

1989 EXHIBITION GUIDE

1989 IEEE/MTT-S Exhibition Guide

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

Accumet Engineering Corp. 1233
Hudson, MA

C. Haering, H. Muffoletto, L. Voyer

Substrates, including 99.6%/96% alumina, beryllium oxide, quartz/silica, and other dielectric materials. Substrates are offered with "as fired," lapped and polished surface finishes. Additional services include diamond sawing of customer supplied metalized substrates and laser scribing and drilling of substrate blanks.

Acrian Inc. 306
San Jose, CA

Acurrel Inc. 1321
Milpitas, CA

P. Davies, R. Brown, J. Kump, B. Chan

Microwave test equipment (2 to 40 GHz) to enhance scalar network analyzers.

Adams-Russell Inc. 1212
Waltham, MA

D. Ryan

RF and microwave signal processing and collection instruments, components, interconnect products, antennas and subassemblies, dip and vacuum brazed avionic housings, chassis and heat exchangers.

Adams-Russell Inc. 1212
Antenna and Microwave Division
Amesbury, MA

H. Adjemian, K. Akerley, D. Crocker, F. Kaczor, S. Nugent, D. Smith, D. Snader, R. Guimond, H. Schlegel, R. Schwartz

Broadband antennas, precision coaxial cables, test and measurement coaxial cables/adapters, and double ridge components.

Adams-Russell Inc. 1212
ANZAC Division
Burlington, MA

M. Smith, D. Williams, A. LeMay, D. Strand

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

Adams-Russell Inc. 1212
Brazonics Division
Amesbury, MA

P. Kinney

Aluminum and metal fabrication and brazing services, including precision joining of high frequency waveguides, electronic chassis and heat exchangers.

Adams-Russell Inc. 1212
Communications Programs Division
Waltham, MA

F. Reynolds

Communications processing hardware, software and systems for surveillance applications; emitter location, multichannel signal sorting and classification, data demodulation, telemetry processing, array processing, system control and data acquisitions.

Adams-Russell Inc. 1212
Microwave Products Division
Chatsworth, CA

D. Ryan, S. LaLond

Slotted planar array antennas and related electronics for missile, aircraft, satellite and ground-based requirements.

Adams-Russell Inc. 1212
Modpak
Burlington, MA

A. LeMay, D. Strand

RF shielded enclosures.

Adams-Russell Inc. 1212
RHG Laboratory Inc.
Deer Park, NY

D. Krautheimer, R. Yuruckso, M. Smith, D. Strand

RF and microwave signal processing components and subassemblies, logarithmic and IF amplifiers, discriminators, mixers, receivers, microwave links and phase products.

Adams-Russell Inc. 1212
SDI Microwave Inc.
N. Billerica, MA

D. Ritchie, J. Windhol, M. Smith, D. Strand

RF and microwave diodes (PIN, NIP, limiter, Schottky, tuning varactor, multiplier, step recovery and noise hyperabrupt types) and MOS capacitors.

Adams-Russell Inc. 1212
Semiconductor Center
Burlington, MA

M. Smith, D. Strand

GaAs MMICs and foundry services from wafer-only processing to complete packaging.

Adams-Russell Inc. 1212
Space Center
Waltham, MA

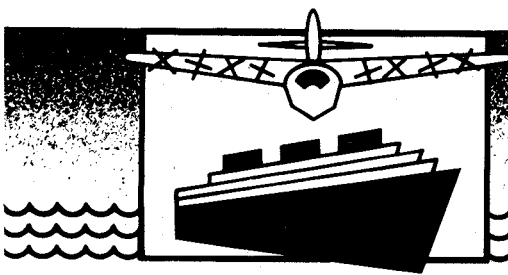
K. Lambert, D. Strand

Space-qualified RF and microwave components and subassemblies.

Adams-Russell Inc. 1212
Surveillance Equipment Division
Hunt Valley, MD
Hemdon, VA

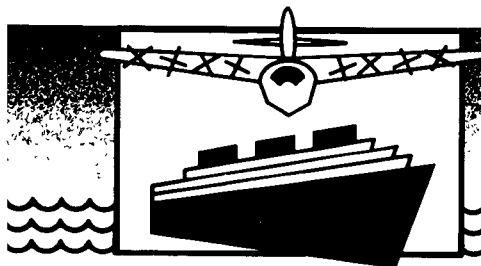
F. Reynolds

VHF/UHF and microwave receivers and receiving systems; digital scan and IF pan displays; frequency converters; switch matrices; video, IF and audio distribution amplifiers; and other ancillary receiving equipment.



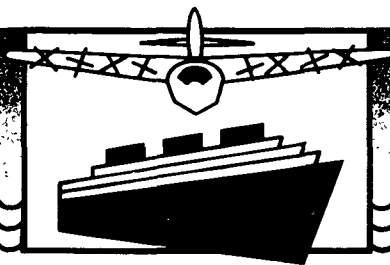
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- Advance Reproductions Corp.** 604
North Andover, MA
C. Losanno, G. Stoll
CAD, photolithography and phototooling services to microwave, hybrid, semiconductor and printed circuit manufacturers.
- Advanced Microwave Circuits Corp.** 632
Framingham, MA
F. Morese, A. Morese
Microwave printed circuit boards on various soft substrate and thin-film materials; development of new and existing technologies; in-house capabilities for manufacturing, engineering and R&D support.
- Advanced Milliwave Labs** 1327
Westlake, CA
J. Inbar, C. Inbar, T. Mazilu, E. McAvoy, A. Pericola
High intercept amplifiers from 1 to 1300 MHz, HF/VHF/UHF/L-Band and telemetry receiving multicouplers, microwave discrete and MIC low noise and medium power amplifiers, phase shifters, mm-wave mixers, filters, doublers, telemetry components, monopulse comparators, 0/180° switches, custom networks and amplifiers.
- Advantest America Inc.** 210
Lincolnshire, IL
F. Kamei, M. Hirose, T. Takenaka, L. Rhodes, P. Bazan, B. Dentinger, J. Neitman
The R3361 3.6 GHz spectrum analyzer, R4136 23 GHz spectrum analyzer, R4131A/B 3.5 GHz spectrum analyzer, and the R9211E FFT analyzer.
- AEL Defense Corp.** 1235
Lansdale, PA
A. Gross, J. Iervolino, N. Nagurny, M. Nussbaum, J. Wadkowski
Microwave and hybrid integrated subsystems, antennas, radar warning systems and receivers.
- Aerowave Inc.** 420
Medford, MA
T.L. Kozul, M. Kozul, L. Kahn, R. Kahn
Millimeter waveguide devices operating over the frequency range from 18 to 325 GHz.
- Airpax Co.** 813
Cambridge, MD
C. Tinley, J. Favinger, G. Langley, R. Goldstein, G. Zukow, I. Pigovat, N. Lee, J. Conroy
Custom closely toleranced machined microwave housings and packages incorporating direct glass-to-metal seals in various materials including kovar and stainless steels.
- Airtron** 1006
Division of Litton Systems
Morris Plains, NJ
A.J. Tuck Co. 710
Brookfield, CT
A. Tuck IV, D. Tuck, L. Hunt
Precision electroformed components built to customer requirements, including waveguide transitions, filters, cavities, polarizers, OMTs, horns, corrugated horns and waveguides, miniature bends, miniature double ridge and millimeter components.
- Alan Industries Inc.** 1029
Columbus, IN
W. Kennedy, B. Kennedy, B. Mullins, S. Kennedy
Attenuators, including programmable, continuously variable, rotary, fixed, toggle switch, rocker switch and pushbutton types; terminations, RF fuses, resistive dividers, and impedance matching pads.
- Alpha Industries Inc.** 1000
Woburn, MA
M. Reid, N. Bishop, P. Lentini, C. Genzabella, R. Goldwasser, J. Alberici, A. Blankenship, W. Dwyer, C. Gupta, B. Stiles, B. Harris, G. Kariotis
Microwave semiconductor devices, microwave and mm-wave components, multifunction integrated assemblies, microwave/mm-wave monolithic integrated circuits (MMICs), antennas, microwave ceramic substrates, dielectric resonators, thin/thick metalization and ferrites.
- American Technical Ceramics** 704
Huntington Station, NY
D. Davis, R. Wood
UHF and microwave single and multilayer capacitors.
- Amitron** 1330
North Andover, MA
R. Simone, H. Avratin
Thick-film microelectronic substrates and resistor components used in commercial, military and hi-rel applications.
- AMP Inc.** 805
Harrisburg, PA
R. Bridgman, C. Nikoloff, D. Peoples, H. Ranck
High speed, ribbon coaxial and coaxial cable assemblies, blindmate coaxial contacts, aerospace and military products, high density connectors, coaxial and triaxial contacts and adapters for flexible and semi-rigid cabling.
- Amperex Electronic Co.** 107
Slatersville, RI
J. Salvay, M. Pradille
RF and microwave semiconductors and modules.
- Amphenol RF Division** 1304
Danbury, CT
L. Lipomi, R. Malek, B. Van Kerre Broeck, F. Hull, C. Dreyer, N. Sladek, P. Maw, M. Fitch, M. Myer, B. Parry, J. Psailia
RF/microwave connectors and cable assemblies for flexible and semi-rigid coaxial, twin-axial and triaxial cables.
- Amplica Inc.** 1701
Newbury Park, CA
- Amplifier Research** 214
Souderton, PA
D. Shepherd, E. Smarz, L. Pokorny, S. Roth
Broadband RF power amplifiers and accessories (10 kHz to 1 GHz); applications include laboratory and industrial uses including NMR/MRI, particle accelerators, RFI susceptibility testing, EMP simulation, wattmeter calibration, RF plasma research, RF heating and other medical, biological and physical research applications.
- Amplifonix Inc.** 817
Langhorne, PA
R. Dubois, A. Riben, D. Lucas, J. Grotzinger
RF hybrid amplifiers, diodes, switches and attenuators in TO, dip, dual in-line dip and surface-mount packages; connectorized housings operating over the frequency range from 1 kHz to 2.3 GHz.
- Anadigics Inc.** 200
Warren, NJ
J. Patel, M. Gagnon, J. Smith, R. Rosenzweig, C. Huang, P. Wallace, S. Bharj
ICs and GaAs IC-based hybrids, including amplifiers, switches, frequency dividers, broadband/high data rate integrated fiber optic receivers, clock recovery circuits, and transmitters; foundry services also available.
- Andersen Laboratories** 310
Bloomfield, CT
D. Czagany, D. Lowcavage, L. Chiarizia
Surface acoustic wave (SAW) devices: SAW bandpass filters, spectrum shaping SAW filters, SAW hybrid oscillators, SAW dispersive and nondispersive delay lines; Bulk acoustic wave (BAW) devices: BAW delay lines, IMCON, miniaturized BAW; integrated electronics: compressive receivers, filter banks and pulse-compression subsystems.
- Andrew Corp.** 127
Orland Park, IL
R. Perelman, J. Moscola, J. Byrne, R. Treanor
HeliacTM coaxial cables and custom cable assemblies.
- Anghel Laboratories Inc.** 1720
Rockaway Township, NJ



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|---|------|---|------|--|------|
| Anritsu America Inc.
Oakland, NJ | 801 | Astrolab Inc.
Warren, NJ | 1001 | Ball
Efratom Division
Irvine, CA | 1114 |
| Ansoft Corp.
Pittsburgh, PA | 731 | <i>M. Toma, J. Toma, S. Toma, O. Johnson</i> | | <i>C. Moyer, E. Yisarri, L. Chenoweth, B. Smith, T. Brandt</i> | |
| <i>Z. Cendes, J. Lee, C. Ashtiani, D. Sun</i> | | Microwave and RF transmission lines, including connectors, adapters, attenuators, cable assemblies and antennas. | | Rubidium oscillators, modular system, ovenized crystal oscillators using SC-cut resonators and microelectronic packaging. | |
| Antenna and Microwave Division
<i>See Adams-Russell Inc.</i> | 1212 | A.T. Wall Co.
Warwick, RI | 1010 | Balo Hermetics Co.
Butler, NJ | 1406 |
| Apollo Microwaves Ltd.
St-Laurent, Quebec, Canada | 119 | <i>C. Gibbs, C. Deinert, J. Matzen, B. Diggett, J. Tipton, D. Daley, B. Fleetmeyer, L. McCredden, S. McCredden, G. Mao</i> | | <i>E. Rapoza, D. White, J. Paliotta, W. Waskowitz</i> | |
| <i>N. Vouloumanos, L. Schatt</i> | | Waveguide tubing in aluminum, copper, brass, copper-clad invar and coin silver. | | Hi-rel glass-to-metal sealed packages; ceramic/metal packages with 50 ohm stripline feed-thrus; custom machined kovar packages and standard configurations. | |
| Standard and custom engineered components and subsystems (including combining networks, output assemblies, filters, filter diplexers, terminations, couplers, etc.) for telecommunications, defense and industrial applications up to 60 GHz. | | Automatic Testing & Networking Inc.
Woburn, MA | 810 | Boonton Electronics Corp.
Randolph, NJ | 736 |
| ANZAC Division
<i>See Adams-Russell Inc.</i> | 1212 | <i>A. Papetti, V. Adamian, M. Fennelly, V. Zohrabian, C. Giambarresi, K. Rochford, D. Wandrei</i> | | <i>R. Morrell, R. Anlas, T. Demyanovich, J. O'Halloran, J. Poul, F. O'Halloran, R. Abbruzzo</i> | |
| Applied Engineering Products
New Haven, CT | 235 | The NP5 on-wafer S-parameter and noise parameter measurement system, the NP4 noise parameter test set, and the LPM load pull tuner. | | Power meters, RF/RMS voltmeters, impedance measuring instruments, audio oscillators and analyzers, distortion analyzers, modulation meters and analyzers, signal generators, sweep generators/synthesizers, calibrators and accessories. | |
| Armatek Inc.
Richardson, TX | 624 | Avantek Inc.
Santa Clara, CA | 314 | Brazonics Division
<i>See Adams-Russell Inc.</i> | 1212 |
| <i>H. Lester, J. Moore, S. Wheelis, D. Self, E. Williams</i> | | <i>R. Panos, R. Jenkins, C. Bellevia, J. DiSanto</i> | | Brockhouse Custom Fabricators
Exeter, NH | 1012 |
| RF and microwave components, including bipolar and GaAs FET low noise amplifiers, medium power amplifiers, signal processing components, and custom multifunction assemblies utilizing discrete, LEMIC, and MIC technology. | | Microwave and mm-wave semiconductors, components and subassemblies, including YIG-tuned oscillators, amplifiers, and advanced silicon MMIC modules such as a 4.5 GHz divide-by-4 and 5 GHz active mixer/IF amplifier. | | <i>T. Tripp</i> | |
| Artech House
Norwood, MA | 413 | AVX Corp.
Myrtle Beach, SC | 1431 | Instraloc instrumentation bins and modules; precision formed standard and customized assemblies available in single, double or triple widths, complete with fasteners. | |
| <i>W.M. Bazzzy, M. Walsh</i> | | <i>D. O'Toole, R. Phillips, A. Templeton</i> | | Brush Wellman Inc.
Tucson, AZ | 208 |
| Technical books on microwave, radar and telecommunications technology, theory and applications. Software packages also will be on display. | | MLC microwave chip capacitors, CD121114 styles, single-layer capacitors (SLCs), maxi SLCs, and thin-film microwave capacitors. | | <i>M. Anderson, B. Hill, E. Lewis, P. Christenson, T. Adams, J. Quinn, G. Rees</i> | |
| ASM Lithography Inc.
Tempe, AZ | 1411 | Aydin Corp. (West)
San Jose, CA | 1410 | Fully integrated producer of beryllia substrates, multilayer BeO ceramic packages, TWT components and custom manufactured beryllia components. | |
| <i>J. Nelson, P. Janke, B. Shepard</i> | | <i>J. Harris, J. Kominitsky, L. Fisher, A. Weiss, V. Mercado, D. Kim</i> | | Buckbee-Mears/St. Paul
St. Paul, MN | 1308 |
| Philips Beamwriter EBPB-4, an electron beam lithography system for manufacture of GaAs devices, resulting in geometries of 0.05 μ m or smaller. | | Solid-state GaAs FET thin-film microwave amplifiers that operate over the frequency range from 500 MHz to 30 GHz; low noise, power, miniature and limiting types will be displayed. | | <i>J. Confer, F. Grimm, B. Snider, P. Koosmann, M. Rantz, T. Stevens</i> | |
| ASPE Inc.
Towaco, NJ | 635 | Aydin Vector Division
Newtown, PA | 1410 | Circuits, microwave antenna boards, multilayer Teflon boards, PTH up to 36" x 48", electroforming, imaged glass, photochemical machining of metals including titanium. | |
| <i>R. Sachs, A. Sachs, M. Polo-Tierney, K. Pilarz, E. Emery</i> | | <i>P. Buess, P. Meditz, M. Ladisky, H. Okert</i> | | | |
| Glass-to-metal seals, machine sealing and plating. | | Standard and custom hybrid amplifiers, 1 to 1500 MHz RF subassemblies and custom microelectronics. | | | |



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Bullen Ultrasonics Inc. 1722 **Eaton, OH**

M. Moreland, D. Moore, S. Brown, G. Giffen
Custom ultrasonic machining services and equipment sales of ultrasonic impact grinders.

Cablewave Systems 1523 **North Haven, CT**

A. Criscuolo, R. Parsons, L. Stille, J. Lawrence
Semi-flexible coaxial cable, elliptical waveguide, RF coaxial and waveguide connectors, microwave parabolic antennas, pressurization equipment and accessories, mounting hardware for semi-flexible transmission line.

Cabot Ceramics 1409 **Greenville, RI**

B. Shaw, B. Joly, P. Bartigian, M. Seely
Microwave and RF power ceramic packages operating over the frequency range from DC to 18 GHz and up, for use in discrete transistor, diode and MMIC devices.

California Amplifier Inc. 1405 **Camarillo, CA**

California Eastern Labs 515 **Santa Clara, CA**

J. Swan, L. Lea, R. Tyson, D. Apte, T. Costa, S. Morris, B. Magill, D. Conant, B. Marcus, M. Burkett, B. Cox, L. Olsen

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 heterojunction FETs and MESFETs; power GaAs FETs; small-signal bipolars; power bipolars; hybrid ICs; and GaAs and silicon varactor, Schottky and IMPATT diodes.

Cascade Microtech Inc. 1126 **Beaverton, OR**

T. Burcham, D. Harris, J. Marron, J. Ladwig, T. Hanna-Smith, R. Ares

NPT18 on-wafer noise parameter test set, microCAT standard microwave test executive software, model 12 high frequency probe fixture, model 42 wafer probe station, MTF26 26.5 GHz microwave test fixture.

Cayuga Automatic Machining Ltd. 1707 **Cayuga, Ontario, Canada**

B. Thomson, N. Turner, R. Cosby
CNC precision machining of component parts for the microwave industry; production of connector housings, flanges, coupling nuts, and heat sinks from stainless steel, brass, copper and aluminum.

Celeritek Inc. 732 **San Jose, CA**

B. Jones, G. Koker, S. Fujisaka, T. Herdt, D. Reinholm, B. Blindbury, C. Hordan, D. Bush, M. Guidi

GaAs FETs and GaAs FET amplifiers, subsystems and MMICs.

Ceratronics 914 **Worcester, MA**

C. Cutts, J. Walker, J. Blum, E. Sundburg
High purity alumina substrates for thin-film applications, aluminum nitride substrates, and IC packages.

Circuit Busters Inc. 407 **Stone Mountain, GA**

R. Rhea
RF and microwave engineering software for IBM personal computers and compatibles, including IBM PC/XT/AT and PS/2. SuperStar is a general purpose high speed linear circuit simulation, tuning and optimization program. FILTER synthesizes a variety of L-C filters, including unique elliptic and symmetric filters. OSCILLATOR designs oscillators, and TLINE analyzes and synthesizes microstrip, stripline and coplanar waveguide.

Coaxitube Corp. 1335 **Salisbury, MD**

G. Passmore, W. McNeil, A. West
RF/microwave semi-rigid and flexible cable assemblies, pre-packaged and custom designed delay lines, and pre-assembled right angle cable assemblies.

Coleman Microwave Co. 600 **Edinburg, VA**

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

Microwave filters, duplexers, triplexers (tunable and fixed tuned), featuring direct frequency tape and LED readouts; programmable filters (IEEE bus compatible) with accuracy of ± 1 MHz; designs are available in coaxial and waveguide for high power and receiver applications; rigid and flexible waveguide assemblies, bends, twists, straight sections, terminations and coaxial adapters covering the frequency range from 0.15 to 26 GHz.

Communications Programs Division 1212 *See Adams-Russell Inc.*

Communication Techniques Inc. 900 **Whippany, NJ**

Compac Development Corp. 1008 **Holbrook, NY**

C. Groves, P. Rao

Standard and custom RFI/EMI shielded enclosures, RF connectors, coaxial attenuators, gas-venting power relays and switches (TSS-SPST and TSD SPDT).

Compact Software Inc. 1032 **Paterson, NJ**

J. Brocklehurst, A. Wigodner, M. Perhacs, L. Angelini, B. McGinn, T. Kwan, L. Perez, P. Limberg, U. Rohde, R. Gilmore, K. Courter

CAD tools, including synthesis programs for circuit design, linear and nonlinear analysis and optimization programs to simulate design results and optimize performance, and layout programs to provide the microstrip or stripline mask for the finished design.

Compex Corp. 124 **Medford, NJ**

C. Ennis, G. Gordon
Single-layer ceramic parallel plate microwave chip capacitors with gold or tin finish, metalized and unmetalized class 1 and 2 substrates; split electrode, binary, arrays and custom electrode configuration in all dielectrics.

Component General Inc. 227 **Odessa, FL**

R. Davo, M. Davo
Power base mounted components including resistors, terminations and attenuators; SMA terminations; conduction cooler loads; power chips including resistors, terminations and attenuators; coaxial components including rods, discs and T-pads; and flange terminations.

Composite Technical Alloys 1519 **Attleboro, MA**

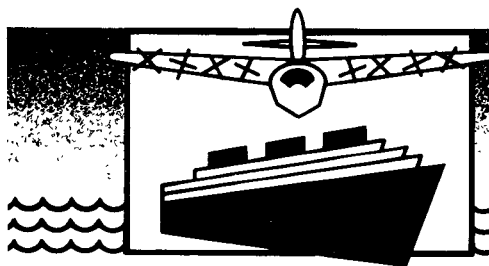
R. Jones, D. Depot, B. Breslin
Power packages, chip carriers, brazed assembly products, glass sealed assemblies and composite substrates.

Comstron Corp. 815 **Melville, NY**

L. Borow, B. Papaieck, J. LeRoy
Switch filterbanks, XTAL and L/C filters, and the new FS-2000 frequency synthesizer.

Connecting Devices Inc. 300 **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, hand-form and flexible cable assemblies; adapters, hermetic connectors, and assembly and measurement tools.



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Continental Microwave & Tool Co. 129 **Hampton, NH**

R. Cicale, D. Wall, J. Ripel

Flexible and rigid waveguide assemblies, passive microwave components, and waveguide antennas; 28 sizes of rectangular and double-ridge waveguide in rigid and seamless flexible styles from WR284 to WR22.

Coors Ceramics Co. 114 **Golden, CO**

Copper and Brass Sales, Inc. 1525 **East Detroit, MI**

D. Eberle, L. Buhl, G. Clark

OFE copper, electronic grade cupro-nickel, electronic grade nickel.

Cougar Components **Santa Clara, CA**

N. Atherton, D. Cheadle, J. Musquez

RF and microwave cascaded amplifiers and signal processing components operating over frequencies from 0.3 to 3000 MHz.

Crystal Technology Inc. 630 **Palo Alto, CA**

Z. Palmer, A. Comparini, C. Amrhein, D. Allen, H. Skeie

SAW and acousto-optic Bragg cells; integrated optic components and subassemblies for electronic warfare, telecommunications and instrumentation applications, including photonic switches; integrated optic foundry service.

CTT Inc. 816 **Santa Clara, CA**

D. Tai, J. Meyers, B. O'Connor, D. Hanes, E. Sox, L. Hauck

Solid-state microwave amplifiers and subassemblies, including low noise broadband amplifiers, high power broadband and narrow-band amplifiers, frequency converters, transmitters and transceivers operating over the frequency range from 0.5 to 40 GHz.

Daden Associates Inc. 229 **Laguna Hills, CA**

L. Jones, D. Hook, D. Henry

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

Daico Industries 912 **Compton, CA**

D. Kleven, W. Grunau

RF switches and attenuators constructed with GaAs FET, PIN diode and other technologies; RF attenuators including stepped and voltage-controlled types; phase compensation and amplitude matching.

David Sarnoff Research Center 1702 **Princeton, NJ**

R. Camisa, Y. Narayan, D. McGee, V. Korsun, K. Sivek, J. Donahue, J. Crabbe, E. Denlinger, C. Catanese, F. Marlowe, D. Rhodes, H. Johnson, B. Epstein

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 and affordable packaging.

Dielectric Laboratories Inc. 904 **Cazenovia, NY**

P. Kip, G. Vorlop, J. Phillips

Single-layer microwave ceramic capacitors, QPL approved porcelain capacitors, high dielectric constant substrates, and low ESR monolithic ceramic capacitors.

Dorado Co. 133 **Seattle, WA**

E. Sedlik, C. Rutstein, M. Lu, H. Rutstein

Millimeter-wave devices and equipment operating over the frequency range from 18 to 170 GHz; passive waveguide devices including couplers, bends, attenuators, tuners, filters and loads; ferrite devices including Gunn oscillators, mixers and detectors; test equipment including power meters, frequency meters, programmable attenuators/phase shifters, six-port measuring system; gyrotrons and klystrons.

Dow-Key Microwave Corp. 128 **Ventura, CA**

E. Kjellberg, J. Dysart, V. Harter, J. Williams, J. Wlekinski

Microwave switches and coaxial relays.

Dynatech Microwave 1208 **Calabasas, CA**

W. Reed, J. Koltunik, J. Wetzel, K. Chart, J. Trujillo, T. Jamias

Electromechanical switches operating over the frequency range from DC to 40 GHz, passive components, integrated devices and switch matrices.

Dynawave Inc. 837 **Georgetown, MA**

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

Precision RF connectors (SSMA, SMA, TNC and Type N) and cable assemblies, including Dynamates, blindmates, hermetics and field-replaceable types.

Eaton Corp. 634 **Electronic Instrumentation Division** **Los Angeles, CA**

T. Audia, J. Martocci, M. Freschi, J. Zack, B. Pastori

High performance RF and microwave test and measurement instrumentation, including fast switching frequency synthesizers and noise figure test systems.

Eaton Corp. 1415 **Microwave Products Division** **Sunnyvale, CA**

J. Stahlke, L. Yates, R. Aiken, D. Shinn, J. Cotsworth, M. Lee

Semi-rigid coaxial cables, bandpass filters, YIG-tuned filters and oscillators, voltage-tuned oscillators, switches, double-balanced mixers, multifunctional components, circulators, isolators, filters, diplexers, multiplexers and gain equalizers in communications, radar warning, ECM, ESM and missile systems.

EDO Corp. 915 **Barnes Engineering Division** **Shelton, CT**

R. Stetson

Infrared thermal imaging systems to provide true temperature mapping of powered-up microelectronics with automatic correction for spatial emissivity. Spot temperature infrared microscope for high speed plotting of thermal contours and measuring thermal transients.

EEsof Inc. 720 **Westlake Village, CA**

C. Abronson, J. Bunting, B. Childs, T. Costas, G. Curtis, P. Draxler, B. Dunn, F. Hof, B. Jewett, J. Kapinos, D. Leiss, J. Lindauer, K. Martin, C. McClellan, T. Miracco, D. Mutch, J. Novick, J. Pariseault, R. Patston, H. Pecher, O. Pitzalis, R. Rivera, R. Ross, J. Waters, P. Wilhelmson

Integrated computer-aided engineering software for microwave/RF applications, including software for linear and nonlinear simulation, system simulation, electromagnetic simulation, automatic network synthesis, computer-aided test and filter design; also shown will be a complete graphical design environment and a turnkey MMIC workstation.

EEV Inc. 414 **Elmsford, NY**

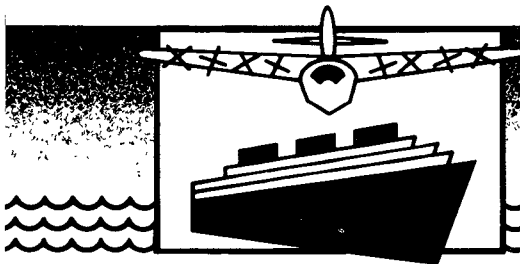
J. Collard, F. Oakes, A. Sayers

TWTs, magnetrons, microwave devices and mm-wave components.

EIP Microwave Inc. 929 **San Jose, CA**

D. Mulder, L. Johnson, J. Khazam, C. McDaniel

CW microwave counters operating at frequencies up to 110 GHz; pulsed microwave counters operating up to 170 GHz.



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Electro-Films, Inc. 312 **Warwick, RI**

B. Black, T. Petit, F. Weatherman, G. Weatherman, M. James, A. Reichel

Thin-film passive microwave components; metalized plates; etched substrates with metalized through holes and patterned wrap-around edges; fine-line couplers (0.5 ± 0.05 mil lines and spaces); airbridges; high frequency chip resistors; TaN and NiCr resistors; and Cr, Cu, Ni, Pd, TiW, Au and Mo metalizations.

Electro Rent Corp. 1412 **Van Nuys, CA**

RF and microwave test equipment for rent including signal generators, spectrum and network analyzers and Sun workstations.

EMC Technology Inc. 121 **Cherry Hill, NJ**

P. Semitschew, S. Rollin, F. Halgas, S. Lehrfeld

Fixed attenuators, programmable attenuators, detectors, terminations, resistors, DC blocks, and hybrid assemblies.

Emerson & Cuming Inc. 530 **Woburn, MA**

M.W. Frasca, C.P. Gregory, J. Tyler, L. Byrnes, L. Fleury-Crochiere

A complete line of products for use in suppressing, modifying or enhancing microwave energy management, including absorptive foams and dielectric materials.

EMF Systems 430 **State College, PA**

J. Chernega, J. Chernega, M. Cleland, G. Kerness

Microwave solid-state oscillators and associated circuitry, including VCOs operating over the frequency range from 10 MHz to 16 GHz, crystal oscillators, phase-locked oscillators, and synthesizers and low phase noise VCOs for military applications.

Epitronics Corp. 1324 **Phoenix, AZ**

P. Crook, D. Davito, D. Currie

Custom and semicustom III-V epitaxial structures utilizing MOCVD technology.

EPSCO Inc. 520 **Westwood, MA**

Epsilon Lambda Electronics 723 **Geneva, IL**

R. Knox, P. Papaevagelou, S. O'Brien

Millimeter-wave oscillators and subsystems.

Evered 1012 **West Bromwich, UK**

T. Tripp

Azdar precision waveguide tubing in wide range of sizes and alloys.

FEI Microwave 601 **Sunnyvale, CA**

P. Clark, P. Thesing, F. Lemmon, W. Patton, J. Humphrey, B. Holbert, R. Bridge, R. Christensen, J. Corollo, P. Martin, D. Bush, M. Adamo, T. Rosas, L. Martire, R. Kirby

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

Ferranti Industrial Electronics 405 **Dundee, Scotland, UK**

J. Lowe, M. Wood, B. O'Donnell

Microwave Components Group: ferrite circulators and isolators, receiver protectors incorporating STC facilities, products for particle accelerator systems, TWTs and power supplies; Microwave Division: oscillators, solid-state amplifiers, supercomponents and subsystems.

Ferretec Inc. 1321 **Milpitas, CA**

A. Rosenzweig, D. Killen, D. Hoekstra, S. Hammond, C. Schiebold, R. Smith, L. Stille

YIG-based broadband open- and closed-loop filters and oscillators, including digital or analog drivers; integrated subsystems; microwave tuner assemblies; and Ferretrac® technology.

Filtran Microcircuits Inc. 1333 **Ottawa, Ontario, Canada**

C. Sutton, K. Ramachandran

High resolution circuits on Teflon and ceramic for commercial and military microwave communications; a "blind-hole" approach for plated-through holes will be presented.

Filtronic Components Ltd. 1311 **Subsystems Division** **Shipley, England, UK**

J. Rhodes, S. Wilson, K. Ferguson, C. Mobbs, D. Gotch, M. Thornton, H. Belk

CW immune and DC coupled DLVAs, RF log amplifiers, switched multiplexers, digital frequency discriminators and frequency memory loops.

Flexco Microwave Inc. 712 **Coaxial Division** **Port Murray, NJ**

W. Pote, R. Walker, R. Tappen, B. Sellitto

Long Lyfe coaxial cable assemblies with various connectors operating at frequencies up to 40 GHz.

Flexco Microwave Inc. 712 **Qual-Tech Division** **Port Murray, NJ**

W. Pote, J. Borja, W. Hurd, R. Patterson, D. McIninch

Microwave control components and subassemblies, including digital phase shifters, bi-phase modulators, attenuators, switches, power dividers and hybrids.

Florida RF Labs Inc. 1200 **Palm City, FL**

D. Sampson, G. Fenex, F. Scalzo, L. Fisher, A. Weiss, V. Mercado

Thin-film resistors and terminations for strip-line, microstrip and coaxial applications; resistors, including coaxial rods and discs; terminations, including high power flange, pill-shaped, coaxial cartridge and high power strip-line types; waveguide elements, including film cards of kapton, mylar, fiberglass and attenuators; flexible and semi-rigid coaxial cable assemblies and coaxial delay lines.

Focus Microwaves Inc. 1700 **Kirkland (Montreal), Quebec, Canada**

C. Tsironis, I. Fichtner

Computer-controlled microwave tuners operating with IBM-PC portable computer.

FSY Microwave Inc. 1110 **Rockville, MD**

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

RF and microwave filters, diplexers, multiplexers and integrated switch filter assemblies operating over the frequency range from DC to 26.5 GHz.

Fujitsu Microelectronics, Inc. 1115 **Santa Clara, CA**

S. Rupp, B. Utter, Y. Nemoto, Y. Hirano, K. Ohta, T. Shintani, W. Bechtold, L. Duque, N. Corpron, T. Saito, G. Medley, S. Erickson

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

Gamma-f Corp. 511 **Torrance, CA**

Gamma Microwave Inc. 808 **Los Gatos, CA**

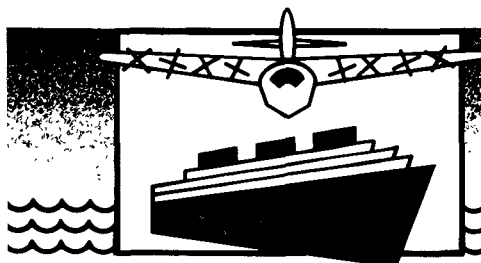
G. Gianatasio, T. Birks, B. Stookey, G. Gen-Efrain

Microwave phase-locked oscillators and microwave frequency synthesizers.

Gammatek Inc. 1715 **Warwick, RI**

J. Sgambato, D. Murphy, R. Rhyner, R. Auyang

Thin-film microelectronic components, including metalized substrates, chip resistors, patterned/etched hybrid circuit substrates and microwave conductor patterns with fine line and through hole capability, cleaning equipment, and plasma etching equipment.



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Gel-Pak Division/Vichem Corp. 1132 **Mountain View, CA**

M. Althouse

Shipping and handling systems for semiconductors, wafers, substrates, carriers and other high value, fragile or hard-to-handle devices.

General Microwave Corp. 611 **Amityville, NY**

M. Wind, J.P. Schindler, A. Caggiano

Microwave components including attenuators, modulators, switches, phase shifters, couplers, limiters, and coaxial mm-wave components; microwave instruments including automatic single- and dual-channel peak power meters, average power meters, and radiation hazard measuring systems.

Gennum Corp. 1413 **Burlington, Ontario, Canada**

M. Yaw, I. Scott

ICs for RF applications and RF custom and semicustom ICs.

GHz Technologies Inc. 531 **Montreal, Canada**

Z. Huszar, J. Lindover, D. Poirier

Microwave components such as filters, couplers, ferrite devices, combining networks, power dividers and cable assemblies.

Giga-Bit Logic Inc. 1709 **Newbury Park, CA**

J. Guedj, J. Kemps

A 400 MHz direct digital synthesis chip set with 1.5 ns access time, 4K ROM and a 16 GHz, 32-bit phase accumulator (106102); PLL chip set that consists of a 1 GHz phase/frequency comparator, a 1.3 GHz programmable counter and a 2 GHz variable modulus divider.

Giga-tronics Inc. 1401 **Pleasant Hill, CA**

J. Scheck, P. Edwards, H. Mette

RF, microwave and millimeter sweepers, signal generators and signal sources operating over the frequency range from 10 MHz to 75 GHz.

Gilbert Engineering Co. 1718 **Phoenix, AZ**

R. D'Entremont, D. Burris, J. Zorzy

Coaxial connector products, including the high performance, micro-miniature "GPO" series operating at frequencies to 40 GHz; high performance, low EMI, SMA, TNC, ETNC and 7 mm connectors.

Gore, W.L. and Associates 320 **Flagstaff, AZ**

L. Backer, G. Walter, S. Dippel, C. Lee

Development, design and manufacture of wire and cable products for a wide range of military, aerospace and commercial applications; products include subminiature hook-up wire, wire-wrappable wire, round cables, ribbon cables, coaxial cables and microwave coaxial assemblies.

Harris Microwave Semiconductor 721 **Milpitas, CA**

V. Kovacevic, L. Perry, K. De Salvo, M. Emerson, J. Tenedorio, N. Pressel, T. McKay, J. Schappacher, J. Barrera, G. Mathur, S. Hecker

GaAs FETs, GaAs MMICs and custom foundry services, hi-rel screening through Class S available.

Haverhill Cable & Manufacturing Corp. 628 **Haverhill, MA**

T. Kneeland, D. Kneeland

MIL-C-17 semi-rigid coaxial cable in standard and low loss types and in various sizes and finishes.

Herotek Inc. 620 **Sunnyvale, CA**

C. Lai, C. Lai, R. Donahue

Microwave detectors to 40 GHz, limiters, comb generators, PIN diode switches, amplifiers, MIC products, microwave subsystems and polar discriminators.

Hewlett-Packard Co. 1020 **Palo Alto, CA**

Microwave design system software, integrated vector network analyzers, portable spectrum analyzer (HP8561B), tracking generator (HP85640A), mass memory module (HP85620A), modular measurement system, and OEM components (including an SPDT mechanical switch, programmable step attenuator, custom switching matrices, PDB detectors, connector gages, couplers and mm-wave accessories).

Hewlett-Packard Co. 1120 **San Jose, CA**

Hittite Microwave Corp. 1313 **Woburn, MA**

Y. Ayasli, F. Paik, J. Moniz, L. Reynolds, M. Shifrin, P. Katzin

The FMCW radar chip incorporating a proprietary monolithic circulator along with a monolithic 500 W CW switch utilizing the MFET, a proprietary FET configuration.

Horizon-House Microwave Inc. 413 **Norwood, MA**

W. Bazy, B. Bossard, C. Ayotte, A. Ambrose

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

Huber & Suhner Inc. 735 **Woburn, MA**

B. Rothman, H.P. Manser, A. Brugger, J. Relihan, A. Tobacco

Sucoflex microwave cable assemblies, and microwave components including adapters, attenuators, terminations, power dividers, filters, EMP protectors and RF/microwave connectors.

Hughes Aircraft Co. 203 **Electron Dynamics Division** **Torrance, CA**

D. Ohtomo, M. Smith, R. Brownell, B. McMorough, P. Wolff

Instrumentation TWTs, broadband ECM radar and airborne X-band radar TWTs.

Hughes Aircraft Co. 203 **Microwave Products Division** **Torrance, CA**

J. Nichols, P. Gianfortune, K. Conklin, C. Breeze, H. Bell, A. MacGillivray, D. Larson, J. Cadwalader, D. Johnson, S. Edberg

Millimeter-wave instrumentation, subsystems, components, GaAs FETs and MMICs, noise sources and programmable attenuators.

Hypres Inc. 1421 **Elmstord, NY**

N. Konidaris, F. Longo, F. Borghetti, G. Nohenwarter, E. Hanson

70 GHz sampling oscilloscope and time-domain reflectometer based on superconducting electronics.

Instruments for Industry 1414 **Ronkonkoma, NY**

T. D'Arcangelis, R. O'Neill

Broadband high power amplifiers, leveling preamplifiers, E-field sensors, TEM (Crawford) cells, E-field generating antennas, and EMC test rooms for EMC/EMP/EMI susceptibility testing and laboratory use.

Insulated Wire Inc. 1236 **Ronkonkoma, NY**

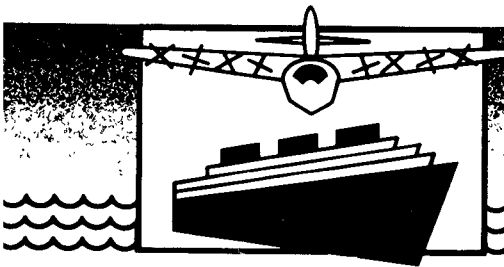
A. Nixon, S. Bruno

High performance flexible microwave cable assemblies operating at frequencies from DC to 50 GHz.

Integrated Microwave 1527 **San Diego, CA**

D. Clark, R. Mouber, D. Bree, M. Monie

RF and microwave filters, multiplexers, multipliers and integrated subsystems in the DC to 26.5 GHz frequency range.



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Inter-Continental Microwave Santa Clara, CA

W. Schuerch, K. Lee, R. Wolfe, S. Law, P. Rieder
Microwave test fixtures for chip measurements, packaged devices, MMICs and multiport custom devices; calibration standards for TRL, LRL and TOSL calibration methods; non-destructive beam lead diode test fixtures.

Ion Beam Milling Inc. Manchester, NH

R. Quagan, R. McDonnell, G. Quagan
Monolithic chip attenuators (DC to 26.5 GHz), broadband planar chip inductors, Lange couplers with features down to 0.1 mil on any metalization, custom resistor networks, contract photolithography (1.5 μ m), and diamond dicing services (1/2 mil tolerances).

Isotronics Inc. New Bedford, MA

K. Sullivan, A. Kirkaldy, D. Morse, J. Occiphinti, J. Lang
Hi-rel metal packages for hybrid, microwave and fiber optic circuits in a variety of alloys including copper-tungsten.

ITT GaAs Technology Center Roanoke, VA

J. Grzyb, D. Fisher, E. Donoho, I. Bahl
GaAs technology and MMIC foundry service.

ITT Sealelectro Trumbull, CT

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

JCA Technology Newbury Park, CA

J. Chao, D. Biddle
Microwave low noise amplifiers, control components and subassemblies.

JFW Industries Inc. Indianapolis, IN

J. Walker, F. Walker
Thick-film microstrip attenuators and terminations, fixed attenuators, terminations, feedthrough terminations, impedance matching transformers, detectors, RF fuseholders, power dividers, pushbutton attenuators, rotary attenuators, programmable attenuators, switches and GPIB interfaces.

Johanson Dielectrics Inc. Burbank, CA

D. O'Toole, D. Farkas, F. Luhrs
RF / microwave capacitors, multilayer porcelain, and single-layer devices.

Johanson Manufacturing Co. Boonton, NJ

T. Rowan, E. Fagerlund
Variable capacitors and microwave tuning elements.

John Wiley & Sons Inc. New York, NY

G. Telecki, L. Stein
New books and journals in microwave technology, including a new journal titled *Microwave and Optical Technology Letters*.

Joslyn Defense Systems Inc. Shelburne, VT

G. Coddington, E. Sheehan, G. Youngewirth
RF and microwave switches and cable assemblies; ribbonized, organized, integrated wiring systems; microwave switching systems, matrices and subsystems.

Journal of Electronic Defense Norwood, MA

H. Gershonoff, S. Hardy, D. Pariani, D. Herskovitz, T. Bossard, J. Hinojosa

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

Kaman Instrumentation Colorado Springs, CO

S. Perry, G. Barney, T. Dillahunty
SiO₂ dielectric coaxial cable assembly.

KDI/Triangle Electronics Whippany, NJ

D. McConnell, C. Schraufnagl, H. Shinn
Microwave resistors, components and subassemblies, including thick/thin film switches, digital attenuators, phase shifters, oscillators, mixers and power dividers in the frequency range from DC to 18 GHz.

Keene Technologies Rancho Cucamonga, CA

Kings Electronics Co. Inc. Tuckahoe, NY

F. Pack, E. Lagarto
RF coaxial, twinaxial and triaxial connectors; MIL-1553 databus connectors; connectors for

data transmission; RF printed circuit board connectors, attenuators and terminations; RF, BNC, TNC, NSMA and C connectors; adapters, including isolated ground types with crimp and crimp captive contacts; custom cable assemblies.

K&L Microwave Inc. Salisbury, MD

P. Leq, J. Tinkler, J. Price, D. Howett, T. Cappello, D. Chambers, C. Schaub, J. Grey

Microwave and RF components operating over the frequency range from 500 kHz to 40 GHz, including miniature filters, cavity and waveguide filters, crystal filters, tunable filters, frequency agile and integrated subsystems, integrated subassemblies as well as coaxial switches to 26.5 GHz and RF switching matrices.

Krytar Inc. Sunnyvale, CA

T. Russell, M. Molley, C. Gentile
Ultra broadband microwave components, including directional detectors, directional couplers, zero bias Schottky detectors, crystal detectors, 3 dB 90° hybrids and 3 dB 180° hybrids.

KW Microwave Inc. San Diego, CA

H. Harrison, P. Buckley, W. Waskowitz, D. Hall, P. Quigly, A. Estrada

Microwave components, bandpass filters, ferrites, multipliers, multiplexers, solid-state switches, switch filters, and integrated subsystems operating over the frequency range from 500 kHz to 40 GHz.

Kyocera America Inc. San Diego, CA

A. Buck, L. Gibson, G. Scott, K. Irwin, S. Hill, D. Diamond, R. Labrado, E. Tanaka, M. Hoshino, K. Ward, T. Uenishi, R. Osmun

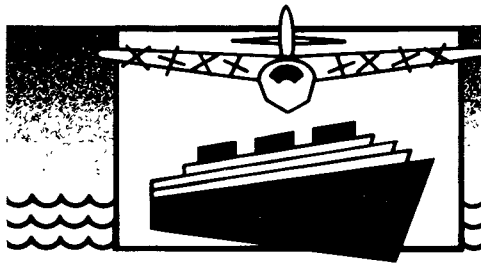
Microwave/RF ceramic packages, thick-film ceramic substrates and thin-film ceramic substrates.

Lasertron Inc. Burlington, MA

W. Diamond, R. Plastow, S. Pavlik
Fiber optic sources, detectors and links designed for reliable RF and microwave transmission over single-mode fiber at frequencies extending above 10 GHz. Products available include 1310 nm laser-based transmitters and wide bandwidth detectors designed for operation in 50 ohm systems with maximum bandwidth exceeding 10 GHz.

Lectronic Research Labs Camden, NJ

K. Reid, B. Raub
Free 202-page master catalog of 6000 new and reconditioned microwave products from 181 manufacturers, including HP, Tektronix, General Radio and Fluke. Microwave test equipment, coaxial components, waveguide and flanges,



1989 EXHIBITION GUIDE

waveguide components, military surplus and microwave training kits. Assorted reconditioned products will be on display.

Lemo RF 1717
Huntingdon Valley, PA

J. Finerfrock, M. Moore

Microwave connective products, including SMA, B, C, 3.5 mm and 2.4 mm precision connectors; fiber optic single and multimode connectors and multi-mixed media; and quick disconnect connectors.

Lightwave Technologies Inc. 1706
St. Petersburg, FL

S. Daniels, J. Hunter

Microwave software, including a linear microwave simulator.

Litton Electron Devices 625
San Jose, CA

J. McPherson, M. Pardo, M. Miller, B. Franke
GaAs FETs, amplifiers and subsystems.

Locus Inc. 428
State College, PA

E. Brem, W. Caplan, R. Newbegin

Low noise amplifiers, redundant and triple redundant LNAs, GaAs FET power amplifiers, converters, image reject mixers, microwave oscillators, and thin-film integrated modules.

LogiMetrics Inc. 727
Plainview, NY

E. Blum

High power TWT amplifiers operating over the frequency range from 0.5 to 40 GHz, from 1 W to 5 kW. Other products include communication amplifiers, radiated susceptibility test sets, jamming systems and threat simulators.

Loral Microwave 1100
Frequency Sources
Chelmsford, MA

B. Knowles, D. Brown, D. Langan

DTOs, control devices, semiconductors, crystal oscillators and VCOs.

Loral Microwave 1100
Narda
Hauppauge, NY

B. Leibowitz, J. Frohmann, J. Coppola, V. Chitkara, A. Rao

Voltage-variable attenuators, mm-wave adaptors, millimeter attenuators, RF mechanical switches, PIN diode switches, millimeter couplers and power dividers, high power couplers and hybrids, drop-in DMO series of DROs, HTO series of DROs, and radiation monitoring devices.

Loral Microwave 1100
Narda West
San Jose, CA

D. Arbaugh, G. Layne, L. Miller

GaAs FET amplifiers, filters, multiplexers, isolators, circulators, oscillators, gain equalizers and microwave integrated subassemblies.

Loral Microwave 1100
Narda West
Rancho Cordova, CA

R. Krestoff, D. Immekus, C. Fraser, B. Horne, C. Yoshida

Ultra-miniature isolator, drop-in and coaxial isolators and circulators, gain equalizers and isolators.

Loral Microwave 1100
Wavecom
Northridge, CA

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

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

Lorch Electronics 806
Englewood, NJ

D. Beene, C. McCoy, V. Hazners

RF and IF signal processing components including mixers, microwave filters, electronic switches, switch matrices, digital phase shifters, digital attenuators, phase detectors, comparators, phase shifters, phase modulators, couplers, hybrids and integrated modules.

Lucas Weinschel 526
Gaithersburg, MD

T. Barnard, C. Crews, L. Pregey, G. McNamara, D. Young, B. Knill, J. Dholoo

RF and microwave test instruments and components.

M/A-COM Inc. 500
Burlington, MA

J. Bowen, M. Field, J.P. Gillard, C. Ducharme, F. McAgara, D. Stelzer, R. Strickland. Other M/A-COM employees, including engineers, marketing personnel and top management will be in attendance.

Semiconductors including GaAs and silicon diodes, transistors, MMICs and materials; high power components including solid-state and electromechanical switches and controls, castings, ferrites, TR tubes and miniature magnetrons; coaxial components including connectors, adapters, couplers, dividers, diode switches, limiters, attenuators, phase shifters, mixers, detectors and amplifiers; subsystems including multifunction assemblies for radar, communications, EW and missiles, and VCOs, DTOs, DROs, synthesizers, HPAs, and antenna assemblies.

MAC Technology Inc. 1220
Klamath Falls, OR

M. Bailey, D. Wright, M. Egbert, J. Branigar, D. Sipes

Stripline couplers, power dividers, directional couplers, 90° hybrids, and high power air line couplers operating over the frequency range from 0.5 to 18 GHz.

Magnum Microwave Corp. 928
Fremont, CA

L. Earl, J. Talbot, J. Fowler

RF and microwave mixers, voltage-controlled

oscillators, mixer and VCO subsystems, complete signal processing blocks, and dielectric resonator oscillators.

Marconi Electronic Devices 527
Hauppauge, NY

E. Smith, D. Williams, S. Neylon, D. McCann, I. Dale, E. Saunders, C. Petereit

Waveguide/coaxial rotary joints, broadband microstrip components to 40 GHz, mm-wave subsystems for seeker applications, GaAs planar doped barrier structures and mixers.

MATCOM Inc. 1301
Palo Alto, CA

B. Jones, C. Huynh, B. Hampton, K. Akada, T. Shino, E. deVera

Microwave semiconductors.

Materials Research Corp. 1101
Hybrid Products Division
Pearl River, NY

T. Stensgard, M. Hill, J. Walker, P. Harper, K. Callery, M. Barna

Superstrate™ 9.6 alumina substrates; precision laser, diamond and ultrasonic machining services; commercial to space qualified sputtering and pulse plating metalization services on alumina, beryllia, quartz, aluminum nitride, ferrites, garnets and titanates; additive and subtractive circuit patterning services including fine line geometries, via holes, and wraparound technologies.

Maury Microwave Corp. 1014
Cucamonga, CA

Merrimac Industries Inc. 1134
West Caldwell, NJ

J. Blahosky, E. Niemiec, C. Potzer, W. Joswick, T. Ramsden

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

Metelics Corp. 1112
Sunnyvale, CA

R. Dorilag, J. Tatum, J. Godbout, F. Kwan, T. Clark

Microwave diodes, including Schottkys, PINs, tuning varactors, step recovery diodes, and planar tunnel diodes.

MIC Technology Corp. 110
Richardson, TX

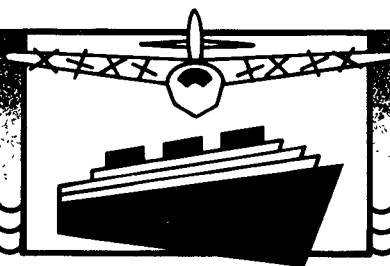
K. Walker, D. Chapman, L. Ingham

Thin-film manufacturing services, substrates, machined substrates, thin-film coatings, thin-film etching, and CAD artwork.

MICA Microwave Corp. 1221
San Jose, CA

F. Mills, A. Campbell, T. Nguyen, A. Chan, L. Parry, K. Wilbanks

Ferrite devices including MICA-PAC and drop-in devices, coaxial and custom isolators and circulators and isoadapters; limiter detector devices including tunnel and Schottky detectors, limiters, limiter detectors and isodetectors.



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Micro-Chem Inc. 930 Santa Clara, CA

L. Matts, D. Natz, L. Tooker, S. Tooker, L. Hutchison, C. Hutchison

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

Micro-Coax Components Inc. 701 Collegeville, PA

F. Decker, L. Deery, J. Lewis, R. Schafer

Tubular lowpass, bandpass and highpass filters; UTFLEX flexible microwave cable assemblies; semi-rigid coaxial cables; and connectors and assemblies.

Micro-Dynamics Inc. 1326 Woburn, MA

T. Haley, M. Sweet, R. Jacobson

Microwave switches; switch filters; limiters; digital, voltage-controlled and shutter attenuators; integrated subassemblies; TR tubes and waveguide switches.

Microelectronics Technology Inc. 1325 Hsinchu, Taiwan, ROC

P. Chen, W. Lo, W. Huang, C. Hsieh, L.C. Chang

Microwave components and subsystems, solid-state power amplifiers from 1 to 15 GHz, C-band power amplifiers up to 10 W, C-band linear power amplifiers for digital radio applications, Ku-band power amplifiers up to 2 W, TWTA retrofit systems and Marisat components.

Microlab/FXR 911 Livingston, NJ

R. Vincent, P. Nye

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

Micronetics Inc. 1316 Norwood, NJ

Micronics Technology Inc. 725 Glen Cove, NY

P. Basse, J. Mruz

Precision RF and microwave frequency sources, including frequency synthesizers, phase lock DROs and multipliers; custom microwave subassemblies for frequency conversion, generation and signal processing applications; mixers, filters, circulators, PIN devices and amplifiers.

Micro-Now Instrument Co. Inc. 422 Skokie, IL

C. Arnow, R. Janyia, R. Hoguet, F. Arnow

Millimeter-wave instrumentation, including solid-state and BWO sweeper generators up to 170 GHz.

Microphase Corp. 713 Norwalk, CT

F. Parrin, H. Schumacher, S. Temel, G. Temel, H. Weil

Detector log video amplifiers, multiplexers, filters, detectors, limiters, channelizers, detector

modules, filter modules, threshold detector amplifiers, video receivers, channelized receivers, and microwave integrated assemblies.

Microsonics 1009 Weymouth, MA

Microsource Inc. 621 Santa Rosa, CA

G. Basawapatna, M. Lampenfeld, T. Quigley, M. Shandas, J. Albright, M. Cheong, C. Maker

Microwave components, subsystems and systems, including YIG tuned oscillators, multipliers, bandpass/bandreject filters, synthesizers, up/downconverters, integrated front ends, and multichannel phase matched receiver front ends.

Microtech Inc. 800 Cheshire, CT

J. Radder, J. McGregor, A. Bitzarakis, B. Driscoll, B. Vaccarino, R. Kass

Rectangular and double-ridged waveguide and components operating over the frequency range from 1.2 to 50 GHz, including catalog and custom flexible and rigid assemblies, directional couplers, waveguide to coaxial adapters, pressure windows and tees; high speed, low phase noise VCOs, frequency multipliers, and phase-locked oscillators.

Microwave Applications Group 1130 Santa Maria, CA

D. Prigge, W. Hord

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

Microwave Circuit Machining Inc. 930 Santa Clara, CA

L. Matts, D. Natz, L. Tooker, S. Tooker, L. Hutchison, C. Hutchison

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

Microwave Development Co. Inc. 113 North Andover, MA

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

Passive double ridge/rectangular waveguide and coaxial components operating over the frequency range from 1 to 40 GHz, including magic tees, directional couplers, high power adapters, calibration kits, high power quartz pressure windows, filters, terminations, loop couplers, power samplers, transitions, bends, and waveguide assemblies.

Microwave Development Labs 1315 Natick, MA

R. Tucker, E. Bannister, G. Riblet, E. Josephson, D. Rondou, D. Josephson

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, windows and suspended substrates.

Microwave Device Technology 132 Lawrence, MA

M. Ayyagari, T. Ramachandran

Data sheets on the following products: mm-wave Gunn diodes; broadband Gunns for YIGs in C, X, Ku, K and Ka bands; GaAs pulsed IMPATT diodes; GaAs abrupt tuning varactors; GaAs constant gamma hyperabrupt tuning varactors; and ISIS multiplier varactors.

Microwave Exhibitions 1331 and Publishers Ltd.

Tunbridge Wells, Kent, UK

R. Marriott, J. McPhail

Conference proceedings covering the Military Microwaves and the European Microwave conferences; reprint volumes and information covering this year's 19th European Microwave meeting in London.

Microwave Journal 413 Norwood, MA

H. Ellowitz, E. Johnson, C. Sheffres, W. Cook, M. Stiglitz, A. Braun, C. Donohue, L. Resnick, M. DeVincenzi, T. Richards, J. Long, C. Covitz

Microwave Journal magazine: subscription and editorial information.

Microwave Power Inc. 401 Santa Clara, CA

J. Tiso, F. Sechi, M. Bujatti, G. Greenwood

High power GaAs narrow and broadband amplifiers operating over the frequency range from 5 to 20 GHz. Power levels range from 0.5 to 5 W. Higher levels and custom designs available.

Microwave Printed Circuitry Inc. 215 Lowell, MA

M. Casper, M. Casper, M. Boyle-Macomber

Teflon circuit boards, stripline and microstrip designs including aluminum-backed materials, and thin-film custom circuitry, resistor arrays and chips.

Microwave Products Division 1212 See Adams-Russell Inc.

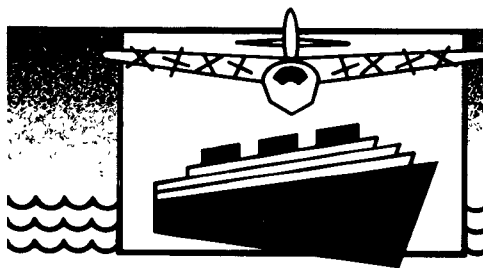
Microwave Semiconductor Corp. 709 Somerset, NJ

J. Diesso, C. Lump, G. Oliver, C. Kamnitsis

RF/microwave power transistors, amplifiers and subsystems; silicon MMICs; solid-state noise generators; pulsed L-band HPA systems to 60 kW; UHF, L- and S-band short and long pulse radar devices; Mode-S/Mark XV/TCAS power transistors.

Microwave Solutions Inc. 1231 San Diego, CA

E. Teyssier, R. Hall, L. Poniente, J. Garza, B. Vaccarino, B. Driscoll, B. Mitchel, J. Mitchel, D. Robison, M. Hushar, C. Stout



1989 EXHIBITION GUIDE

Microwave amplifiers and supercomponents operating at frequencies up to 26 GHz.

Microwave Technology 1005 **Fremont, CA**

J. Lee, D. Gray, A. Roberts, J. Steward, W. Kennan, K. Kawakami

GaAs epitaxial material, MMICs, FET devices, FET amplifiers, detector log video amplifiers and multifunction subassemblies.

Microwaves & RF 631 **Hasbrouck Heights, NJ**

M. Massad, R. Koulbanis, S. Bearse, J. Browne, M. Kachmar, G. Roberts, D. Kennedy, M. Caney, P. Arndt

Microwaves & RF magazine.

Millitech Corp. 833 **South Deerfield, MA**

R. Huguenin, N. Deo, L. Vale, D. Wheeler, E. van der Kaay

Millimeter and submillimeter active components, including oscillators, multipliers, mixers, detectors and isolators; also antennas, subassemblies, Gaussian optic components, frequency extension units for millimeter test applications, block downconverters, and wide-band receiving subsystems.

Mini-Circuits Laboratory 906 **Brooklyn, NY**

Mini-Systems Inc. 516 **North Attleboro, MA**

C. Bender, J. Pinac

Electronic components, thick- and thin-film chip resistors, hermetic electronic packages, custom hybrid circuits.

Mitec Electronics Ltd. 1229 **Pointe Claire, Quebec, Canada**

M. Monzon, A. Martin, J. Gravelle, M. Bentob, J. Robinson, C. Lorenc, G. Simays, D. Snow, T. Tranter

Microwave components and subsystems for telecommunications, satellite communicators and military applications with frequency range and test equipment capabilities of 1 to 60 GHz; microwave subsystems and networks for: up-link and downlink assemblies, transmit and receive multiplexing for communications equipment, and transmit and receive front-ends for radar equipment.

MITEQ Inc. 615 **Hauppauge, NY**

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

Low noise amplifiers operating over the frequency range from 1 MHz to 30 GHz in moderate and ultrawide bandwidths; power amplifiers operating over the frequency range from 500 MHz to 20 GHz in moderate to octave bandwidths; frequency sources including cav-

ity-tuned oscillators, VCOs, DROs, phase-locked cavities and DROs; signal processing components including mixers, mixer-preamplifiers, image-reject mixers, limiters, discriminators, log amplifiers and multifunction assemblies.

Mitsubishi Electronics 607 **Sunnyvale, CA**

S. Child, J. Dreyfuss, J. Berger, J. Guadagno

Microwave GaAs FETs and devices including low noise, medium and high power discrete devices, high power internally matched devices and MMICs.

Modpak 1212 *See Adams-Russell Inc.*

Modular Components National Inc. 1329 **Forest Hill, MD**

S. Sousa, R. Fletcher

Stripline and microstrip circuit boards and metal-backed microwave printed circuit boards.

Motorola Semiconductor Products 408 **Phoenix, AZ**

P. Holmes, D. Murray, S. O'Shea, N. Dye, B. Hunter, M. Williams, R. Hejhall, L. Wilson, D. Walters

RF and microwave discrete silicon bipolar and FET transistors to 4 GHz; low noise and power devices in a wide range of packages; complete amplifier assemblies to 100 W and 2 GHz.

MPR 1429 **Burnaby, BC, Canada**

P. Walters, D. Rosenauer, M. Wlodyka, E. Minkus

Satcom microwave and RF units; thick- and thin-film circuits including MHMIC, MMIC and direct silicon interconnect.

M-Pulse Microwave 608 **San Jose, CA**

E. Pendleton, B. Long, J. Richards, sales representatives

Microwave and RF diodes including Schottkys, PINs, NIPs, SRDs, varactors, tunnels and MNOS capacitors; products available in chip, beam lead or packaged configurations; new patented leadless ring quads.

MSN 533 **Englewood, CO**

S. Steeves, M. Adams, C. LaCroix, T. Gordon, K. Walsh, G. Breed, L. Besser

Microwave System News magazine, RF Design magazine, Defense Electronics magazine, and Microwave System Designer's Handbook.

Murata Erie North America 436 **Smyrna, GA**

R. Barnum, M. Hattori, Y. Ishikawa, M. Johnston, S. Kurose, B. Lipomi, Y. Mori, G. Pfeiffer, T. Sudo, K. Wakino, M. Weski

Surface-mountable monolithic and microwave chip ceramic capacitors, inductors, trimmer capacitors, trimming potentiometers, AM/FM filters, resonators, and Hall effect elements; conventional passive components including

disc and monolithic ceramic capacitors, resistor networks and potentiometers, EMI/RFI filters, rectifiers, power supplies, filter connectors, crystals, and piezoelectric products including transducers, resonators and alarms.

NCI 406 **Paramus, NJ**

B. Hessen-Schmidt, G. Simonyan

Digitally tuned oscillators, synthesizers, phase-locked oscillators in RF and microwave frequencies.

New England Micronetics 1316 **Norwood, NJ**

Noise Com Inc. 406 **Paramus, NJ**

G. Simonyan, D. McLaughlin, J. Jacob, B. Hessen-Schmidt, Bob Smith

Full line of solid-state noise diodes, modules and instruments from DC to 110 GHz.

Norplex Oak Inc. 534 **La Crosse, WI**

R. Higbie, J. Christians, R. Trine, K. Valiquette, J. Foeller, M. Muck

PTFE/woven substrate materials (laminates) for high frequency, low loss microwave applications.

NTK Technical Ceramics 734 **Springfield, NJ**

M. Ota, C. Ito, B. Hirano, P. DiPaolo, R. Hanson

Microwave dielectrics, PZT products and 455 kHz filters.

Nurad 828 **Baltimore, MD**

L. Cox, E. Lewis, G. Neuberth, C. Yablou

ECM/EW horn and data link antennas, radomes, conformal flush-mounted antennas, and video/data transmission systems.

Olektron 1011 **Webster, MA**

B. Baker, J. Canty, T. Coppola, B. Beauregard

Attenuators, comparators, couplers, hybrids, mixers, modulators, phase shifters, power dividers and switches.

Olin-Aegis Interconnect Technologies 304 **New Bedford, MA**

M. LoFrumento, C. Roellig, J. Greenspan, A. Durr

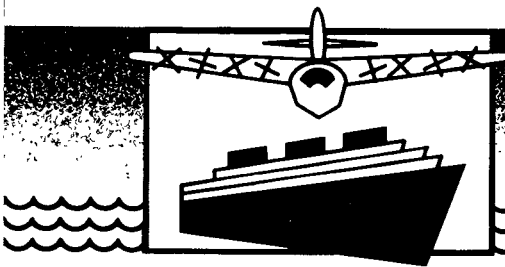
Microcircuit packages for microwave and hybrid applications, fabricated in both metal and ceramic designs; laser-trimmed substrates (including 99.6% alumina) for thin-film applications.

Omega Microwave Inc. 225 **San Jose, CA**

Optimization Systems Associates 1714 **Dundas, Ontario, Canada**

J. Bandler, N. Bandler, S. Chen, R. Biernacki, Q. Zhang, M. Renault, J. Loman

Nonlinear FET model parameter extraction programs, including RoMPE™ and HarPE™.



1989 EXHIBITION GUIDE

Ortel Corp. 1225
Alhambra, CA

G. Grimes, B. Moore, S. Keller, L. Stark, H. Blauvelt, D. Huff, I. Ury, H. Loboda, N. Kwong, R. Mielke, C. Mathews, W. Selders, B. Jacobsen

Fiber optic links for RF/microwave signals; applications include satellite antenna remoting, microwave delay lines, video transmission and high speed data links.

Pacific Monolithics 104
Sunnyvale, CA

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

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

Pacific R&D Inc. 1708
Glendale, CA

W. Wilson, R. Booth, J. MacConnell

Frequency synthesizers and microwave subsystems.

Panasonic Industrial Co. 111
Secaucus, NJ

S. Inai, N. Watanabe, E. Small, T. Rhodes, T. Uwano, T. Nakamura, M. Yoshioka

Dielectric microwave devices for wireless equipment, including dielectric microwave resonators, microwave modules, bandpass filters and voltage-controlled oscillators.

Pascall Electronics Inc. 916
Basking Ridge, NJ

A. Cox, R. Burman, N. Macey, P. Burgess

IF signal processing supercomponents, logarithmic IF amplifiers, constant-phase limiters, frequency discriminators, I & Q phase detector subsystems, selective power meter (carrier monitor), and military power supplies.

PC Dynamics 134
Frisco, TX

S. Nodland, R. Bishop, C. Webb, B. Deitz, J. Holbrook

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

Penn Engineering Components 1719
N. Hollywood, CA

L. Washburn, R. Washburn, W. Down, B. Chester, R. Bastean

Waveguide tubing, flanges, cast and formed bends, catalog and custom components.

Picogiga Inc. 913
Oxnard, CA

A. Carlsson, J.F. Rochette

GaAs and heterostructure epitaxial wafers.

Picosecond Pulse Labs 1427
Boulder, CO

J. Andrews, S. Andrews, S. Andrews

Pulse generators with rise times from 20 ps to 300 ps and amplitudes up to 50 V; broadband coaxial components including attenuators, amplifiers, bias tees, DC blocks, power splitters, signal probes and transformers.

Piezo Crystal Co. 1711
Carlisle, PA

C. Jersik, G. Kurzenknabe, J. Lehr, L. Heishman, R. Zeigler

Quartz crystals and crystal oscillators.

Plessey Three-Five Group 535
San Diego, CA

D. Wappe, R. Evans, J. Arnold

GaAs FETs and MMICs, microwave amplifiers, SAW components, opto-electronics and LED displays.

P/M Industries 626
Portland, OR

Polyflon Co. 708
New Rochelle, NY

W. LaRusso, J. Seminoro

High voltage, high Q non-magnetic fixed variable and trimmer RF capacitors, CuFlon® ultralow loss substrate material, electroplated PTFE components, custom manufacture of NMR/MRI probes and/or coils.

Precision Tube Co. Inc. 1335
North Wales, PA

G. Passmore, W. McNeil, A. West

Semi-rigid coaxial cables including MIL-C-17, soft-form, mini-loss, cryogenic and air-articulated cables; rigid waveguides in copper, bronze and aluminum.

Q-bit Corp. 606
Palm Bay, FL

M. Rogers, G. Callaway, C. Rice, D. Wooley, H. Mead

High dynamic range amplifiers; utilizing Power Feedback™ over frequencies from 0.1 to 3 GHz, hybrid microelectronic and coaxial packaging available.

Quality Microwave Interconnects Inc. 131
Tewksbury, MA

R. Pendergast, J. Kerrigan, P. Tusini

Microwave coaxial cable assemblies.

Racal-Dana Instruments 126
Irvine, CA

A. Meadows, P. Dhillon, M. Levy, S. Schreiber

VXI products, microwave frequency counters, low noise RF sources and RF microwave switching systems.

Radiall Inc. 1328
Stratford, CT

Radian Technology 623
Santa Clara, CA

J. Mongillo, L. Johnson

Microwave filters, multiplexers, voltage-controlled oscillators, digitally controlled oscillators,

frequency synthesizers and switch filter assemblies.

Raytheon Co. 228
Microwave and Power Tube Division
Waltham, MA

W. Boyd, J. Hieber, W. Berwick

Ferrite and solid-state devices (including GaAs FETs), MICs, RF sources and signal processors, infrared devices, hybrid electronic microcircuits, CRTs, lasers, and microwave tubes (CFAs, TWTs and klystrons) for use in early warning, ECM and communications systems.

REMEC Inc. 315
San Diego, CA

G. Margard, G. Czuba, L. Merrow, S. Janetzky, M. Loy, J. Dziki, M. McMahon, R. Ragland, J. Giles, E. Ekaireb, C. Somach

Miniature filters; switch filter arrays; duplexers; multiplexers; PIN diode switches, attenuators and limiters; multipliers; converters; amplifier subsystems; and supercomponents comprised of these assemblies.

Republic Electronics Corp. 1416
Paterson, NJ

L. Eisenberger

Capacitors, including parallel plate types for applications to 50 GHz; microwave MLCs utilizing P-90 and NPO dielectrics, QPL to MIL-C-55681B; temperature compensating from NPO to N5600.

Resin Systems Corp. 512
Amherst, NH

D. Prawdzik, T. DeSisto

Microwave loads, absorbers and terminations in low, medium and high power; catalogued loads and terminations in low (polyiron) and high (ceramic) power, designed for the complete range of waveguide sizes; pourable casting compound, rod, plate and square stock.

Res-Net Microwave Inc. 117
Clearwater, FL

RFD Inc. 125
Tampa, FL

R. Frizzell, L. Tyson, A. Evans, C. Torrey, M. Dodge, W. Feick

Synthesizers, oscillators, amplifiers and subsystems.

RHG Laboratory Inc. 1212
See Adams-Russell Inc.

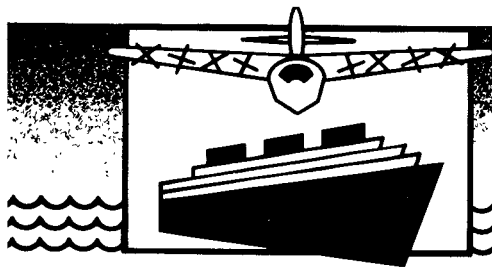
Rockwell Ferrocom 108
San Jose, CA

C. Forsberg, M. Kyser, M. Swift, W. Fuller

Isolators and circulators in coaxial, drop-in, waveguide, isoadapter, three-port and multi-junction designs, operating at frequencies from 0.13 to 26.5 GHz.

Rogers Corp. 328
Microwave Division
Chandler, AZ

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



1989 EXHIBITION GUIDE

Microwave laminates for stripline and microstrip applications.

Rohde & Schwarz Inc. 1408
Lanham, MD

S. Elkins, D. Cook, R. Thornton, W. Bowes, S. Greer, E. Gagnon, B. Dalley, J. Ramie, D. Hammed, J. Gaertner, D. McNally, G. Bischoff

FSA spectrum analyzer, SMH signal generator and the EP-6 EMI/EMC system.

Rosenberger Microwave 705
Titmoning, W. Germany

Sage Laboratories 716
Natick, MA

A. Cieri, C. Marguerite, P. Alfano, H. Chapell, J. Majewski

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

Salisbury Engineering Inc. 733
Salisbury, MD

W. Barbely, N. Barbely, R. Newberry

RF and microwave filters.

Sanders/A Lockheed Co. 231
Manchester, NH

J. Korcuba, R. Jerome, W. Bradley

DFDs, amplifiers, control devices, microwave integrated modules, antennas, sources and subsystems.

Sarnoff Research Center 1702
Princeton, NJ

R. Camisa, Y. Narayan, D. McGee, V. Korsun, K. Sivek, J. Donahue, J. Crabbe, E. Denlinger, C. Catanese, F. Marlowe, D. Rhodes, H. Johnson, B. Epstein

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

Sawtek Inc. 1435
Orlando, FL

R. Hays, S. Miller, G. Monetti, R. Kindell, S. Richardson

SAW devices including bandpass filters, low loss filters, resonator filters, oscillators, delay lines, pulse expanders/compressors and custom subsystems that use SAW components; technical assistance for design and production requirements.

Schleuniger USA Inc. 1713
Manchester, NH

C. Burns, P. Doyon, W. Burns, R. Burns, R. Bisson

Coaxial cable stripping equipment including the models 207, 257 and 8015 programmable coaxial cable strippers that strip coaxial cable up to 0.590" OD with strip lengths as long as 3"; single conductor wire stripping machines and semi-rigid cable strippers; multiple step stripping, chamfering and pointing in one operation.

Scientific Microwave Corp. 237
Mississauga, Ontario, Canada

A. Saad

Passive microwave and mm-wave components, including filters, diplexers, circulators, hybrids, couplers, transitions and terminations; evanescent-mode ridge waveguide and planar structures; custom production and consulting services.

Sciteq Electronics Inc. 1418
San Diego, CA

P. Feinberg, C. Myrick

Innovative designs in direct digital synthesis (DDS), featuring GaAs DDS operating from DC to 300 MHz with 20 ns switching speed; OEM and board level frequency synthesizers using DDS, DDS with PLL, mix/filter and drift cancel techniques to generate up to 6 GHz.

SDI Microwave Inc. 1212
See Adams-Russell Inc.

Semiconductor Center 1212
See Adams-Russell Inc.

Sierra Microwave Technology 403
Rancho Cordova, CA

J. Mitchell, L. Race

Microwave components, including isolators, circulators, equalizers, filters, switches and integrated assemblies.

Soladyne 328
Division of Rogers Corp.
San Diego, CA

D. Reed, C. Ogden, A. Hassell, J. Eckholt

Stripline and microstrip circuits on PTFE-based substrates.

Southwest Microwave 217
Tempe, AZ

Space Center 1212
See Adams-Russell Inc.

Space Machine & Engineering 1521
St. Petersburg, FL

J. Archbold, J. Harty, A. Loyd, E. Loyd, K. Zions
Waveguide components and precision machined parts.

Sprague-Goodman Electronics 1223
Garden City Park, NY

M. Trubowitsch, D. Louro, G. Sunde, R. Baxter, D. Tomlinson, D. Sunde, S. Lambert, J. Perry

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

SSPA Microwave Corp. 123
Mississauga, Ontario, Canada

T. Cheng, A. Leung, M. Cheng

Microwave solid-state power amplifiers operating over the frequency range from 1.3 to 18 GHz, with output power up to 100 W at 5.85 to 6.45 GHz and 20 W at 14 to 14.5 GHz.

STC Components Inc. 404
Schaumburg, IL

C. Fay

Medium and high power pulsed and CW traveling wave tubes and TWT amplifiers operating over the frequency range from 4 to 40 GHz with output powers to 400 W CW.

Steinbrecher 434
Woburn, MA

D. Shute, D. Peterson, L. Hayman

High dynamic range microwave, mm-wave and RF components and subsystems for advanced communications and high speed data acquisitions, including ARRAPATT high power mm-wave amplifiers, mm-wave frequency multipliers, microwave mixers, ACCUVERTER RF-to-digital converters, HF tuners and B/D converters.

Stellar Industries Corp. 1710
Leominster, MA

J. Snook, R. Visser, S. Lehrfeld, F. Halgas, D. Morse

Thermal management materials, including AlN, BeO and SiC; ceramic machining and metalization services for custom applications.

Storm Products 1404
Hinsdale, IL

B. Holland, B. Barrath

Flexible and semi-rigid low loss delay lines, assemblies, cables and connectors; fiber optic adapters, coil cards and assemblies.

Surveillance Equipment Division 1212
See Adams-Russell Inc.

Systron Donner Instrument Division 1107
Concord, CA

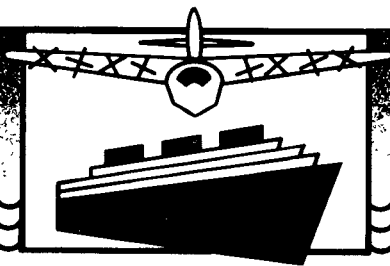
D. Herbert, D. McKenzie, B. Geddes

Synthesized signal generators, universal microwave frequency counters, and ATE programmable DC power supplies.

Systron Donner Microwave Division 1111
Van Nuys, CA

A. Madni, J. Vu, B. Carpenter

Frequency translators, monopulse receivers, frequency synthesizers, signal sources, ELINT receivers, up/downconverters, integrated microwave subassemblies, and transmission line fault analyzers. Active component line includes thin-film GaAs FET amplifiers up to 26 GHz, solid-state digital phase shifters and multipliers. Passive component line includes waveguide switches, couplers, attenuators, adapters, flexible/twistable waveguides, bends, joints, horns and custom stripline assemblies.



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Tachonics 400 **Plainsboro, NJ**

K. Townsend, C. Ghosh, R. Pengelly, S. Goodspeed, P. Cooper, J. Wilson, K. Gilbert

GaAs MMIC switches and switch modules, amplifiers and amplifier modules, attenuators and attenuator modules, temperature compensators, digital attenuators, and MMIC-based hybrids.

Taconic Plastics Ltd. 412 **Petersburg, NY**

B. Smith, S. Seymour, I. Brooks, H. Teal

PTFE/woven glass substrates for military and commercial microwave circuit boards.

Taylor Microwave Inc. 1723 **Hoboken, NJ**

B. Sastre, D. Sastre

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

TECDIA Inc. 115 **Mountain View, CA**

A. Liguori, K. Koyama, N. Aguilar

Single-layer parallel plate chip capacitors and etched substrates.

Technical Components Inc. 1211 **Warwick, RI**

T. Nobrega, R. DeAngelis, H. Barrett, P. Schumacher

Ceramic-to-metal and glass-to-metal MMIC and standard microwave packaging of all types.

Tektronix Inc. 820 **Digital Signal Processing SPU** **Beaverton, OR**

The 3052 real time digital spectrum analyzer (winner of New Product Technology Award for T&M instrumentation) and RF160 downconverter.

Tektronix Inc. 1003 **ICO** **Beaverton, OR**

Mask tooling and design services, including optical and electron beam photomasks and microlithography services.

Tektronix Inc. 820 **Lab Instruments Division** **Beaverton, OR**

The 11802 digitizing sampling oscilloscope and the model 301 PEP.

Tektronix Inc. 820 **Microwave and RF Instruments Division** **Beaverton, OR**

The model 2782 microwave spectrum analyzer operating at frequencies up to 33 GHz

Tektronix Inc. 820 **Microwave Technology Organization** **Beaverton, OR**

The DC to 40 GHz TMP9000 series of microwave probes for on-wafer S-parameter or noise measurements.

Teledyne Microelectronics 1230 **Los Angeles, CA**

C. Parkinson, P. Galletta, D. German, H. Obright, Y. Rubin, D. Woods

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, ultralow to high power designs and packaging for severe environments.

Teledyne Microwave 1222 **Mountain View, CA**

M. Lee, D. Rogers, D. Krudop, B. Owens, J. Lee, J. Pavick, R. Ando, E. Kirchner, G. Gilbert, P. Gruver, N. Bilir, S. Lee, S. Kendall

Advanced DLVAs, amplifiers, DTOs, DROs, isolators, circulators, equalizers and integrated subsystems, including upconverters and downconverters; standard and custom engineered SPDTs, transfer and multithrow coaxial switches operating over the frequency range from DC to 26.5 GHz; bulk acoustic wave delay devices.

Teledyne MMIC 1234 **Mountain View, CA**

Teledyne Pines 1226 **Aurora, IL**

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

The model 106 CXC-10 and model 107 NC-15 coaxial cable benders; micrometra part configuration measuring machine.

Telephonics/PRD Instruments 1309 **Huntington, NY**

H. Ruschmann, R. Wallenmeier, J. Levy

Microwave components and test equipment including automatic vector voltmeters.

Test & Measurement World 1332 **Newton, MA**

E. Winchell

Test & Measurement World magazine.

Texas Instruments 120 **Dallas, TX**

T. Chamberlain, M. Jones, T. Kilgo, S. Lazar, G. Lerude, T. McCaffrey, S. Nelson, P. Schure, W. Sloan, R. Toole

Microwave military components and foundry services for custom designs, standard MMICs and custom components covering frequencies from 110 MHz to 20 GHz.

Texcel, Inc. 629 **Westfield, MA**

J. Lovotti, L. Derose, D. Cimma, R. Lalli

Laser hermetic sealing systems and services, including a computer-controlled glovebox laser sealing systems for precision welding of high reliability electronics packages and a fully equipped hermetic sealing lab for subcontract MIL-spec laser sealing.

Thomson Hybrids 1334 **Dover, NJ**

Time Microwave 811 **Milpitas, CA**

M. Midwin, L. Underkoffler, Z. Romero, B. Swanson, J. Roberds

Suspended substrate technology (SST) multiplexers to 40 GHz; SST bandpass, highpass, lowpass and band-reject filters to 26 GHz; switch filters; polar frequency discriminators; double-balanced mixers; and broadband frequency doublers.

Times Microwave Systems 1704 **Wallingford, CT**

M. Pride, P. Page, R. Krimsier

RF and microwave transmission lines, coaxial cable assemblies, delay lines and MIL-C-17 coaxial cable.

TRAK Microwave 700 **Tampa, FL**

T. Roberts, S. Altamari, T. Gant, M. Wilson, D. Williams

Oscillators (dielectrically stabilized, crystal-controlled, voltage-controlled, YIG-tuned), amplifiers, IF amplifiers, multipliers, comb generators, YIG filters, isolators, circulators, frequency synthesizers, upconverters, downconverters and subsystems.

Transco Products Inc. 204 **Camarillo, CA**

J. Fricke, A. Kwon, L. Neeley

RF and microwave products that direct RF energy, including coaxial and waveguide switches, airborne antennas, filters, couplers, diplexers and RF assemblies.

Trim-Tronics Inc. 1515 **Cazenoiva, NY**

J. Dowd, M. Tronser

Air variable capacitors, sapphire variable capacitors and microwave tuning elements.

TriQuint Semiconductor 802 **Beaverton, OR**

GaAs; custom, semi-custom and standard ICs with digital clock rates to 4 GHz.

TRM Inc. 1031 **Manchester, NH**

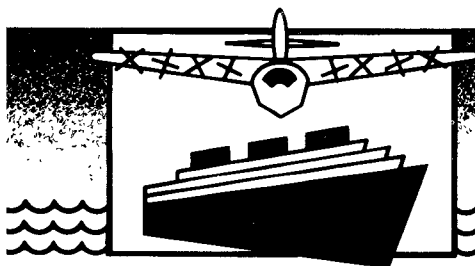
A. Butts, A. Tirollo, H. Gagne

Directional couplers, power dividers, hybrids and custom components operating from DC to 26 GHz.

Trontech Inc. 1208 **Neptune, NJ**

C. Brand, A. Arbuckle, P. Miguez

RF and microwave amplifiers operating over



1989 EXHIBITION GUIDE

the frequency range from 1 kHz to 4 GHz, including LNA, ultra broadband and power amplifiers to 100 W.

Tuck, A.J. Co. 710
Brookfield, CT

A. Tuck IV, D. Tuck, L. Hunt

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

TTE Inc. 432
Los Angeles, CA

S. Sodaro, D. Zavac

Signal conditioning filters operating from 1 Hz to 750 MHz, wideband transformers, baluns and matching transformers.

United Glass to Metal Sealing Inc. 1517
Chelmsford, MA

P. Sullivan, R. Darwin

Glass sealed kovar packages, feedthrus, feedthru insertion assembly, and custom machining, plating, soldering and brazing services.

UTE Microwave Inc. 510
Asbury Park, NJ

L. Nilson, W. Reddoch, J. Gruther, W. McMann

Ferrite isolators, circulators, iso-adapters, circ-adapters, coaxial and waveguide junctions, iso-filters, iso-filter adapters, waveguide terminations, multiport circulators, UHF circulators and isolators.

Varian RF Subsystems Division 220
Beverly, MA

C. Davis

Integrated phase/amplitude interferometer subsystems for DF application; constant transmission phase log amplifier.

Varian - SSO - Cal 220
Santa Clara, CA

W. Warden, B. Quinn, D. Merkley, D. Tuccori, C. Oleson, M. Kopeck, R. Hamilton, F. Olson

Active microwave/mm-wave devices, components and subsystems utilizing MMIC, GaAs and InP technology, including amplifiers, integrated assemblies and subassemblies, DROs, devices (MMICs and diodes) and GaAs foundry services.

Vectron Laboratories Inc. 707
Norwalk, CT

L. Jawitz, J. Dreher, H. Schoenduve, H. Elms

Crystal and non-crystal controlled oscillators from 0.1 Hz to 1 GHz; sinewave, TTL, CMOS, HCMOS and ECL including XO's, TCXO's, TC/VCXO's, VCO's and OCXO's.

Vectronics Microwave Corp. 509
Middlesex, NJ

J. Vogler, T. Vogler

Digital and analog phase shifters, digital and analog attenuators, digital frequency translators, solid-state switches and modulators, mix-

ers, monopulse converters, multifunction MIC modules and passive microstrip components.

Voltronics Corp. 706
E. Hanover, NJ

N. Perrella, S. Newman

Precision trimmer capacitors; glass, sapphire, quartz and air dielectric; MIL-C-14409D QPLD tuners for DROs and microwave cavity filters.

Wall, A.T. Co. 1010
Warwick, RI

C. Gibbs, C. Deinert, J. Matzen, B. Diggett, J. Tipton, D. Daley, B. Fleetmeyer, L. McCredde, S. McCredde, G. Mao

Waveguide tubing in aluminum, copper, brass, copper-clad invar and coin silver.

Watkins-Johnson Co. 301
Palo Alto, CA

B. Hoglund, F. Bancho, S. Witmer, K. Gilbert, L. Dessert, P. Lin, J. Schram, J. Cochran, J. Spear, L. Zulaica

Microwave semiconductor devices, microwave integrated circuits, RF signal processing components and subsystems, mm-wave components, YIG oscillators and filters, voltage-controlled and digitally tuned oscillators, and MMIC components.

Waveline Inc. 814
Fairfield, NJ

D. Morsillo, E. Fodor, J. McGregor

Microwave components and test equipment, including coaxial and waveguide attenuators, waveguide-to-coaxial adapters, switches, couplers, terminations, isolators and circulators, filters and custom designs, and WR22 and double-ridged components.

Wavetek Corp. 1300
San Diego, CA

T. Whitacre, B. Hynes, L. Dolan, J. White, D. Armann, D. Brockway, D. Morikawa, W. Golder, S. Fox

RF and microwave signal generators, RF frequency synthesizers, precision scalar analyzers, and CW and peak power meters.

Webb Laboratories 508
Hartland, WI

R. Webb, K. Webb, R. Carl

Microwave/RF CAE software, including the Receiver Advantage and SysCad for receiver, transmitter and radar engineering; TransCad for comprehensive synthesis of single- and coupled-TEM and non-TEM structures; and Filsolv for synthesis of practical lowpass, high-pass and bandpass networks.

Western Microwave Inc. 622
Sunnyvale, CA

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

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

Wiley, John & Sons Inc. 112
New York, NY

G. Telecki, L. Stein

New books and journals in microwave technology, including a new journal titled *Microwave and Optical Technology Letters*.

Williams Precious Metals 208
Buffalo, NY

T. Adams, T. Ganzenmuller, B. Stroehlein, J. Newman, F. Weatherman

Precious metal products for microwave applications including die attach materials, solder and brazing alloys, jumper chips, bonding tabs, moly tabs, power straps and high purity sputtering and evaporation materials.

Wiltron Co. 920
Morgan Hill, CA

B. Blair, D. Bush, M. Guidi, C. Hordan, B. Blindbury, E. Daw, B. Wiedemann, J. Niehues, T. Brinkoetter

60 GHz coaxial vector network analyzer, 65 GHz microwave components, scalar network analyzers, synthesizers and sweep generators.

W.L. Gore and Associates 320
Flagstaff, AZ

L. Backer, G. Walter, S. Dippel, C. Lee

Development, design and manufacture of wire and cable products for a wide range of military, aerospace and commercial applications; products include subminiature hook-up wire, wire-wrappable wire, round cables, ribbon cables, coaxial cables and microwave coaxial assemblies.

XL Microwave Inc. 1716
Oakland, CA

D. Swift, R. Kieft, N. Kieft, D. Thornton, B. Blair, B. Blindbury, D. Bush, C. Hordan, M. Guidi, S. Watts

Microwave counters (3 GHz, 8 GHz, 12.4 GHz and 20 GHz) with amplitude measuring, GPIB and DC operation.

ZAX Millimeter Wave Corp. 1116
San Dimas, CA

D. Zacharias, S. Rigdon, R. Moreno

Millimeter-wave components and systems operating over the frequency range from 44 to 325 GHz; antennas, detectors, cryogenic mixers, subharmonic and balanced mixers; fixed frequency, mechanically tuned and varactor-tuned Gunn oscillators; frequency multipliers; calibration loads; radars and radiometers.

Zeta Laboratories Inc. 514
San Jose, CA

E. Chapman, N. Stecklein, J. DiGiovanni, S. Wetenkamp, M. Law, M. Malling, T. Leotta, J. Spear, B. Dominguez, J. Rolling

Microwave signal generation and signal processing components, and DF/intercept subsystems and systems.