

TEST & MEASUREMENT PRODUCT PRINCIPALS

OSCILLOSCOPES, RF WATTMETERS, ANALYSERS, GENERATORS, EMF MONITORING SOLUTIONS, BENCH/RACK MOUNT PSUs & ELECTRONIC LOADS



APM Technologies

- Price Competitive High Efficiency Programmable DC Power Supplies for Automotive, Aerospace, Industrial, Scientific, Defence & Medical Applications.
- Rack Mount DC Programmable Power Supplies including Low Noise Linear Designs.
- Rack Mount AC Programmable Power Supplies.



Bird Technologies

- The "Original & Best" ThruLine® Wattmeters.
- Handheld VNA/Spectrum Analysers & Antenna Testers.
- PC & Rack-Mount Spectrum Analysers.
- Wafer Fab Specific, High Accuracy RF Power Measurement Systems.
- Handheld Analogue & Digital RF Power Meters & Wattmeters.
- Broadcast Power Measurement & Monitoring Systems.



Cleverscope

- PC Based Mixed Signal Oscilloscopes.
- 2 Analogue & 8 Digital Inputs.
- 4 Isolated Channel USB Oscilloscopes.
- Lifetime Warranty.



Environmental Stress Systems

- Thermal Platforms (Hot/Cold Plates)
- Mechanical (MRPT), Nitrogen (LN₂) or Liquid Carbon Dioxide (LCO₂) Controlled Platforms.
- Cryogenic Metal Treatment Systems.
- Biomedical/Pharmaceutical Thermal Platforms.
- Liquid Recirculating Chillers.
- Cascade Condensers.



Farran Technology

- Frequency Extension Products for VNAs/PNAs/PNA-Xs, SAs, NFAs & Signal Generators (40 to 500GHz).
- Low Cost mmWave, 2 Port VNA Test Solutions (50 to 75GHz, 60 to 90GHz & 75 to 110GHz).
- Frequency Extension Controller Modules & Extender Calibration Kits (40 to 500GHz).



GW Instek

- Compact, Touch Screen Oscilloscopes.
- Oscilloscopes from 70 to 500MHz.
- AC & DC Power Supplies.
- Waveform, Function & Arbitrary Waveform Generators.
- Spectrum Analysers.
- Benchtop DMMs to 6½ Digits.
- Component Testers.
- Electrical Safety Testers.



ITECH

- Bench & Rack Mount DC Programmable Power Supplies including Low Noise Linear Designs.
- Bench & Rack Mount AC Programmable Power Supplies.
- Bench & Rack Mount DC Programmable Electronic Loads including Multi-Channel Models.
- High Voltage Power Supplies to 2,250V DC.
- Battery Test Systems including Battery Emulators & Solar Battery Test Systems.
- Power Analysers for AC & DC Systems to 600Vrms.



Keysight Technologies

- Digital Oscilloscopes for all Applications & Budgets from 70MHz to 6GHz with Touch Screen Operation and a Wide Range of Decode Software Option Models Available.
- Benchtop & Handheld DMMs, LCR Meters, Current Clamps, Cable/Antenna Testers & Spectrum Analysers.
- Power Supplies & Electronic Loads with Ultra-High Precision & Low Noise Models.
- Frequency Counters.
- Data Acquisition & Signal Switching Systems.
- Function & Arbitrary Waveform Generators.



Pendulum Instruments

- Time & Frequency Measurement, Analysis, Simulation & Calibration Systems.
- Metrology, Aerospace, Defence, Telecom & Automotive Industries.
- Oscillator Manufacturing, RF & Microwave, Electronic & Contract Manufacturing.
- Easy-to-Use, Feature-Rich, GNSS Simulators.
- Industry-Leading Frequency Counter/Analysers.
- GPS-Controlled Rubidium Reference Clocks Offering Unique Traceability Portability.
- Economical Frequency Distribution Amplifier Solutions.



SynQor

- High Performance Power Conversion Solutions for Defence, Aerospace, Industrial, Transportation, Medical & Telecom/Datacom Applications.
- 3-Phase to Single-Phase AC Conversion:
 - 4,000W (5,000 VA) Output Power.
 - Phase Input 80 to 265Vrms Line-to-Line, 47 to 800Hz.
 - Full Power Operation from -40 to +55°C.
- UPS Defence-Grade Uninterruptible Power Supplies:
 - Universal AC Input 80 to 265VAC, 47 to 65Hz with Optional DC.
 - 1,250W to 1,500VA, 2,500W to 3,000VA Output Power.
 - Full Power Operation -20 to +55°C.



Tabor Electronics

- World Class High Speed Arbitrary Waveform Generators & Function/Pulse Generators.
- Proteus Series of Arbitrary Waveform Generators.
- Lucid Series of RF Signal Generators.
- Software Package to Create Complex Waveforms.
- Wideband Amplifiers.
- PCI/PXI Instruments.



TDK Lambda

- Programmable Power Supplies.
- Genesys range, 200W to 15kW, Rack Mount, 1U to 3U sizes.
- Z+ range, 200W to 800W, Rack Mount, Half-Width or Bench Versions.
- Custom Solutions Available.



Wavecontrol

- Radio Frequency & EMF Safety Monitoring Solutions for Worker Protection & Legislative Compliance.
- In-Situ Permanent Monitoring Systems.
- Handheld Portable Monitoring Systems.
- Large Area Electromagnetic Mapping Solutions.



X-COM Systems

- RF Capture, Recording & Playback Systems.
- Spectro-X Spectrum Playback & Analysis Software.
- RF Editing & Creation Software.
- Multi-Channel, Independently Programmable, Broadband Signal Generators.
- Customised Solutions for Interference Analysis, Covert Surveillance, Radar Signal Analysis & Wireless Systems.

IN-HOUSE CAPABILITY

DESIGN & TEST TO 40GHz, POWER GENERATION & POWER MEASUREMENT TO 1kW WITH 3% ACCURACY

SERVICE & CALIBRATION

Aspen Electronics Ltd has been working with Bird Technologies since it first started in business over 40 years ago. As the Bird Technologies' dedicated European Service Centre, we service, repair & calibrate the majority of Bird products at our West London facility. Our primary work is the calibration of RF power, plus the repair and refurbishment of High Power Loads and Attenuators.



To ensure we offer the best service possible, we recently invested in High Power Amplifiers, plus associated equipment to ensure we are able to generate spur free, high power RF signals, vital for good calibration.

Power measurements are made using our high accuracy, high repeatability, Bird Technologies metrology grade RF Wattmeters as transfer standards, plus very high accuracy broadband RF Calorimeters as primary standards. In addition, we use a variety of "special to type" test instruments to ensure your Bird Wattmeter is in optimum operating condition.

With additional equipment such as Spectrum Analysers, Network Analysers and many other instruments, Aspen Electronics is able to calibrate a wide range of RF & Microwave equipment. This facility also gives us the ability to support many of the RF & Microwave Components & Sub-Systems we offer.

DESIGN & MANUFACTURE

With more than 40 years' experience of RF & Microwave Components & Systems, plus a well-equipped service facility, Aspen Electronics is able to design, manufacture and test "special to type" RF & Microwave Sub-Systems and Instrumentation products.

A High Power (2W), 40GHz Phase Locked Source with phase and amplitude control (above top).

A 3GHz Signal Generation and Conditioning System (above bottom).

These represent just some of the products we have built to customer specifications.

Whatever your requirements, our dedicated and experienced design team are here to help provide the right solution for your needs.



ON YOUR WAVELENGTH

Head Office

6 Stirling Park, Laker Road,
Rochester, Kent, ME1 3QR

Tel: + 44 (0)330 313 3220
rf@apcplc.com
www.aspen-electronics.com



ON YOUR WAVELENGTH

- + COMPONENTS
- + TEST EQUIPMENT
- + DESIGN & MANUFACTURE
- + SERVICE & CALIBRATION

▶ THE ASPEN ADVANTAGE

6 PRODUCT SHORTFORM
JAN 2020 - ISSUE 6

LINE CARD



TEL: + 44 (0) 330 313 3220

COMPONENT PRODUCT PRINCIPALS

ANALOGUE, DIGITAL, RF, MICROWAVE & MILLIMETRIC COMPONENTS & SUB-SYSTEMS



Adsantec

- Very High Speed Mixed Signal ICs to 50GHz/50Gbps.
- Multiplexers & Demultiplexers.
- Clock/Data Phase Shifters & Variable Delay Lines.
- Selectors & Switches, Analogue to Digital Converters.
- Linear, Limiting & Transimpedance Amplifiers (TIAs).
- Track & Hold Amplifiers, FIR Filters.
- High Speed Logic, Clock Processors & Signal Generators.
- PRBS Pulse Generators from 0.1 to 40Gbps.



Arance Electronics

- High Performance Test Cables & Adaptors for Defence, Communications & Research Applications to 67GHz.
- VNA Test Cables to 67GHz.
- 50Ω Low Loss Flexible, Armoured, Semi-Flexible & Semi-Rigid Cable Assemblies.
- NMD 3.5, 2.92, 2.4 & 1.85mm Test Port Adaptors.
- Precision Mechanical Calibration Kits & Torque Wrenches.



Bird Technologies

- Terminations & Loads from 2W to 80kW including Convection & Conduction Cooled Models to 18GHz.
- High Power, Oil, Water & Air Cooled Loads for Digital Broadcast Applications.
- Attenuators from 2W to 4kW.
- Splitters, Couplers & Signal Samplers.
- Coaxial Adaptors including EIA Rigid-Line Adaptors.



Charter Engineering

- Electromechanical Coaxial Switches from DC to 26.5GHz.
- SPDT, Transfer & Multiposition SP3T to SP12T.
- SMA, N-Type, TNC & SC Connector Options.
- Internally Terminated & High Power Versions.
- Low Passive Intermodulation (PIM) Types.



Ciao Wireless

- RF & Microwave Amplifiers from 20kHz to 45GHz.
- Low Noise, Ultra Broadband & Multi-Octave Amplifiers.
- Limiting & Ka Band Amplifiers.
- Radial Power Combiners & Dividers to 30GHz.
- Space Qualified Filters, Multiplexers, Hybrids & Couplers to 65GHz.



CrossPoint Technologies

- RF & Microwave Switching Systems for Commercial & Defence Applications including Satellite Earth Stations, Signal Exploitation, ELINT COMINT, SIGINT, TT&C & Test.
- Standard Products for HF, VHF, UHF & Microwave Systems to 18GHz.
- Matrix Switching Systems.
- Redundancy Switching Systems.
- Routing/Selector Switches.
- Solid State & Electromechanical Versions.
- Custom Designs Available.



Croven Crystals

- Precision Quartz Crystal Resonators.
- AT, FC, IT & SC-Cut Crystals from 1 to 360MHz.
- Low Phase Noise & Low Ageing.
- Cold Weld & Resistance Weld Holders.
- QPL Approved Since 1967 per MIL-PRF-3098H.
- Rapid Prototyping Capability.
- Extensive Inventory of Samples.



Custom MMIC

- RF to Millimeter Wave InP pHEMT, GaAs pHEMT, GaAs HBT, GaN pHEMT & GaAs MESFET MMICs.
- Distributed Amplifiers, LNAs, PAs & Drivers to 50GHz.
- Low Phase Noise LNAs (LPNAs).
- Phase Shifters, Attenuators & Switches to 50GHz.
- Plastic QFN VCOs in bands from 5 to 40GHz.
- Mixers: Fundamental, IRM & I/Q to 46GHz.
- Multipliers: Active & Passive to 40GHz.
- Space Qualified Parts Available.

E-MAIL: RF@APCPLC.COM

COMPONENT PRODUCT PRINCIPALS

ANALOGUE, DIGITAL, RF, MICROWAVE & MILLIMETRIC COMPONENTS & SUB-SYSTEMS



Integra Technologies

- High Power Pulsed RF Power Transistors to 10GHz for Radar & Avionics Applications.
- VHF, UHF, L-Band, S-Band, C-Band & X-Band.
- IFF, Mode S, A-DME, G-DME & TACAN.
- VDMOS up to 300W CW UHF.
- Bipolar up to 1.5kW L-Band, 170W S-Band.
- LDMOS up to 1kW L-Band, 180W S-Band.
- GaN up to 1.2 kW L-Band & S-Band.



Integrated Microwave

- Ceramic Filters from 500kHz to 11GHz.
- Bandpass & Bandstop Filters.
- Highpass & Lowpass Filters.
- Ceramic Coaxial Resonators.
- Diplexers, Duplexers & Multiplexers.



Junkosha

- High Performance Cable Assemblies from 26.5 to 120GHz.
- MWX0: High Phase Stability to 120GHz.
- MWX1: Wide Temp Range & High-Durability to 26.5GHz.
- MWX2: Flexible Cables for Measurement Instruments.
- MWX3: High Phase Stability over Temp to 40GHz.
- MWX4: Formable & Flexible, Low Insertion Loss Cable Assemblies to 67GHz.
- MWX5: Formable Semi-Flex Cable for to 18GHz.
- MWX6 Series: High Precision Skew Match Cable Assemblies to 67GHz.
- Aerospace & Space Qualified Cables Available.



KDS

- Miniature Crystal Resonators to 80MHz.
- Miniature Crystal Oscillators to 212.5MHz.
- Arkh.3G Miniature Crystal Technology.
- XO, VCXOs, TCXOs & OCXOs.
- Miniature Monolithic Crystal Filters to 160MHz.
- Optical Quartz Products.
- Automotive Crystal Products to 64MHz.



Keysight Technologies

- Hi-Reliability Electromechanical Coaxial Switches to 40GHz, providing Absolute Measurement Certainty & Long Life to 5,000,000 Cycles.
- Adaptors, Amplifiers & Attenuators.
- DC Blocks & Diode Detectors.
- Directional Couplers & Bridges.
- Power Limiters, Dividers & Splitters.
- Solid State PIN Switches.



Koaxis

- RF Coaxial Cable Assemblies for Defence, Telecommunications & Cable TV Applications to 60GHz.
- 50Ω, 75Ω (CATV), Hand-Formable, Semi-Rigid, Flexible RG Assemblies & VNA Cables.
- K-Flex™ .047, .086, .120 & .141 Flexible Alternatives to Semi-Rigid.
- Low Loss, Phase-Tracking, Phase & Delay Matched Cables.
- 1.85mm, 2.4mm, 2.92mm, MCX, MMCX, MMPX, Type N, SMA, SMP, SMPM, SSMA, SSMB, SSMC, TNC, VITA 67 & Size 8 Connector Options.



KVG Quartz Crystal Technology

- Standard & Precision Ceramic Crystals to 300MHz.
- Crystal Oscillators: XOs, VCXOs, TCXOs & OCXOs to 2.5GHz.
- Ultra-Low Phase Noise with < 180dBc/Hz Noise Floor.
- Ultra-Low g-Sensitivity OCXOs & TCXOs.
- Crystal Filters: MCF, Discrete & Discriminators to 200MHz.
- ESCC "Qualified Parts List" for Space Applications.
- Custom Quartz Crystal Products Available.



Laird Technologies

- Antennas & Accessories for 3G, 4G, LTE, Cellular, WiMAX, BWA, WLAN & WISP Applications.
- In-Building, CPE, Access Point & Mobile Client Antennas.
- Base Station & Backhaul Antennas.
- Mobile Radio & RFID Antennas.
- Vehicular Antennas & Telematics.



Marki Microwave

- Passive & Active Components to 67GHz.
- MMIC & Patented Microlithic Mixers to 57GHz.
- T3 High Linearity Mixers to 40GHz.
- Legacy Double & Triple Balanced Mixers to 65GHz.
- Image Reject/SSB & IQ Special Function Mixers.
- LO Driver Amplifiers, MMICs, Baluns & Transformers to 67GHz.
- Bias Tees, & DC Blocks, SMD & Coaxial to 65GHz.
- Couplers & 3dB Quad Hybrids to 67GHz.
- Multipliers including Doublers, Triplers & Quadruplers.
- NLT. Comb Generators to 85GHz.
- Filters including Bandpass, Lowpass & Highpass.
- Duplexers & Gain Equalisers.
- Resistive, Wilkinson, 2, 3 & 4 Way Power Dividers to 50GHz.



Micro Lambda Wireless

- YIG Tuned Products from 500MHz to 50GHz.
- YIG Oscillators.
- YIG Retrofits & Equivalents for Avantek™.
- Miniature YIG Oscillators including Surface Mount & T-08.
- YIG Bandpass & Band Reject Filters.
- Frequency Synthesizers & Multipliers.
- Bench Test Boxes, YIG Drivers & Controllers.
- Harmonic Generators & Integrated Products.



Millimeter Wave Products

- Millimeter Wave Products, Microwave Technology Components & Assemblies to 325GHz.
- Waveguide Transitions & Adaptors.
- Waveguide to Coaxial Adaptors.
- Flexible, Square & Double Ridge Waveguide.
- Straights, E&H Plane Bends & Twists
- Ferrite Components.
- Antennas, Couplers, Filters, Loads & Terminations.
- Amplifiers, Attenuators, Detectors, Mixers & Switches.



Quasar Microwave Technology

- Passive Waveguide Components & Sub-Systems to 40GHz.
- WG10/WR284 through to WG22/WR28 Inclusive.
- Rigid & Flexible Waveguide Components & Assemblies.
- High Power Loads & Fixed/Variable Attenuators.
- Low, Medium & High Power Terminations & Shorts.
- Broadwall, Crossguide & Loop Couplers.
- WG to Coaxial Adaptors, (N, SMA, K, APC7, TNC, 7-16)
- Waveguide Taper Transitions.
- Double Ridge Waveguide Components.
- Splitters, Phase Shifters & Line Stretchers.
- Horn Antennas from WR975 to WR28.
- Filters & Diplexers, Switching Networks & OMTs.
- Waveguide Hardware, Flanges, Gaskets, Shims & Spacers, Clamps & Hangers, Bulkhead Feed-Throughs, Quick Disconnects, Pressure Windows & Pressurisation Sections.
- Calibration Kits

COMPONENT PRODUCT PRINCIPALS

ANALOGUE, DIGITAL, RF, MICROWAVE & MILLIMETRIC COMPONENTS & SUB-SYSTEMS



RFbeam Microwave

- Radar Sensors/Doppler Devices, Transceivers & Systems to 86GHz for Range & Distance Detection.
- Doppler Sensors for Indoor Automation, Movement Detection & Speed Measurement.
- Applications including Automatic Light Activation, Traffic Movement/Flow & Security Systems.
- Analogue & Digital Processing Output Versions.
- Doppler Transceivers & Simulators.
- Radar Signal Processors, Test & Measurement Systems.
- Antennas & Custom Designs Available.



RFIC

- InGaP/GaAs HBT, PHEMT & RF CMOS ICs for Wireless Applications.
- Front-End Modules, Power Amplifiers, LNAs & Switches for WLAN 802.11a/b/g/n/ac/d/e, Bluetooth, LTE FDD/TDD, WiMAX, Wi-Fi, CDMA, Routers, APs, Entertainment Systems & Educational Aid Applications



SAF Tehnika

- Hand Held, Stand-Alone Spectrum Analysers in Bands from 300MHz to 87GHz.
- Resistive LCD Touchscreen Allows Working with Gloves on.
- Market Leading Receiver Sensitivity: -105dB at 1MHz RBW.
- Instant On/Off Functionality with Simple, Intuitive Controls.
- PC Software Included for Post Measurement Analysis & Reporting.



Signal Microwave

- Precision Millimetric Connectors from 40 to 110GHz.
- Edge Launch Connectors 1.0mm (110GHz), 1.85mm (67GHz), 2.4mm (50GHz) & 2.92mm (40GHz).
- Field Replaceable Connectors 2.92mm (40GHz).
- Vertical Launch Connectors 2.92mm (40GHz).
- Test Boards for Edge Launch Connectors (40 & 70GHz).
- Broadband Test Verification Boards (40 & 70GHz).
- Adaptors 1.85mm (70GHz).



SJM Prewell

- InGaP HBT MMIC Amplifiers from 5MHz to 6GHz for Commercial, Hi-Rel & Defence Applications.
- Mobile Infrastructure, Cellular, PCS, GSM, GPRS, WCDMA, WLAN, ISM, RFID & Fixed Wireless.
- Low Noise, Gain Block & Medium Power Amplifiers.
- IF Amplifiers for CATV, VHF/UHF Transmission & Receivers.
- SOT-26 Power Dividers.



Smiths Interconnect

- RF & Microwave Filters to 40GHz.
- Cavity, Ceramic, Discrete, Tubular & Waveguide Filters.
- Manual & Digital Tuneable Filters.
- Duplexers & Switched Filter Banks.
- Manual, Digital & Voltage Controlled Phase Shifters.
- Voltage Controlled Attenuators.



Sonoma Scientific

- Isolators, Circulators, Iso-Adaptors & Hybrids from 40MHz to 40GHz with Power Handling to 4kW plus.
- Surface Mount, Drop-In, Microstrip, Coaxial & Waveguide.
- Phase Matched & Low IM Products.
- Cellular, SatCom, Tetra, Inmarsat, Microwave Radio, Radar & Custom Applications.



Spectratime

- High-End Crystal, Rubidium & Integrated GPS/GNSS Clocks & Oscillators for Telecomm, Defence, Navigation, Broadcast, Instrumentation & Space Applications.
- SmarTiming+* Disciplining with Advanced Holdover Performance.
- iSource+* range of Crystal & Rubidium Sources for Precise Performance Applications.
- iSync+* range of Synchronisation OCXO & Rubidium Oscillators & Reference Clocks.



SynQor

- High Performance Power Conversion Solutions for Defence, Aerospace, Industrial, Transportation, Medical & Telecom/Datacom Applications.
- Mil-COTS Products including Power Convertors & Filters.
- DC Input Voltages from 9.0 to 700V.
- Hi-Rel Products with Input Voltage Ranges from 5.5 to 475V.
- Converters, Filters, Single/3 Phase Power Correction Modules, DC Filter Modules, Non-Isolated DC-DC Convertors.
- Next Generation DC-DC Bus Convertors.



Triad RF Systems

- Bi-Directional Amplifiers for High Performance Data & Communications Links.
- Standard Products from 20MHz to 8GHz.
- TX Output Powers of 2, 5, 10 or 20W with Error Vector Magnitude (EVM) of 4% typ.
- Rx LNA has 11dB of Gain & NF less than 2.5dB typ.
- GaN & LDMOS Technologies as Applicable.
- TX/RX Switching times < 1µ sec typ.
- Platforms include UAVs, UGVs & Drones.
- Dual & Quad Configurations for MIMO Applications.



TRM Microwave

- Power Dividers/Combiners 2 to 24 Way covering DC-26.5 GHz, Connectorized, Flatpack, Drop-in & Surface Mount.
- Directional Couplers 3 & 4 Port to 26.5GHz, Connectorised & Flatpack Packages.
- Hybrids High Power Cellular, PCS & Dual Band Models, Connectorised, Flatpack, Drop-in & Surface Mount Packages.
- Space Qualified & Custom Solutions Available.



Ultra Electronics - Herley

- Phase Locked Frequency Sources to 50GHz.
- Free Running Dielectric Frequency Sources.
- Direct & Indirect Synthesizers.
- Fast Switching, Broad Bandwidths & Miniature Designs.
- Coaxial & Crystal Oscillators up to 50GHz.
- Block Up/Downconverter Modules for SatCom Applications.
- Aspen Stock a Wide Range of PDROs for Quick Delivery.



Wolfspeed

- LDMOS, GaN, HEMT & MMIC Devices for RF & Microwave, Defence, Aerospace & Telecom Applications.
- Discrete Transistor & MMIC PA Die DC to 18GHz, 28V, 40V & 50V. Power 6 to > 300W.
- Matched & Unmatched GaN on SiC Packaged Discrete Transistors L-Band to X-Band.
- Cellular Infrastructure Power Transistors 400 to 3,500MHz. LDMOS & GaN on SiC.
- UHF, L-Band & Broadcast RF Power Transistors 400 to 1,400MHz.
- Packaged MMIC Pas, L-Band to Ku-Band, 2 to 75W. 28V, 40V & 50V.

WWW.ASPEN-ELECTRONICS.COM

TEL: + 44 (0) 330 313 3220