

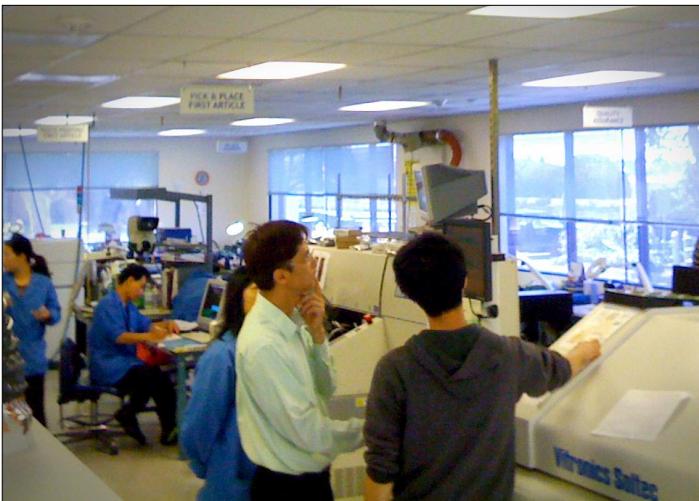


# DIGICOM ELECTRONICS

## Mastering Electronic Processes that Require High Quality and Reliability

When you walk into Digicom you enter the new state-of-the-art facility that the EMS provider moved into in February of this year. The move came after 30 years in business. What you see is attention to quality, from the wall-to-wall ESD floor, specialized cleaning equipment and process controls, emphasis on green manufacturing, and the ISO 9001:2008, ISO 13485:2003 medical devices quality, quality system regulation 21 CFR 820, mil-spec 45208, and numerous other certifications.

Each step of the assembly process is noted electronically and sequenced in the order that it needs to take place. Inspection points are set at every stage, first article checks ensure that the process flows error-free, and every operator has a unique identifier, providing complete traceability from when a job enters Digicom to the finished product. Digicom is committed to building its products and sourcing parts in the United States, but works with partners from many parts of the world and ships finished products internationally.



### Supporting Many Assembly Technologies

"Every EMS (electronic manufacturing services) company is different," says Mo Ohady, general manager of Oakland, California-based Digicom Electronics. "You can tell when you walk into a place, examine the equipment and processes, speak to the people."

Digicom can support many different assembly technologies. These include: automated assembly (usually SMT); manual assembly (through-hole or SMT); SMT boards; through-hole board assembly; high-end cable harnesses; and mechanical assembly.

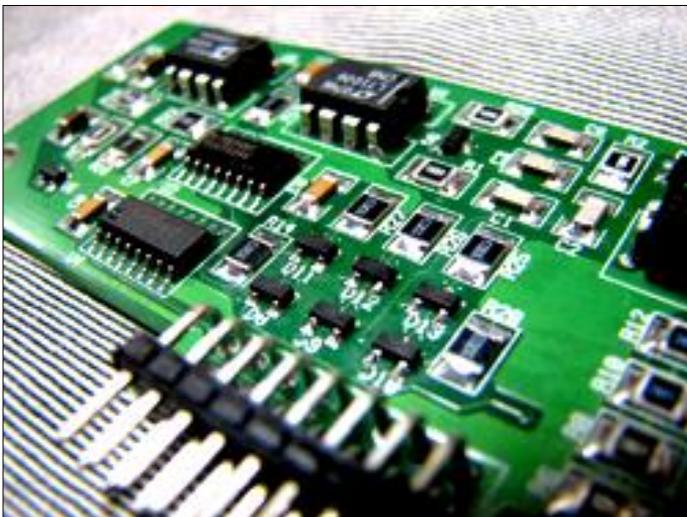
"Digicom isn't for everyone," continues Ohady. "We don't want to manufacture volumes of smart phones.

Our specialty is the product that requires the utmost quality and reliability — complex prototypes, medical, aerospace, military, industrial, and instruments — and although we can handle high volume manufacturing, we also embrace working with companies to design, develop, and troubleshoot challenging electronic products."

Some of the design collaborations have resulted in products that are now exclusive to Digicom. For example the

ROACH (reconfigurable open architecture computing hardware) system that was developed with major universities and research labs throughout the world. The ROACH system takes the baseband data from the most powerful radio telescopes, changes it from analog to digital, and applies sophisticated digital signal processing filtering techniques to derive information about our universe. These systems are customized for each application as some applications require downloading a tremendous amount of data quickly, while others want to selectively download the data. Intricate modules and box build projects, such as the ROACH system, IADC (analog to digital conversion boards), and IBOB (interconnect break-out boards), are totally turnkey.

Another specialty is cabling that can be used in the harshest environments. In this case, Digicom was approached by a train company. The cables were subjected to intense sand and abrasion during braking and they had to withstand 500°F (260°C) of heat. Digicom came up with a special material covering for the cable and designed the cable in such a way as to withstand these elements. It is now the only company that designs and manufactures this cable. The company also builds complex cable assemblies such



as power, data, radio, video, and co-axial type harnesses.

## Diamond Track Process

Central to Digicom is its Diamond Track Manufacturing Process that includes design services, advanced cleaning, selective soldering, purchasing and inventory management, process control, inspection and test, certification, and process validation. These activities enhance productivity, product control, quality, and integrity of the product that's built.

"There is a gap in the market caused by new technologies that make it more difficult to ensure circuit board integrity. Today's chemistries in fluxes and solder, plus the closeness of components, make cleaning more difficult," explains Ohady.

The cleaning aspect of the process is critically important because many failures are due to boards that are not truly clean of contaminants

*"It's not enough to put the boards through a wash cycle. It takes a special combination of chemicals, temperature, wash cycles, and timing to get the boards really clean."*

from the manufacturing process. Maybe the boards seem fine and work okay when they get into the field, but after several months, systems break down. "We have made it our mission to make sure that we have the cleanest boards so that there is no concern when they are placed in harsh environments," continues Ohady. "It's not enough to put the boards through a wash cycle. It takes a special combination of chemicals, temperature, wash cycles, and timing to get the boards really clean. We have researched this

topic and done many experiments to come up with our Diamond Track Cleaning Process. We recently sent our boards to be inspected by an independent lab. When we got the results back we couldn't understand them because our score wasn't on the chart. We were told that our boards were 75 percent cleaner than the highest level of clean according to IPC cleanliness standards, and we are still working to improve or process."

Testing is another area of emphasis. Every board is tested. Inspections are done at every station along the manufacturing process and not only are boards optically inspected with the newest and most innovative equipment that uses lasers to see all areas of the board, but they are manually inspected after that. "We're not ready to trust the boards completely to automated equipment," Ohady explains. "Maybe one day if we see that the results we get are that reliable, but until then, we'll continue to follow-up with manual inspection."



## Medical Electronics

"One area that we're really concentrating on is the medical electronics market. Obtaining ISO13485 medical certification means a lot to us. There is no room for error with medical devices. Each job that Digicom accepts, no matter the industry, is special. That's another thing that differentiates us. The person assigned to each job is a very high level engineer. We look at each job, box-build system, board, and analyze the design for manufacturability and potential problems, evaluate the bill of materials, optimize the manufacturing process to find ways to produce the product more cost-effectively. A lot of this has to do with forecasting."

"Validating the process is complicated, especially with medical products. In dealing with the FDA, products can be delayed. We can speed our customers' products through this process because the compliance bodies recognize our certification and know our standards and procedures are applied to the products we're building for our customers," adds Ohady. "With our Diamond Track Process, we approach design, cleaning, manufacturing, quality, and reliability in a comprehensive new way and we are closing the technology gap to deliver excellence."

### **DIGICOM Electronics, Inc.**

7799 Pardee Lane, Oakland, CA 94621

Tel: 510-639-7003

Email: [info@digicom.org](mailto:info@digicom.org)

"Validating the process is complicated, especially with medical products. In dealing with the FDA, products can be delayed. We can speed our customers' products through this process because the compliance bodies recognize our certification and know our standards and procedures are applied to the products we're building for our customers."