystems.

Norplex/Oak Inc. **812**
La Crosse, WI

R. Higbie, G. McQuarrie, K. Valiquette, M. Clott, S. Shumaker

PTFE/woven substrate materials for high frequency, low loss microwave applications and copper-clad microwave laminates.

Norsal Ind. **1236**
Central Islip, NY

N. Spector, M. Spector, L. Griffiths, L. Kent, A. Margulis

ECM and EW communication microwave components 0.5 to 26 GHz, frequency translation devices, amplitude control devices, passive components.

Northern Scientific Labs **1317**
Division of General Instrument
Fairfield, NJ

W. Sullivan, S. Martinko, D. Heller

DFMs, digital IFM receivers, telemetry systems.

Norton Co. **1404**
Ravenna, OH

Norton Co. **1134**
Advanced Ceramics
Northboro, MA

C. Cutts, R. Visser

High purity alumina substrates for thin-film applications and aluminum nitride substrates and IC packages.

NTK Technical Ceramic **1205**
Springfield, NJ

Nurad **608**
Baltimore, MD

L. Czirjak, J. Gillis, G. Neuberth, C. Yablon, P. Zanow

Antennas and radomes for EW applications. New developments include conformal flush mounted antennas. In addition, a complete line of remote television surveillance systems is available.

Olektron Corp. **215**
Webster, MA

B. Baker, W. Beauregard

Mirowave components, power dividers, switches, directional couplers, hybrids, modulators, attenuators, phase shifters, phase comparators, mixers.

Omega Microwave **1376**
San Jose, CA

J. Johnson, C. Blancarte, D. LaCombe, B. Jostrand

Omega microwave manufactures amplifiers and subsystems in the 2 to 18 GHz frequency spectrum. Narrowband and broadband amplifiers are available covering low noise through high power applications. Subsys-

tem capabilities include limiters, power monitors, variable attenuators, switches, filters, couplers, logic-controlled functions, power dividers. Detailed information is available in our "Configure Your Own Product Amplifier Guide".

Omni-Wave Electronics **1317**
Gloucester, MA

J. McCartney, M. Hamilton

TR/ATR/PRE-TR tubes, TWTs, magnetrons, beam power tetrodes, klystrons, and high power solid state duplexers, hydrogen thyratrons; high power coaxial components (3-1/8, 1-5/8, etc).

Omohundro **1317**
Costa Mesa, CA

D. Rebard

Radomes, polarizers and metalized reflectors.

Optimax Inc. **517**
Hatfield, PA

J. Quinn, C. O'Brien, F. McDonnell, S. Smola, T. Dolan, F. Schick, J. Hickey, J. Mogel, A. Bauer

Thick-film RF amplifiers, modules, RF control devices and drivers, high speed digital attenutators, multifunction assemblies.

Ortel Corp. **808**
Alhambra, CA

L. Stark, G. Grimes, W. Selders, H. Blauvelt, D. Huff

Analog fiber optic replacements for coax or waveguide links operating to 18 GHz.

Pacific Monolithics **611**
Sunnyvale, CA

R. Bay-Ramyon, D. Bond, C. Braun, B. Chung, D. Lockie, W. Moyers, A. Podell, F. Russell, E. Wilson

GaAs MMIC-based microwave subsystems and components, including receivers, transponders, phase-shifter networks, amplifiers, converters, log amps and oscillators ranging from 20 MHz to 18 GHz.

Panasonic Ind. Co. **1405**
Components Group
Secaucus, NJ

Pascall Electronics Ltd. **1321**
Sunbury-on-Thames, UK

A. Cox, R. Burman, M. Bright

Logarithmic IF amplifiers, constant phase shift limiters, I and Q detectors, frequency discriminators, microwave low noise amplifiers with input protection. Solid-state microwave driver amplifiers.

PC Dynamics **405**
Frisco, TX

C. Anderson, R. Deitz, S. Nodland, R. Bishop, C. Webb, G. Maurer, H. Yeong

Microstrip and stripline circuits, metal backed substrates and multilayers using soft substrate materials.

Picogiga Inc. **1403**
Oxnard, CA

Plessey Three-Five Group **1218**
San Diego, CA

D. Wrappe, R. Evans, C. Stewart, J. Arnold

GaAs FETs, MMIC amplifiers and switches.

P/M Industries Inc. **832**
Portland, OR

R. Gorton, P. Parks

CO_2 and YAG lasers are used to do contract ceramic cutting, hole drilling, scribing and resistor trimming on thick- and thin-film circuits.

Polyflon Co. **1318**
New Rochelle, NY

W. LaRusso, M. Luhrmann, R. Chow

RF high voltage, high Q, non-magnetic, variable and fixed capacitors, Cuflon-ultra low loss microwave substrate, NMR/MRI imaging coils; non-magnetic products for MRI applications.

PRD Instruments/Telephonics Corp. **1340**
Huntington, NY

P. Schild, G. Herman, J. Price, J. Levy, G. Iavarone, F. Rudmann, H. Ruschmann

Microwave instrumentation, vector voltmeters, VSWR meters, high voltage klystron power supply, microwave power meter and sensors, power monitors and microwave precision components.

Precision Photomask Inc. **1075**
Montreal, Quebec, Canada

M. Jain, S. Juma

Photomasks of chrome, emulsion and iron oxide for thin-film microwave substrates. Discrete devices, MIC, MMIC and SAW devices.

Premier Microwave Corp. **1317**
Port Chester, NY

J. Simmonds, E. Wantuck

Rotary joints, high power ferrite circulators and isolators, custom waveguide components.

Q-bit Corp. **707**
Palm Bay, FL

M. Rogers, G. Callaway, I. Riebe, H. Hillman, H. Mead

RF amplifiers from 0.05 to 3 GHz using both thick- and thin-film technology and featuring "power feedback" for high reverse isolation. Units are available in TO-8, flatpack or coaxial cable packages.

Radiall Inc. **913**
Stratford, CT

S. Lucci, A. Hernandez, P. Dionisio, D. Flanders

RF coaxial connectors, attenuators, terminations, couplers, switches and other passive devices.

Radian Technology **1016**
Santa Clara, CA

J. Mongillo, P. McLaughlin, K. Taverrite, J. Matson, N. Han

Voltage and digital tuned oscillators with emphasis on fast tuning requirements in the 0.5 to 18 GHz band. High performance filters, multiplexers and switch/filters for 0.5 to 26 GHz applications.

Ramsey Electronics Inc. **721**
Penfield, NY

J. Ramsey, B. Myers

Low cost synthesized signal generator with a frequency range from 100 KHz to 1 GHz, 100 Hz resolution, AM and FM MOD capabilities. Price range: $2,500.00.

Rantec Anechoic Systems **1317**
Canoga Park, CA

T. Tobias

Anechoic materials and chambers, and shielded chambers.

Raytheon Co. **870**
Microwave and Power Tube Division
Waltham, MA

R. Andrews, E. Attella, W. Boyd, G. Callahan, P. Chorney, J. Hieber, R. Laton, A. White, B. Vafiades, M. Zilberstein

Microwave components and assemblies, including microwave tubes, hybrid circuits, ferrite devices, SAW devices, GaAs FETs, MICs and MMICs.

Reactel Inc. **905**
Rockville, MD

M. Assurian, S. Assurian

RF and microwave filters, integrated subassemblies consisting of switched filter banks with TTL control, isofilters, detector filter assemblies, suspended substrate diplexers and multiplers.

Reeves-Hoffman **418**
Carlisle, PA

D. Kingery, L. Barbary, M. Laser, R. Kovanic, F. Ranklin, B. Kelley, K. Laser, D. Bobb, J. Pokrzyk, C. Mercer, J. Miller

Crystal units, filters, oscillators and microcircuit packaging.

Remec Inc. **1227**
San Diego, CA

R. Ragland, C. Somach, G. Margard, J. Giles, E. Ekaireb, G. Czuba, L. Merrow, J. Jacocks, J. Neel, J. Pfunder

Filters, switches, switched filters, equalizers, log amps, integrated subsystems, multipliers, comb generators, up/down converters, bit oscillators, tunable filters, attenuators and delay lines.

Reps Five **903**
Matawan, NJ

C. Dupraz, B. Weaver, P. Lau, M. Bremer, D. Weaver, L. Weaver

TO-8 cascadable amplifiers, IF log amplifiers, PIN diode switches, crystal oscillators/multipliers, VCXOs, OCXOs, TCXOs and microwave components DC to 28 GHz.

Republic Electronics Corp. **935**
Paterson, NJ

S. Witlieb, L. Eisenberger

Capacitors - parallel plate for applications to 50 GHz. Microwave, MLC utilizing P-90 and NPO dielectrics. QPL to MIL-C-55681B. Temperature compensating from NPO to N5600.

Resin Systems Corp. **1301**
Amherst, NH

S. Campbell, D. Prawdzik, S. McAninch

A broad selection of our cataloged loads and terminations in low (polyiron) and high (silicon carbide) power designed for the complete range of waveguide sizes. In addition, the attendees can review an extensive selection of our raw materials, including pourable casting compound, rod, plate and square stock in the complete range of formulations.

Res-Net Microwave **1305**
Clearwater, FL

RF Design **217**
Denver, CO

RLC Electronic Inc. **612**
Mount Kisco, NY

A. Borck, D. Borck, P. Wright, S. Seissler, J. Norelli, C. Bobroski, E. Diamond

Passive microwave components including low pass, bandpass and high pass microwave filters, miniature, high power and solid state RF switches, fixed, variable and step attenuators along with various types of detectors, dividers and couplers.

Rockwell Ferrocom **906**
San Jose, CA

M. Swift, M. Kyser, B. Forsberg, R. Hicks, R. Schwartz

Coaxial and waveguide circulators and isolators, including adapters and multiple port configurations from 0.4 to 26.5 GHz for commercial and military (MIL-1-45208A) applications.

Rogers Corp. **915**
Microwave Division
Chandler, AZ

Z. Katinszky, J. Dobrick, E. Sandor, K. Takasumi, C. Santiago, D. Boulanger, R. Desilets, R. Cole, R. Jansen, M. Norris, J. Carroll, R. Bonfield

Microwave laminates for stripline and microstrip applications.

Rosenberger Microwave **614**
Westlake Village, CA

RS Microwave **520**
Butler, NJ

R. Snyder, M. Snyder, G. Clegg, S. Benzacak, N. Pensky, L. Soules, M. Plasner

RF and microwave filters and multiplexers from 500 KHz to 40 GHz.

Sage Laboratories Inc. **1208**
Natick, MA

A. Cieri, T. Saad, C. Marguerite, P. Alfano, H. Chapell, Y. Majewski

Passive microwave components, including attenuators, couplers, filters, hybrids, mixers, phase shifters, switches, power dividers, rotary joints, video detectors, terminations, crystal holders, wireline and wirepac (3 dB quadrature hybrids and couplers).

Sanders Associates Inc. **312**
A Lockheed Co.
Manchester, NH

L. Johnson, W. Bradley, R. Jerome, N. Van Dine, A. Budreau, J. Korcuba, J. Miley

Microwave amplifiers, DFDs, sources (DTOs, DROs, STAMOs and synthesizers), control devices, attennas, microwave integrated modules, subsystems and interconnect products.

Scientific Microwave Corp. **402**
Mississauga, Ontario, Canada

A. Saad

Passive microwave and mm-wave components, including filters, diplexers, circulators, hybrids, couplers, transitions and terminations, for military, space and commercial applications. New design techniques are applied to various evanescent-mode ridge W/G and planar structures to cover narrowband, wideband, low power and high power requirements.

Sciteq Electronics Inc. **700**
San Diego, CA

P. Feinberg, H. Eisenson, R. Camarillo, R. Rauvola

OEM and board level synthesizers exploiting direct digital synthesis technology at microwave frequencies.

Sealectro-BICC **1141**
Trumbull, CT

RF coaxial connectors including, K connectors to 46 GHz, SMA, SMB, SMC, high frequency blindmate types, solderless, precision N and TNC. RF coaxial cable assemblies, microwave devices and printed circuit board components.

Shawinigan Research and Technology **1300**
Kanata, Ontario, Canada

Sierra Microwave Technology **1107**
Rancho Cordova, CA

J. Mitchell, T. Rodriguez, L. Walton

Isolators, circulators, equalizers, filters and integrated components.

Soladyne **916**
Division of Rogers Corp.
San Diego, CA

D. Reed, C. Ogden, A. Hassell, B. Hassell

Stripline and microstrip circuits on PTFE-based substrates.

Solitron Microwave **1020**
Riviera Beach, FL

R. Sulzer, J. Cabrera, B. Jackson, J. Brooks, B. Hughes

Coax connectors such as SMB, SMC, SMA, SSMA, Type N, PN, TCN HFPTNC, precision cable assemblies, semi-rigid flexible and custom, thin-film products, coax attenuators, coax terminations stripline flange terminations, pill terminations, power resistors, film cards mylar and mica.

Southwest Microwave **110**
Tempe, AZ

D. Murray, J. Kubota, R. Hall

High performance coaxial connectors and adapters, low VSWR, low loss, low RF leakage connectors.

Space Machine & Engineering Corp. **712**
St. Petersburg, FL

J. Archbold, V. Archbold, A. El-Zein, J. Harty, O. Laivo, A. Loyd, E. Loyd, A. Sciarrino, R. Weber, K. Zoints

Waveguide components and precision machined parts.

Sprague-Goodman Electronics Inc. **1137**
Garden City Park, NY

J. Goodman, M. Trubowitsch, B. Feller, W. Richman, J. Harty, E. Waxman

Trimmer capacitors including film, glass, quartz, mica, sapphire, ceramic and air dielectrics; precision inductors, surface-mounted trimmer capacitors and fixed inductors; and fixed high frequency chip capacitors.

SSPA Microwave **840**
Mississauga, Ontario, Canada

T. Cheng, P. Barber, L. Bunarto, A. Leung, M. Cheng

Microwave solid-state power amplifiers house frequencies ranging from 1.3 to 18 GHz. Output power up to 50 W at 5.4 to 6.4 GHz; 15 W at 14 to 14.5 GHz.

Stantel Components **1110**
Schaumburg, IL

C. Fay

Medium and high power pulsed and CW travelling-wave tubes and travelling-wave tube amplifiers. Markets served are telecommunications, satellite earth stations and uplink, mobile satellite systems, EW/ECM, radar and missile guidance. Frequency range of 4 to 40 GHz with output powers to 400 W CW.

Steinbrecher **1176**
Woburn, MA

D. Steinbrecher, D. Peterson, R. Porciello, L. Hayman

Microwave, mm-wave and RF components, subsystems, and systems for advanced communications and high speed data acquisition applications, including Arrapatt™ impatt amplifier, frequency multipliers, Paramixer™ high dynamic range frequency converters and Accoverter™ high dynamic range RF-to-digital converter.

ST Research Corp. **816**
Newington, VA

B. Wells, S. Perrino, P. Kahle, A. Gagne

RA-100AM programmable signal simulator: up to ten discrete asynchronously pulsed emitters, individual pulsewidths, pulse repetition intervals, up to 16 position pulse staggers; .01 to 99.99% jitter; and signal-to-noise ratios. Extensive library of antenna scans and patterns. Portable noise figure meters and comb generators operating to 40 GHz.

Synergy Microwave Corp. **1250**
Paterson, NJ

C. D'Elio, D. Bonadeo, A. Ferland

RF signal processing components from DC to 4.2 GHz, including mixers, power dividers, SSB/BPSK/QPSK modulators, phase shifters, quadrature IF mixers, image reject mixers, transformers, doublers, attenuators, 3 port and 4 port directional couplers, 90° and 180° hybrids. Available in printed circuit board plug-in, surface mount or connectorized packages, commercial or MIL-STD. Standard catalog and custom designs available.

Systron Donner Corp. **1302**
Instrument Division
Concord, CA

N. Susner, D. Herbert, R. Geddes

Design, development and manufacture of high technology test and measurement instrumentation. Major products include synthesized signal generators, universal microwave frequency counters and ATE programmable DC/power supplies.

Systron Donner **313**
Microwave Division
Van Nuys, CA

J. Vu, B. Carpenter, A. Sheth, A. Madni

Transline analyzer, amplifiers, waveguide systems and subsystems.

Tachonics Corp. **820**
Plainsboro, NJ

D. Maki, R. Pengelly, C. Ghosh, B. Koehn

Monolithic GaAs high performance switches, monolithic and hybrid amplifiers, attenuators, mixers and foundry service.

Taconic Plastics Ltd. **1118**
Petersburg, NY

B. Smith, D. Oppelt, H. Teal

PTGE/woven glass, low loss microwave dielectric materials, copper clad.

Taylor Microwave Inc. **1136**
Hoboken, NJ

B. Sastre, R. Occhipinti

Microwave oscillators from 0.1 to 18 GHz. Cavity oscillators, DROs, VCOs, PLOs, LCOs, MROs and oscillator assemblies, and microwave and RF components including attenuators, switches and phase shifters.

Tecdia Inc. **1035**
Mountain View, CA

A. Liguori, N. Aguilar

Single layer parallel plate chip capacitors and custom-design substrates.

Technical Components Inc. **1306**
Warwick, RI

A. Toole, P. Schumacher, H. Barrett

Multilayer ceramic and glass-to-metal packages for MIC, MMIC, semiconductor and optoelectronic applications.

Tektronix Inc. **1150**
Beaverton, OR

A. Waterman, M. Wright, B. Benedict, M. Throwbridge, D. Goodman, J. Linnen, J. Harris, R. Knarzer, K. Dawson

Mask design layout, optical masks, E-beam masks, spectrum analyzers, portable and lab/bench instruments from 100 Hz to 325 GHz, resolution bandwidths from 10 Hz to 3 MHz; computer-aided engineering systems.

Teledyne Microelectronics **219**
Los Angeles, CA

Custom microcircuits including analog, digital, memories, microprocessors, signal converters, decoders, RF and microwave modules, hi-rel medical electronics, information display modules, fiber-optic/lightwave modules, chip carrier/PCB assemblies, ultra low to high power designs and packaging for severe environments.

Teledyne Microwave **1128**
Mountain View, CA

E. Kirchner, C. Martens, M. Lee, P. Gruver, M. Adams, D. Godsey

Coaxial switches, isolators, circulators, filter assemblies, multiplexers, delay devices, VCOs, MIC subsystems, and GaAs FET amplifiers. Complete manufacturing facilities include complete metal fabrication and fishing facilities, hybrid MIC lab, GaAs FET lab, laminar flow workstations, environmental test and automated test equipment.

Teledyne Pines **881**
Aurora, IL

A. Stewart, R. Kuhn, D. Waskow, F. DuMez

CxC-10 numerically controlled coaxial cable bending machine. Minicyber-3 axes measuring machine for determining benoing program requirements from prototypes or samples of coaxial cable parts.

Test and Measurement Systems Inc. **120**
Santa Clara, CA

B. Biarno, C. Alterman, B. Herman, D. Fast

Fading analysis equipment for the complete performance analysis of microwave and satellite links. Offers complete management information in respect to duration, depth and time of fades as well as uptime and reliability data. Hard copy video printer, model TP-115: 64 levels of grey scale resolution and 300 dots/inch are the outstanding features of this video printer.

Texas Instruments **1157**
Dallas, TX

G. Lerude, T. Kilgo, B. Doherty, D. Tupman, J. Harbus

GaAs analog microwave products. Specifically we will display our foundry service capabilities for custom chip designs, standard products, including amplifiers, switches, attenuators in chip and package form and components capabilities (amplifiers etc.).

Texscan Instrument Division **501**
Indianapolis, IN

J. Shaw, D. O'Connor, B. Jackson

Spectrum analyzer SP1050, the PSG1000 synthesized signal generator. Also, our wide range of components-filters, oscillators, fixed pads, attenuators — bench mount, programmable and rotary. Tracking generator, TG-1000 & TG-1000Z portable. VS-60C sweep generator.

Thomson Electron Tube **1204**
CSF, THM Hybrid and
Microwave Division
Dover, NJ

H. Sandager, E. Paillard

Microwave materials, devices and components for military and professional applications, including microwave diodes, both silicon and GaAs, ferrite components microwave hybrids and subassemblies, and GaAs ICs and FETs.

Thomson Electron Tube **1204**
Ferrite Component Division
Dover, NJ

H. Sandager, E. Paillard

Ferrite and dielectric materials. High power UHF-VHF circulators (up to 200/CW). Drop-in miniature circulators and isolators ("Thompuck" series) in the 2.7 to 3.6, 3.5- to 5 and 8 to 18 GHz range.

Thomson Electron Tube **1204**
GaAs Integrated Circuits Division
Dover, NJ

H. Sandager, E. Paillard

MMICs - broadband amplifiers: 0.5 to 9 GHz, 2 to 20 GHz; power amplifiers: 5 to 6 GHz, Po=1W; control functions: attenuators, phase shifters, switches; sample and hold (TACO = 1 ns, 6 bits); comparators (1 GHz); frequency dividers (4 GHz); and gate arrays (1000 gates, 1.2 GHz). Low noise FETs: TC1403 — NF = 1.8 dB at 12 GHz; TCP 0618 — NF = 1.4 dB at 12 GHz; EC 1840 — NF = 3.5 dB at 40 GHz.

Thomson Electron Tube **1204**
Microwave Diode Division
Dover, NJ

H. Sandager, E. Paillard

High voltage PIN diode up to 300 V breakdown voltage, low series resistance and capacitance. MESA beam-lead silicon PIN diodes (switching time 2 ns at 26 GHz, 4 ns at 94 GHz). High power GaAs Gunn diodes (8 to 94 GHz, 400 to 20 mW/CW). Millimetric diodes: InP Gunns (50 mW), silicon IMPATTS (500 mW/CW)

beam-lead, Schottkys and PINs. Abrupt and hyperabrupt varactors.

Thomson Electronic Tube **1204**
Microwave Hybrid Division
Dover, NJ

Wideband YIG sources (4 to 20 GHz). Dielectric resonator oscillators (3 to 40 GHz, low noise). Linearized voltage controlled oscillators (2 to 18 GHz). GaAs FET amplifiers: 2 to 6, 2 to 8, 6 to 18 and 18 to 40 GHz, low noise, medium power.

Time Microwave **1213**
San Jose, CA

M. Midwin, R. Donahue, L. Johnson, Z. Romero, M. Maesel, P. Kittock

Microwave components to 40 GHz, including mixers, mixer/preamps, filters, switch filters, multiplexers, polar discriminators and integrated assemblies. Specializing in suspended substrate (SST), microstrip, stripline and combline technologies. SST especially suited to high volume production with repeatable unit-to-unit performance.

Times Microwave System **708**
Wallingford, CT

B. Fussleo, D. Dubuc, P. Page

MIL-C-17 coaxial cables for military marketplace. Times also manufacturers cable and cable assemblies to meet specific customer requirements and applications. This includes the design and manufacture of standard and specialty connectors for military applications.

TRAK Microwave Corp. **1070**
Tampa, FL

Transco Products Inc. **1320**
Camarillo, CA

J. Fricke, A. Kwon, L. Neeley

Coaxial and waveguide switches, microwave antennas, microwave filters, combiners, switchable couplers.

Triangle Microwave **1014**
East Hanover, NJ

TriQuint **1120**
Beaverton, OR

D. Powers, L. Pepque

GaAs, custom, semi-custom and standard component ICs, digital clock rates to 4 GHz and microwave F_t of 18 GHz.

TRM Inc. **1372**
Manchester, NH

A. Butts, T. Tirollo, H. Gagne, D. Krol

Couplers, power dividers, hybrids and custom components in the frequency range from DC to 26.5 GHz.

Trontech Inc. **411**
Neptune, NJ

A. Arbuckle, C. Brand, P. Miguelez

RF/microwave amplifiers, low noise, wideband and power.

TRW RF Devices **208**
Lawndale, CA

UTE Microwave Inc. **212**
Asbury Park, NJ

L. Nilson, W. Richman, B. Kent, P. Skliris, R. Baars

Ferrite circulators, isolators, iso-adapters, iso-filter assemblies.

Vari-L Co. Inc. **1374**
Denver, CO

Varian Associates **850**
Palo Alto, CA

Vectronics Microwave Corp. **118**
Middlesex, NJ

J. Vogler, T. Vogler, S. Dec, S. Miskewicz

Digital and analog phase shifters, digital and analog attenuators, digital frequency translators, solid-state switches and modulators, mixers, monopulse converters, multifunction MIC modules, passive microstrip components.

Vectron Labs **1410**
Norwalk, CT

Veritech Microwave Inc. **842**
South Plainfield, NJ

J. Holmquest, P. McGeough Sr., R. Stegens

Ultra broadband amplifiers, low noise and medium power amplifiers covering multi octave to multi decade bandwidths for application in ECM, ESM, ELINT, COMINT and radar systems. Coplanar MIC based subsystems and multifunctions operating to 26.5 GHz including, upconverters, downconverters and phased array radar modules.

Voltronics Corp. **1238**
East Hanover, NJ

R. Newman, S. Newman

Precision trimmer capacitors; sapphire, quartz, glass, teflon, air, MIL-C-14409 QPL. Useable to over 5 GHz. Tuners for DRO and microwave cavities, sealed, long life design.

Watkins-Johnson Co. **1217**
Palo Alto, CA

R. Bardner, K. Bustillos, S. Witmer, S. Algeri, C. Scheetz, J. Lattanza, T. Glomski, S. Kurtz, S. Kamman, M. Bauer, B. Hoglund, L. Zulaica

Cascadable hybrid amplifiers, 2 to 6000 MHz, wideband GaAs FETs, +15 VDC nominal bias amplifiers, special purpose hybrid devices (attenuators, linearizers, limiter amplifiers, limiters, power limiters, detectors), miniature flatpack amplifiers, 2 to 4200 MHz, SMA connector amplifiers, 2 to 6000 MHz, frequency mixers, DC to 26 GHz, dual mixers, image reject mixers (and single sideband upconverters), 2 to 18 GHz, qualified to MIL-M-28837, screened standard mixers, reactive power dividers, 0.5 to 500 MHz, wideband transformers, solid-state switches, 0.5 to 500 MHz, Pin-diode switches.

Wavecom **1158**
Northridge, CA

D. Colletta, W. Anderson, P. Wolfe, N. Renfrow, G. Etzler

Passive microwave devices: filters, multiplexers, directional couplers, and electromechanical RF switches.

Waveline Inc. **1132**
Fairfield, NJ

D. Morsillo, J. McCrea, E. Fodor, J. McGregor

Microwave components and test equipment. Attenuators (coaxial and waveguide), waveguide-to-coaxial adapters, switches, couplers, terminations, isolators and circulators, and custom designs. WR22 and double ridged components.

Wavetek Corp. **203**
San Diego, CA

Wavetronics Inc. **1303A**
Belford, NJ

Webb Laboratories **1411**
Hartland, WI

Westec Communications Inc. **904**
Scottsdale, AZ

R. O'Hara, C. Bissegger

Voltage-controlled oscillators, digitally-controlled oscillators, mechanically-tuned oscillators and associated subsystems. Programmable proportional heaters and programmable low noise voltage regulators.

Western Microwave Inc. **932**
Sunnyvale, CA

K. Schoniger, J. Lautermilch, A. St. John-Brooks

GaAs FET amplifiers, microwave mixers and integrated RF subassemblies, DLVAs, microwave ferrite devices, including drop-in microstrip units, various filters and RF channelizer assemblies.

Wiltron Co. **404**
Morgan Hill, CA

W. Jarvis, B. Bathiany, W. Baxter, J. Rogers, B. Wiedemann, M. Miller, T. Kilbourne

Leading manufacturer of vector and scalar network analyzers, swept frequency synthesizers, sweep generators and precision microwave measurement systems.

W.L. Gore & Associates Inc. **944 & 1037**
Newark, DE

B. Thomas, G. Walter, B. Gibson, J. Johnson

Microwave cable assemblies from DC to 40 GHz. Flexible mm-waveguides to 100 GHz. Etchant to prepare fluorocarbon polymers for bonding radome and high speed PC laminate material.

ZAX Millimeter Wave Corp. **706**
San Dimas, CA

D. Zacharias, S. Rigdon, R. Moreno

Millimeter-wave components and subsystems from 35 GHz to 250 GHz. Antennas, detectors, subharmonic and blanced mixers, fixed frequency, mechanically-tuned and varactor-tuned Gunn oscillators, frequency multipliers, and calibration loads.