

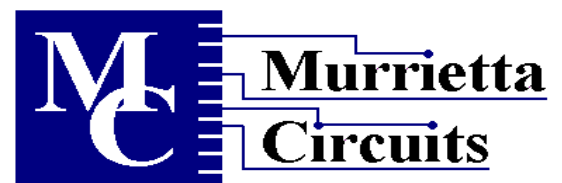
# MURRIETTA CIRCUITS

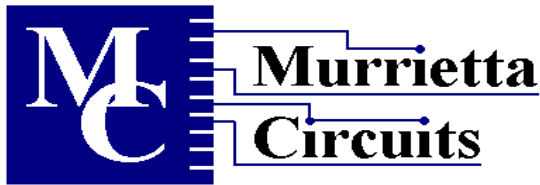
## ELECTRONIC MANUFACTURING SERVICES



## THE INTEGRATED SOLUTION!

**PCB DESIGN  
PCB MANUFACTURING  
PCB ASSEMBLY  
PARTS PROCUREMENT**





5000 Landon Drive, Anaheim, CA 92807 ♦ 714-970-2430 ♦ Fax 714-970-2406

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## **COMPANY HISTORY**

Its current President, Albert G. Murrietta, founded Murrietta Circuits in 1980 as a circuit board design service bureau. In 1983 he opened his first facility in Anaheim with approximately 2,000 square feet and a few employees. By 1984 the company received its first major financing, which was used to invest in leading edge computer workstations for the engineering and design of Printed Circuit Board's (PCBs).

By 1987, with 12 employees and a growing business, Mr. Murrietta began plans to turn Murrietta Circuits into a full manufacturing company. With an additional round of financing and a move to a new facility, Murrietta Circuits officially entered the market for circuit board fabrication in January 1989. After two financially difficult years, a turnaround was managed that saw seven years of 30% plus sales and earnings growth.

In 1996, the company expanded into circuit board assembly with the addition of automated pick-and-place equipment, reflow ovens and BGA rework stations, to completely handle a wide variety of technologies.

2002, Murrietta Circuits moved to its new facility in the Catellus Corporate center in Anaheim. The new building is 47,500 square feet and was specifically designed to house our PCB Fabrication and Assembly divisions, along with the PCB Design & Engineering group. At this time the company offers a full range of electronics manufacturing services, serving the government, aerospace, semiconductor and medical industries. The company is ISO 9001:2008 registered, AS-9100 certified, certified SDB, IPC-6012 & IPC-6013 Class II & III compliant and have NADCAP Accreditation.

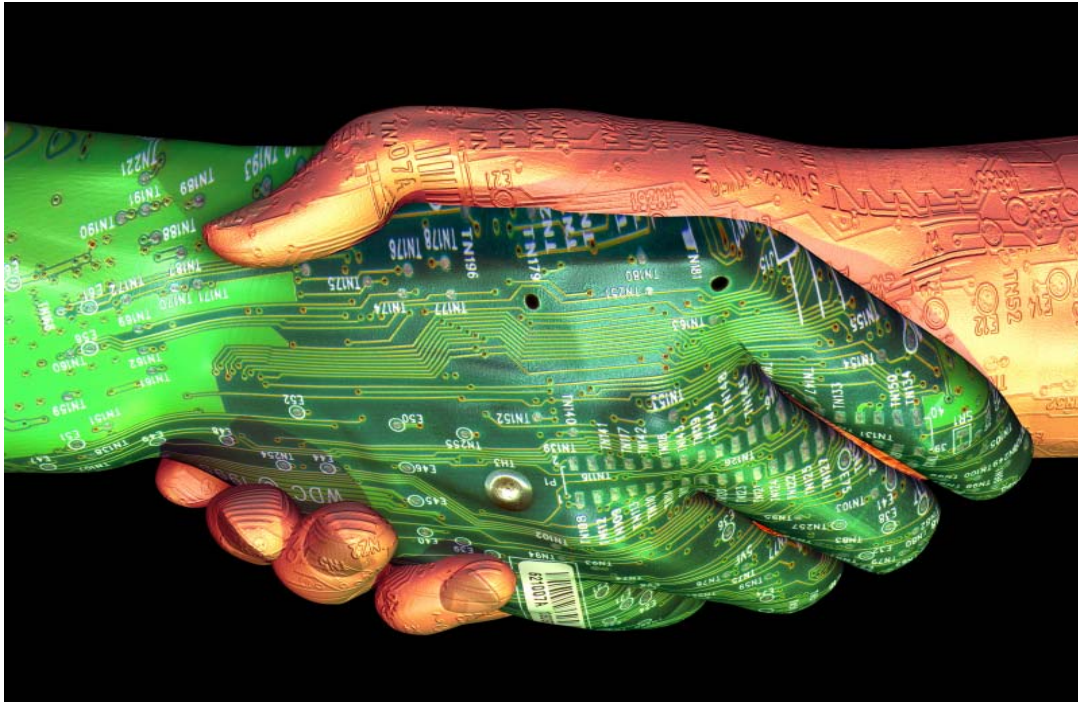
## **MISSION STATEMENT**

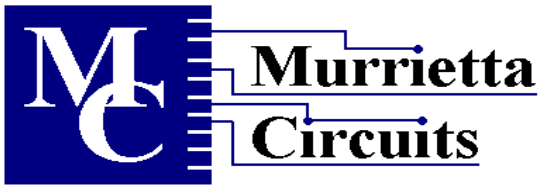
**“WE WILL CONSISTENTLY DELIVER QUALITY PRODUCTS,  
ON TIME, WITH THE HIGHEST CUSTOMER SERVICE, WHILE  
CONTINUALLY IMPROVING OUR PROCESSES”**

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Web Site:  
RFQ E-Mail:

[www.murrietta.com](http://www.murrietta.com)  
[sales@murrietta.com](mailto:sales@murrietta.com)





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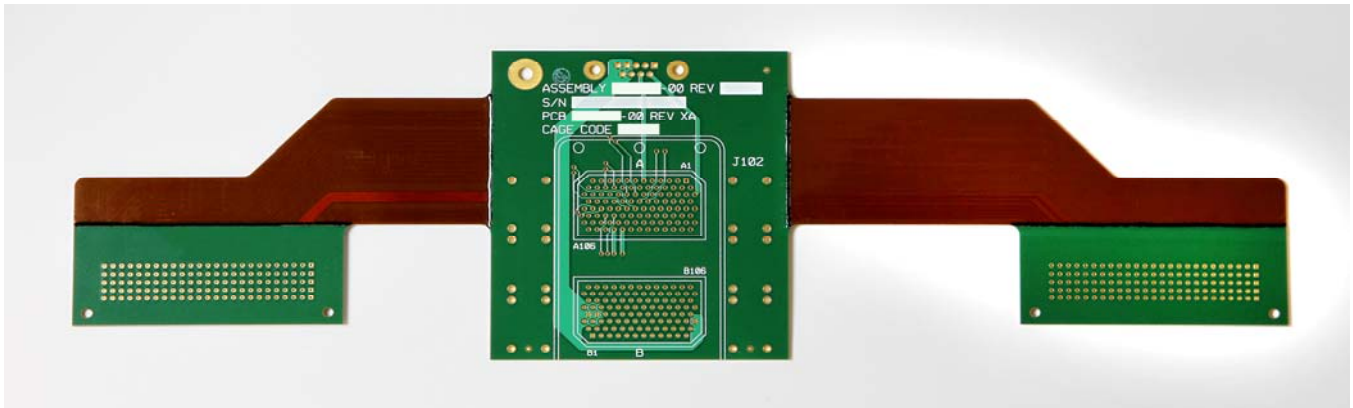
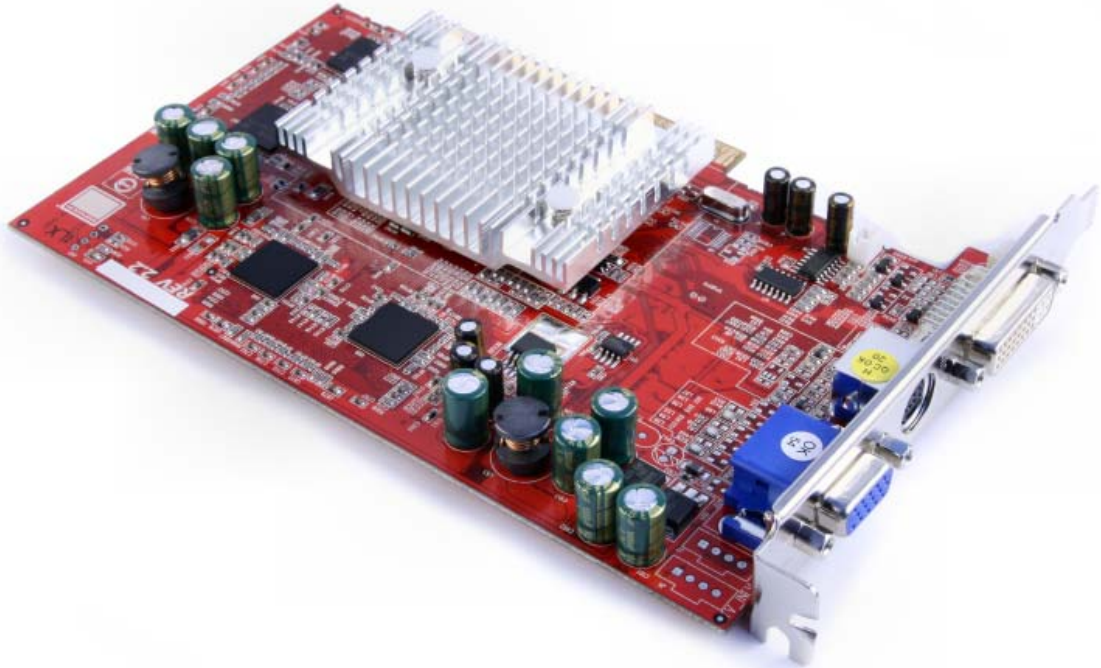
**Quality Standards:**

ISO-9001 Registered (through UL)  
AS-9100 Registered (through UL)  
IPC-610 & IPC 6012 Class II & III  
IPC 6013 Class II & III  
J-Standard 001 Process Certified  
UL Approved  
ITAR Certified  
Comsec Clearance

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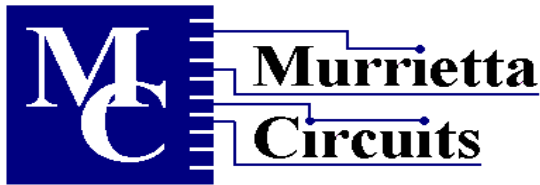
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## I. COMPANY'S PRODUCT / SERVICES

### Electronic Manufacturing Services

- **Design** - circuit board design and schematic capture using the latest technology in software including: Mentor Graphics Expedition 2007.8, Mentor Graphics Expedition PADS, OrCad Schematic Capture, Altium Summer 2009, AutoCad 2000., Cadance Allegro and Solidworks 2010. We also provide electrical engineering & BOM configuration support upon request.
- **Fabrication** – quick-turn prototype and low volume production materials such as: FR-4, Polyimide, Rogers. Technology includes: Blind & Buried Via's, Micro-vias, Impedance Control, High layer count, High aspect ratio copper plating. Product Types: Rigid, Flex & Rigid-Flex.
- **Assembly** - circuit board assembly using automated pick and place equipment. Capabilities include: quick-turns, Fine-Pitch, Ball Grid Arrays, X-Ray, Double Sided SMT, Cable Assemblies and Box Builds.
- **Parts Procurement** – kitting services, BOM management, inventory control and cost reduction services.
- **Test Engineering Services** – Custom Functional Test fixtures, Boundary Scan Testing, ICT, Flying Probe ICT and Design For Test (DFT) consulting.

## II. PERSONNEL RESOURCES

(1)	(a) Admin, Mgmt & Sales	=	20
	(b) PCB Assembly & Manufacturing	=	61
	<b>(c) Total Employees</b>	=	<b>81</b>

## III. FACILITIES

- (1) Murrietta Circuits facility is approximately 50,000 square feet.
- (2)

(a) Admin / Office	=	7,000 square feet
(b) Design / Engr.	=	3,000 square feet
(c) Manufacturing	=	33,500 square feet
(d) Warehouse	=	4,000 square feet
(e) Clean Room	=	2,500 square feet

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**IV. QUALITY ASSURANCE STANDARDS**

**ISO 9001:2008**

**AS9100 Certified**

IPC 2221 & 2222

IPC-6012 Class II & III

IPC-6013 Class II & III

IPC 600

IPC 610 Class II and III

UL Approved

J-Standard 001 Certified

ITAR Registered

Comsec Approved

Nadcap Accreditation

Registered through UL

Registered through UL

PCB Layouts

PCB Fabrication

PCB Fabrication

PCB Fabrication

PCB Fabrication

PCB Fabrication

PCB Assembly

Companywide

Companywide

Companywide

**V. COMPANY OFFICERS**

President

VP Manufacturing

VP Sales & Marketing

Albert G. Murrietta

Albert A. Murrietta

Andrew Murrietta

[al@murrietta.com](mailto:al@murrietta.com)

[albert@murrietta.com](mailto:albert@murrietta.com)

[andy@murrietta.com](mailto:andy@murrietta.com)

**VI. OTHER**

State Resale Number

Federal Tax Id

Year of Incorporation

Cage Code

Dun & Bradstreet

SIC Code

NAICS Code

Business Classification

SR EA 99-249229

33-0540581

1993 (California Corp.)

0EJD7

05-496-6627 Rating 3A2

3672

541330 – Engineering Design Services

334412 – Bare Printed Circuit Boards

334418 – Assembled Printed Circuit Boards

Small Minority Owned Business

SDB-Self-Certified

**CATEGORY**

**CAPABILITY**

**CAD Platforms**

Mentor Graphics Expedition 2007.8  
Mentor Graphics PADS  
Altium Designer  
AutoCad 2000:  
Solidworks 2010  
Cadence Allegro

**Schematic Capture**

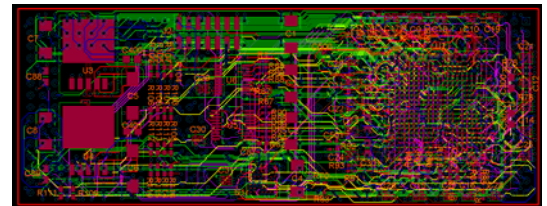
Cadence OrCad Capture  
Mentor Graphics Design Capture 2007.8  
Mentor Graphics DxDesigner 2007.8

**Board Designs**

High Density / Complex Digital  
Analog / Mixed Signal  
Digital / Analog  
Power Supplies  
Backplanes / Midplanes  
Blind / Buried Vias, Microvias & Via in Pad.  
Rigid/Flex/Rigid-Flex

**High Speed Circuitry**

Single ended / Differential Controlled Impedance  
Maximum Trace Length  
Matched Trace Length  
Delay Formulas  
Low to High Layer Count  
Cross Talk Avoidance



**CAM Systems**

Valor Genesis  
CAM350

**Features / Benefits**

Proven DFM Standards (Design For Manufacturability)  
Design For Testability (DFT)  
ICT Testability Analysis  
In-House PCB Fabrication  
In-House PCB Assembly  
BOM Analysis & Parts Procurement  
Full Electrical Engineering Services

**Pricing**

Fixed Price, Hourly Rates & On-Site Design Services

**Quality Standards:**

IPC-2221 & IPC-2222  
IPC-275D



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<b>PROCESS</b>	<b>STANDARD</b>	<b>ADVANCED</b>	<b>LIMITED RUN</b>
<b>Materials</b>			
FR-4, 170 Tg	Yes	-	-
FR-4, > 170 Tg	-	Available	Available
Polyimide, 260 Tg	Available	Available	Available
Teflon	-	Available	Available
Rogers 4000	Available	Available	Available
Lead-Free temp rated	Available	Available	Available
Ceramic	Available	Available	Available
Low Loss	-	Available	Available
Halogen Free	Available	Available	Available
BT Epoxy	Available	Available	Available
Cyanate Ester	Available	Available	Available
STABLCOR®	Yes	Yes	Yes
<b>*Buried Capacitance</b>	-	Available	Available
<b>*Pyralux Flexible Polyimide</b>	Available	Available	Available
<b>*Copper (Rolled Annealed, E.D.)</b>	Available	Available	Available
<b>Inner Layers</b>			
Min. Core Dielectric	= > .002	.001	.001
Min. Line ¼ copper	= > .003	.0025	.002
Min. Line ½ copper	= > .0035	.003	.002
Min. Space ½ copper	= > .00375	.0035	.003
Min. Line 1 oz. copper	.004	.00375	.0035
Min. Space 1 oz. copper	.004	.00375	.0035
Min. Line 2 oz. copper	.005	.004	.00375
Min. Space 2 oz. copper	.005	.004	.00375
Min. Pad Size over drill (overall)	.012 (.006 per side)	.010 (.005 per side)	.008 (.004 per side)
<b>*Min. Pad Size over drill (overall)</b>	<b>.020 (.010 per side)</b>	<b>.014 (.007 per side)</b>	<b>.010 (.005 per side)</b>
Min. Plane Clearance diameter over drilled hole (overall)	.020 (.010 per side)	.016 (.008 per side)	.012 (.006 per side)
<b>*Min. Plane Clearance diameter over drilled hole (overall)</b>	<b>.024 (.012 per side)</b>	<b>.020 (.010 per side)</b>	<b>.016 (.008 per side)</b>
<b>Outer Layers</b>			
Min. Line 1 oz. copper	.004	.00375	.0035
Min. Space 1 oz. copper	.004	.00375	.0035
Min. Line 2 oz. copper	.006	.005	.004
Min. Space 2 oz. copper	.006	.005	.005
Min. Line 3 oz. copper	.008	.007	.006
Min. Space 3 oz. copper	.008	.007	.006
Base copper foil	0.5 oz. (18μ)	0.375 oz. (12μ)	0.25 oz. (9μ)
Min. Pad over drill (overall)	.012 (.006 per side)	.010 (.005 per side)	.008 (.004 per side)

*\* Flex and Rigid-Flex design parameters only, all others apply to all product manufactured. Ask for Flex/Rigid Flex DFM demo.*

**\*\*\*Stated manufacturing capabilities are intended to be general guidelines, deviations are possible and should be reviewed by Murrietta Circuits Engineering personnel\*\*\***

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**RFQ E-Mail:**

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<b>PROCESS</b>	<b>STANDARD</b>	<b>ADVANCED</b>	<b>LIMITED RUN</b>
<b>Multi-layer Construction</b>			
Max. Layers	30 layers	30 layers	> 36 layers
<b>*Max. Layers</b>	<b>18 layers</b>	<b>19-24 layers</b>	<b>&gt; 24 layers</b>
<b>*Flex, Flex + Stiffener, Rigid-Flex</b>	<b>Available</b>	<b>Available</b>	<b>Available</b>
Max. Thickness	Up to .125	.125-.200	= > .250
Min. Thickness Tolerance	+/- 10%	+/- 7%	+/- 5%
Blind & Buried via	Yes	Yes	Yes
Controlled Dielectrics Thickness	+/- .003	+/- .002	+/- .001
Layer to Layer Registration	+/- .005	+/- .003	+/- .003
Bow & Twist (inch per inch)	> .007	> .005	> .005
<b>Drilling</b>			
Minimum Drill Size-mechanical	.008	.006	.004
Controlled Depth Drilling	<b>Yes</b>	Yes	Yes
Drill Position (RTP)	+/- .003	+/- .003	+/- .002
Laser Drilling	-	Yes	Yes
<b>*Hole Edge To Rigid-Flex Interface</b>	<b>.050</b>	<b>.049-.025</b>	<b>&lt;.025</b>
<b>Electrolytic Plating (Copper &amp; Gold)</b>			
Max. Aspect Ratio, Copper (thru holes)	9:1	10:1	12:1
Max. Aspect Ratio, Copper (micro via)	.5:1	.75:1	.85:1
Plasma Etch-back	Yes	Yes	Yes
Electrolytic Hard Gold, tips, selective	Yes	Yes	Yes
Electrolytic Soft Gold	Yes	Yes	Yes
Conductive Silver Via Fill (Via In Pad)	-	Yes	Yes
Edge Plating	Yes	Yes	Yes
<b>Solder mask &amp; Legend</b>			
Solder mask type (LPISM)	Taiyo PSR-4000	Any mfr	Any mfr
<b>*Solder mask type (Flexible)</b>	<b>-</b>	<b>Rogers RFlex 8080</b>	<b>-</b>
Colors-Green, blue, red, clear, black	Green	-	-
Min. Solder mask dams	.004	.0035	.003
Min. Solder mask Clearance	.004	.003	.003
Legend Colors-white, yellow, black, red	White	-	-
Via fill (Conductive, Non-Conductive)	Yes	Yes	Yes
Via tent (dry film)	Yes	Yes	Yes
<b>Conductive Paste / Ink</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Carbon Paste	Yes	Yes	Yes
Dry film solder mask	Available	Available	Available

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<b>PROCESS</b>	<b>STANDARD</b>	<b>ADVANCED</b>	<b>LIMITED RUN</b>
<b>Surface Finishes</b>			
Solder Leveling	Yes	Yes	Yes
Immersion Tin	Yes	Yes	Yes
Immersion Gold over electroless Nickel	Yes	Yes	Yes
Immersion Silver	Yes	Yes	Yes
OSP	Yes	Yes	Yes
<b>Fabrication</b>			
Fabricated dimensions- routing	+/- .005	+/- .004	+/- .004
Fabrication radius	+/- 5 degrees	+/- 5 degrees	+/- 5 degrees
Fabricated dimensions – scoring, x,y	+/- .010	+/- .005	+/- .005
Fabricated dimensions - scoring, z (web thickness)	+/- .005	+/- .004	+/- .004
Beveling	Yes	Yes	Yes
Edge Milling	Yes	Yes	Yes
Counter-sink/bore	Yes	Yes	Yes
<b>Precision Controlled Depth</b>	<b>+/- .005</b>	<b>+/- .003</b>	<b>+/- .002</b>
<b>Testing-Electrical &amp; Impedance</b>			
Double Sided Grid (.070/.080)	Yes	Yes	Yes
Flying Probe (fixture less)	Yes	Yes	Yes
Impedance-single ended, differential, broad-side coupled, edge coupled, co-planar	Yes	Yes	Yes
Impedance Tolerance	+/- 10%	+/- 10%	+/- 8%
<b>Quality Standards</b>			
ISO-9000, 2008 Registered			
AS-9100, Registered			
IPC-6012/IPC-6013/600 Class 2 & 3			
UL Approved	Yes	Yes	Yes
Environmental - HALT, HASS, HATS	Available	Available	Available
Ionic Cleanliness (bare & loaded board)	Yes	Yes	Yes
<b>Panel Sizes</b>			
12" X 18", 16" X 18", 18" X 24"	N/A	N/A	N/A
<b>*Flex Min 12" X 18" – Max 18" X 24"</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Maximum Board Size</b>			
	16" X 22"	16" X 22"	16" X 22"

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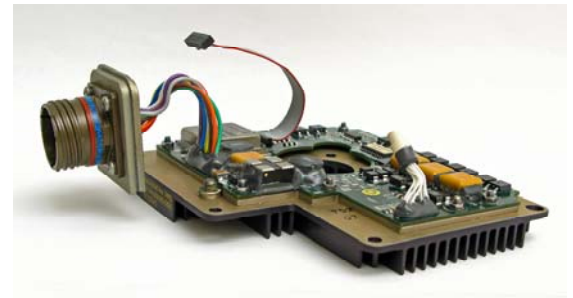
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**CATEGORY**

**CAPABILITY**

<b>Component Types</b>	<b>SMT, BGA, Micro-BGA, Thru-Hole, Mixed, Double Sided</b>
<b>Max. Board Size (Automated)</b>	<b>17 x 19</b>
<b>Max. Board Size (Manual)</b>	<b>24 x 30</b>
<b>Min. Package Size</b>	<b>0105 and up</b>
<b>Minimum Turn</b>	<b>1 work day    <i>(Subject to job specific requirements)</i></b>
<b>Turnkey Mfg / Parts Procurement</b>	<b>Yes</b>
<b>Cable Assembly</b>	<b>Yes</b>
<b>Box Builds</b>	<b>Yes</b>
<b>Accepted Surface Finish:</b>	<b>Solder Level Immersion Gold White Immersion Tin Immersion Silver</b>
<b>Conformal Coating Services:</b>	<b>Silicone (SR) Polyurethane (UR) Acrylic (AR) Epoxy (ER)</b>
<b>X-Ray</b>	<b>Yes</b>
<b>BGA Rework</b>	<b>Yes</b>
<b>ESD Controls:</b>	<b>Floor Coatings Heel &amp; Wrist Straps Grounded Equipment Daily Testing</b>
<b>Test Services:</b>	<b>Functional Test Fixture Design &amp; Mfg Boundary Scan Programming &amp; Testing DFT Analysis Flying Probe In-Circuit Test</b>
<b>Quality Standards:</b>	<b>J-Standard 001 Process Certified AS-9100 &amp; ISO 9001 Registered (through UL) IPC-610 Class II &amp; III IP6012 &amp; IPC-6013 Class II &amp; III</b>



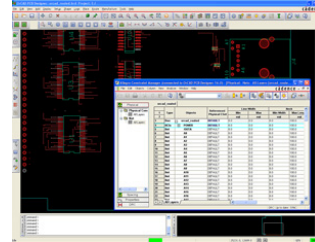
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**PCB DESIGN LAYOUT TOOLS**

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**COMPUTER-AIDED DESIGN (CAD – PCB LAYOUTS)**

- Mentor Graphics Expedition CAD Design Software
- Mentor Graphics Pads CAD Design Software
- Altium Summer 2009 CAD Design Software
- AutoCad 2000i
- Cadence Allegro
- ORCAD Schematic Capture & Spice Simulation Software
- Solidworks for 3D Modeling



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**NETWORK ADMIN & MIS**

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**GENERAL COMPUTER HARDWARE & SOFTWARE**

- Windows 2003 and SUSE Linux servers
- Novell Group wise E-mail Server
- 90 Accounting Software
- Microsoft SQL Server
- Custom Designed Relational Database ERP System
- SQL / Paradox ERP database – Custom designed database application for Quoting, Sales Order Entry, Customer Management, Work Order processing, Status tracking, Traveler generation, Job Configuration, Bill of Material Management, Purchasing, Inventory control, Supplier Management, and more.



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**PCB ASSEMBLY**

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**COMPUTER-AIDED MANUFACTURING (CAM)**

- Aegis CircuitCAM Software for Pick & Place Programming & Document Creation
- Aegis Checkpoint CAM Software for BOM cleanup
- Aegis iView Paperless Document Viewing System
- Aegis iQ Quality SPC System
- Aegis iTrac Paperless Tracking System
- Aegis iMaterials Traceability System
- MyData MyLabel Feeder Management System



**SMT PLACEMENT & REFLOW**

3 High Speed SMT Lines

- (2) MyData My15 Pick & Place Machine (8 heads): 21,000 CPH capacity (Upgraded 2005)
- (1) MyData My12 Pick & Place Machine (8 heads): 21,000 CPH capacity (New Purchase 2005)

2 Prototype SMT Lines

- (2) MyData TP2-9U Pick & Place Machines 4,200 CPH capacity per machine (Upgraded 2005)
- (1) Dek Horizon 03i Fully automatic screen printer with 2D paste verification, Gridlock tooling and Proflow paste dispensing (New 2007)
- (1) MPM SPM w/vision & bottom Stencil wipe Stencil Printer (1997, good condition)
- (1) Heller 1809EXL Reflow Ovens (9 zones) (2005 excellent condition)
- (1) Heller 1800EXL Reflow Ovens (8 zones)



**SOLDERING**

- ACE Kiss-104 Selective Soldering System for In-Line processing and Lead-Free Assembly
- ACE Kiss-103 Selective Soldering System for Leaded Assembly
- Eletrovert Econopak1 SMT Wavesoldering System
- Solder-Pot – Plato Model SP-500T



**INSPECTION**

- Yes-Tech AOI system (2005 Excellent Condition)
- Phoenix 3-D X-Ray Machine (2003 Excellent condition)
- Mantis Inspection Stations
- YSC BGA Fiber Optic Vision/Camera System (2005)
- Olympus Stereo-zoom Microscopes, Model SZ40
- Sonoa Video Inspection/Documentation System



**TEST**

- Sieca Pilot Flying Probe In-Circuit Test Machine with Viva Programming Software
- Corelis Boundary-Scan Programming & Testing Software
- Numerous scopes, meters, power supplies, etc.
- Numerous custom designed Functional Test fixtures



### REWORK STATIONS

- Air-Vac DRS24B BGA Rework Station (2005 Good Condition)
- Pace Rework Station, SMD & BGA

### CIRCUIT BOARD WASHERS

- Trek Triton IV Board Washer (2002 Good Condition)
- Electrovert Ultracleaner Model UC2
- Ionic Contamination Tester - Aqueous Technologies Corp.



### PREP EQUIPMENT

- Terren Radial Lead Cutter
- Manix ADP 100 Dip Former & CF200 Radial Lead Former
- OLAMEF Radial Lead Cutter
- Hepco Radial Lead Former
- Manix cf21450 Preparation Machine
- Eubanks 4900-01 Automated Wire Stripper

### OTHER

- ATI Assembled Board Router (Used 2004, Good Condition)
- Heat Gun – Weller Model# 6970, Master-Mite
- Manual & Semi-automatic Arbor Air Press

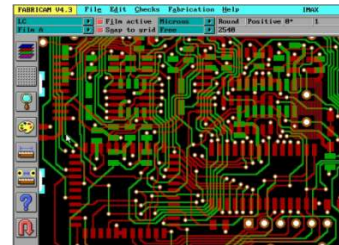
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## PCB MANUFACTURING

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### COMPUTER-AIDED MANUFACTURING (CAM)

- SQL Based Paperless Tracking and Mfg Planning System
- Valor Genesis CAM Software plus automation programming
- CAM350 CAM Software
- Applied Simulation Impedance calculator, RLGC
- Polar PC6000 impedance calculator



**PHOTO DEPARTMENT**

- (1) CA Picard Artwork Punch, Tooling System
- (1) Class 10,000 Clean Room, Temperature/Humidity controlled
- (1) Dupont 5 KW Photo-printer (PC-130)
- (1) Olec 8 KW Photo-printer
- (1) Olec 6 KW Photo-printer
- (1) Diazo Film Developer
- (2) Dupont Dry Film Laminators, HRL-24 with Teknek PC-600DT clean machines
- (1) Dupont ASL-24 Cut Sheet Laminator
- (1) Hakuto CSL 1500B Cut Sheet Laminator
- (1) Gerber/Barco Crescent/30 Laser Photo-plotter
- (1) Gerber/Barco Escort/30 Automatic Film Loader
- (1) Silver film Processor



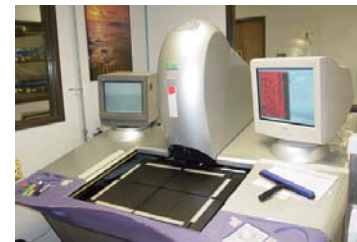
**WET PROCESS**

- (1) Chemcut XLI-30 Develop, Etch, Strip Line with thin core (2 mil) transport (2007 – Excellent Condition)
- (1) Chemcut XLI-30 Chemical Clean Line, with thin core transport (2007 – Excellent Condition)
- (1) Chemcut Oxide Line with thin core transport (2007 – Excellent Condition)
- (1) Tektroller Model CC-305 Cupric Chloride Regeneration System



**INSPECTION**

- (2) Camtek Orion Automated Optical Inspection Systems (2006 New, 2006 Upgrade)
- (2) Bausch & Lomb Stereo-zoom Microscope, Model SVB-73
- (4) Olympus Stereo-zoom Microscope, Model SZ40
- (1) Advanced Controls TrueMeasure Coordinate Measuring Machine
- (1) PerfecTest Inner layer registration test system
- (1) Hughes Circuit Welder, Model MCW/EI
- (3) 1" Micrometers
- (4) 6" Micrometers
- (4) 10x Inspection Loops
- (10) Magnifying Inspection Lamps
- (4) 60x Microscopes



**LAB**

- (1) Leica Inverted Metallograph with CCTV, Video Printer, and Digital Video Measurement.
- (1) Struers Abramin, 12" grinder/polisher
- (1) Pressure chamber
- (1) Vacuum dessicator chamber
- (1) Solder float pot
- (1) Varian AA 20A dual beam Atomic Absorption w/spectrophotometer printer
- (1) Buehler Isomet low speed saw
- (1) Grieve Lab oven
- Various lab glass for chemical analysis



**LAMINATION**

- (1) Set of C.A. Picard Pin Lamination Tooling plates
- (1) C.A Picard Semi-Automatic Post-Etch Punch
- (1) Wabash Lamination Press, 18 X 24" 3 opening press, Model PC75-2418-6TM (Good Condition)
- (1) Wabash Lamination Press, 18 X 24" 2 opening press (Used 2006)
- (1) PHI 20" X 24" Cool Down Press
- (1) Becker U2.70 Vacuum Lamination System
- (1) Lamination Tooling Pin Punch
- (1) Greive Oven, Model: 333



**DRILLING**

- (1) Excellon 689 Drill Machine with six 180k rpm spindles (Feb 2009)
- (1) Advanced Control 2 Spindle Drill Machines, Model 1240 (2001 Excellent Condition)
- (2) Advanced Control 5 Spindle Drill Machines, Model 2500 (Upgraded 2007 – Excellent Condition)
- (2) Hankison Compressed Air Dryers
- (1) Glenbrook Technologies RTX-113 Real Time X-Ray System (Upgraded 2007)



**Plasma**

- (1) Plasma Etch – MK-II 12 shelf, 5 gas unit



**PLATING**

- (1) IPS Fully automated Electroless plating line (Q4 2010)
- (2) IPS 6 cell plating tanks (Q4 2010)



**SCREENING**

- (1) VCM VIII Vertical LPI Developer (Feb 2009)
- (1) Ishii-Hyoki Aluminum Oxide Jet Scrubber Model IJS-630 (Used, refurbished 2007)
- (1) Circuit Automation DP-10 Screen Coater (Used, refurbished 2007)
- (1) Circuit Automation TC-200 Tunnel Oven (Used, refurbished 2007)
- (4) Elite Screen Tables With Backlighting
- (1) Screen Cleaning Wash Out Booth
- (1) Squeegee Sharpening Machine
- (2) C-Sun Model SMO-7A Ovens



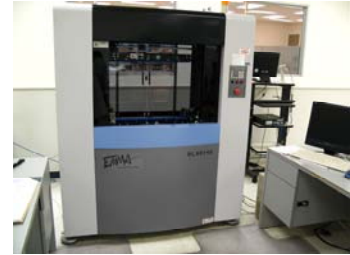
**FABRICATION**

- (1) Excellon Mark VI Driller / Router w/Air-bearing Spindles (Used, 2008, Excellent Condition)
- (1) ATI Model 400 4 Spindle CNC-Routers (Used, 2002)
- (1) Radoll Score Machine
- (1) Radoll Bevelmate edge polisher
- (1) Radoll Bevelmaster gold tip beveler
- (1) Bench Grinder



**ELECTRICAL TEST**

- (1) Microcraft ELX 6146 flying probe tester (2001, all current upgrades, excellent condition)
- (1) CircuitLine 2S Double-Sided Double-density Grid tester (.070/.080 grid) (1999, all current upgrades, excellent condition)
- (1) Polar Instruments Toneohm short locator, Model 850A
- (1) Polar Instruments Controlled Impedance Tester, Model CITS500s
- (1) GCA Test fixture, Flying Probe, & Test Verification Software



**WASTEWATER TREATMENT**

- (1) 20 gpm Closed loop Ion Exchange System
- (1) 10 gpm Discharge System
- (1) 300 gallon Batch Treatment System, including 3 cubic foot filter press

**SHIPPING/RECEIVING**

- (1) 3000 lb. Capacity Clark Electric Fork Lift
- (1) Pexto Hydraulic Power Shear Model Ph52
- (1) Wysong H-52 Hydraulic Power Shear
- (1) Christopher Assoc. Vacuum packaging equipment
- (1) Pelouze 100 lbs. Shipping scale



**FACILITIES**

- (1) Compressor, Rotary Screw 15 H.P. Kaeser Model AK-19
- (1) Kaeser KRD 100 Refrigerated Air Dryer
- (1) Compressor, Rotary Screw 25 H.P. Kaeser Model AS-31
- (1) Kaeser TC-31 Refrigerated Air Dryer
- (1) Compressor, Rotary Screw 30 H.P. Kaeser MD. AS35
- (1) Air Dryer, Kaeser Model KRD-125
- (3) CMS-150 Condensate Management System, oil/water separator
- (2) Vacuum System, Carbet 15 H.P.
- (2) 240 Gallon Vertical Air Receiver Tank
- (1) 50 Ton Chiller
- (1) Emergency Generator





# CERTIFICATE



**UL DQS Inc.**  
Management Systems Solutions

hereby certifies that the company

**Murrietta Circuits Inc.**

5000 East Landon Drive  
Anaheim, CA 92807  
USA

has implemented and maintains a **Quality Management System.**

Scope:

A turnkey contract manufacturer specializing in the layout, fabrication, assembly and test of printed circuit boards including cable assembly.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

**ISO 9001 : 2008**

Certificate registration no.	10000736 QM08
Date of original certification	2001-10-23
Date of revision	2010-09-03
Date of certification	2009-06-29
Valid until	2012-06-28



Ganesh Rao  
President

1130 West Lake Cook Road, Suite 340, Buffalo Grove, IL 60089 USA





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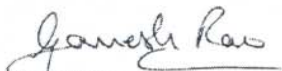
Through an audit, performed in accordance with the latest version of AS9104 and AS 9014, it was verified that the management system fulfills the requirements of the following technically equivalent standards:

### **AS 9100, Rev. B**

Aerospace - Quality Management Systems - Requirements  
(based on ISO 9001:2000)

Certificate Registration No.	10000736 ASH
Date of Certification	2009-06-29
Valid until	2012-06-28



  
Ganesh Rao  
President

1130 West Lake Cook Road, Suite 340, Buffalo Grove, IL 60089 USA



1501111-2002-16867-79

Association Connecting Electronics Industries



**Daniel E. Egler**

*is hereby designated*

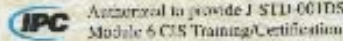
# Certified IPC Trainer

Serial No. J001-T 12242

*and is authorized by IPC to conduct*

## J-STD-001

### Application Specialist Training



**May 10, 2010**

Date of Certification

**Feb. 1, 2012**

Certification Expiration

**Omni Training**

Authorized Training Center

Master Instructor Signature

*This certificate is your official justification of meeting all the necessary requirements to be a Certified IPC Trainer (CIT) in the industry developed and approved J-STD-001 Training and Certification Program. You may now use the CIT designation on letterhead, business cards, and all forms of address. Authorization to convey Application Level certification is granted, and continuing certification status of the instructor is conditioned on providing the training and skills assessment using the industry approved IPC Training Materials in accordance with and to the requirements of the IPC Training and Certification Policy.*

IPC Director of Certification

IPC President

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