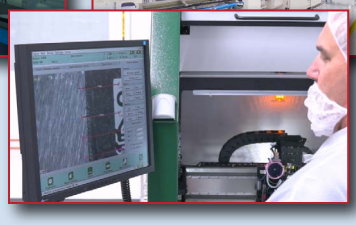
Benchmark Phoenix – Meeting Tough Design Challenges for Customers






Tell Benchmark they can't design something and they will. They love a challenge and will engineer a solution to meet the most stringent specifications. Benchmark Phoenix is a first-of-its-kind facility designed to bring customers cutting-edge RF and high speed electronics to reality faster while reducing size, weight, power and cost (SWaP-C) in their new 120,000+ SF manufacturing space. The facility is a greenfield site providing a range of engineering and manufacturing services ranging from design engineering for RF and high speed applications, through High-density Interconnect (HDI) PCB manufacturing and microelectronic assembly, to SMT and thru-hole assembly and system level integration, to functional testing of high reliability and high frequency products. The site also supports customers with direct-order fulfillment, repair/refurbishment and reverse logistic services. This enables customers to have access to a single site solution for design and development through medium-scale production.

Home to Benchmark Lark Technology's RF and High Speed Design Center of Innovation, Benchmark Phoenix offers customers the ability to rapidly iterate to overcome SWaP-C challenges to advance applications from 5G telecommunications to missile guidance systems. Seamless integration with Benchmark's global manufacturing network gives customers a wide range of options to meet production cost/volume, country of origin or market proximity goals. The Phoenix facility is ISO 9001, AS9100 and ANSI ESD 20:20 certified and ITAR/EAR compliant.

The facility features HDI circuit topologies and modified semi additive processes (mSAP) with 25 micron feature capability; a variety of final finish plating finishes; stacked and staggered micro vias; state-of-the-industry laser direct imaging; automated plating processes; high performance material sets such as liquid crystal polymer (LCP), PTFE, other thermoset and thermoplastic systems and hybrids; automated die attach with seven micron placement accuracy; automated wire/ribbon bonding; assembly/test in ISO 7 cleanroom; jet dispense underfill/encapsulation/dam and fill; stacked die packaging; CSAM acoustic and laser confocal microscope analytics; 3D X-ray; die shear; and wire pull analytics. There is also a full slate of SMT assembly and integration capabilities including analysis and inspection equipment.

Co-located microelectronic and SMT assembly services also ensure that advanced designs can be scaled to required production levels rather than being constrained by fragmented production through multiple suppliers. A case study that demonstrates their expertise includes how market pressures have driven more functionality into smaller devices to the point where conventional partitioning has been the limiting factor. Benchmark Phoenix engineers overcame this design limitation by applying the latest advances in thin dielectric materials and HDI fabrication processes to provide superior signal integrity, enabling non-traditional partitioning while avoiding crosstalk and interference. Benchmark has invested in the materials and processes necessary to create PCBs with 25 micron features in advanced hybrid constructions of more than ten layers, enabling performance up to 110 GHz.

Benchmark Lark Technology is also using the unique features of materials like LCP to greatly reduce the size of circuits, while at the same time improving their performance. This type of approach has allowed Benchmark Lark Technology to shrink laptop size computers down to small cubes and transformed larger microstrip bandpass filters into small, surface mountable LCP stripline filters, which achieves a significant reduction in SWaP-C. In one example, a filter measures 0.25" x 0.25" x 0.032" and weighs only 0.0032 oz, which is 5x lighter than an interdigital microstrip bandpass filter fabricated on another substrate. Lark is currently developing new microwave and mmWave filters at frequencies up to 40 GHz using LCP to deliver high performance and optimize for size, weight and power.

Benchmark's mission is to be their customers' trusted partner; providing comprehensive solutions across the entire product lifecycle; leading through innovative technology and engineering design services; leveraging an optimized global supply chain; and delivering world-class manufacturing services and Benchmark Phoenix embodies this mission.

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