



REGULUS

ISO9001:2015 Certified Company

www.regulus-ems.com



About REGULUS

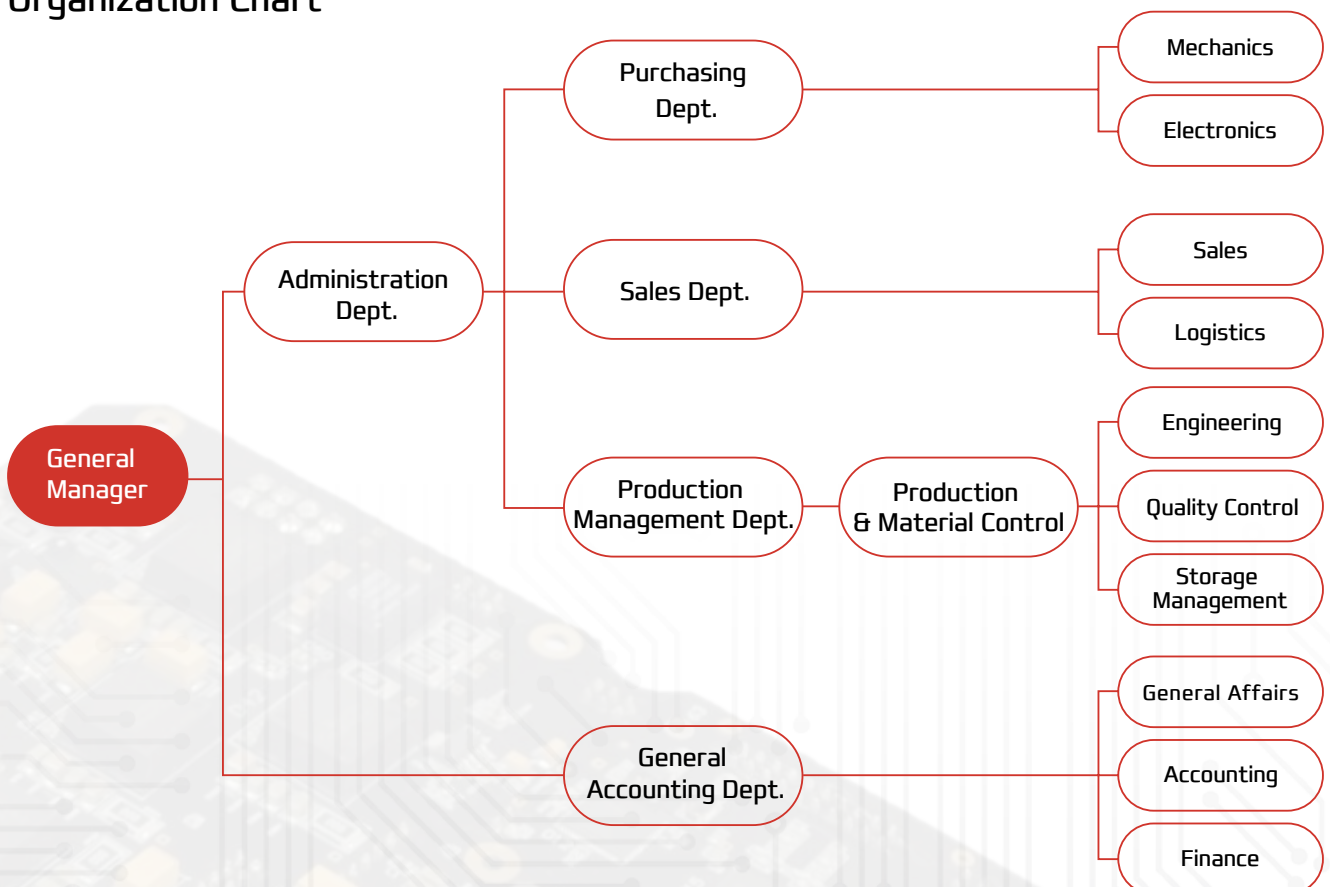


Regulus is an Engineering and Manufacturing company, with 20 years of experience in Manufacturing of customized Electronics, and with strong capabilities in design, development and production of Industrial, Consumer, Healthcare and Medical products, including PCBA, mechanical structures, testing programming and tuning. Our professional team provides one stop solutions by integration of the design, pre production analysis, molding, manufacturing, workshop and assembly production.

For every project, we work closely with our customers reviewing requirements and specifications, then provide proper solutions through evaluation and simulation of all possible technical and/or technological difficulties that may occur during production process. When dealing with customized projects, we set up exclusive value added servicing process for each customer and this is what makes us strong and competitive.

Aiming to be global value added solutions provider and manufacturer, we devote ourselves to the precision and automated manufacturing, providing our customers the latest and the most competitive technologies.

Organization Chart





Our Capacities

- ISO 9001:2015 Quality Management Certified
- ROHS/REACH Compliant Manufacturing
- ISO 14001:2015 Accredited Environment Friendly Production
- IECQ QC080000:2017 Environment Sustainability Compliant Manufacturing
- ISO 13485 Medical Production Solutions
- IPC J-STD-001 / IPC-A-610 (Classes 1,2,3) Compliant Assembly (Soldering)
- IPC Lead-Free & Lead (SnPb) Assembly (Soldering) Capabilities
- ANSI/ESD S20.20 / IEC 61340-5-1 Certified ESD Compliant Facility
- ISO/IEC 17025 Accredited Facility for Testing and Calibration of Devices and Equipment
- UL Certification Availability
- IATF 16949 Production Capacity

Certificates

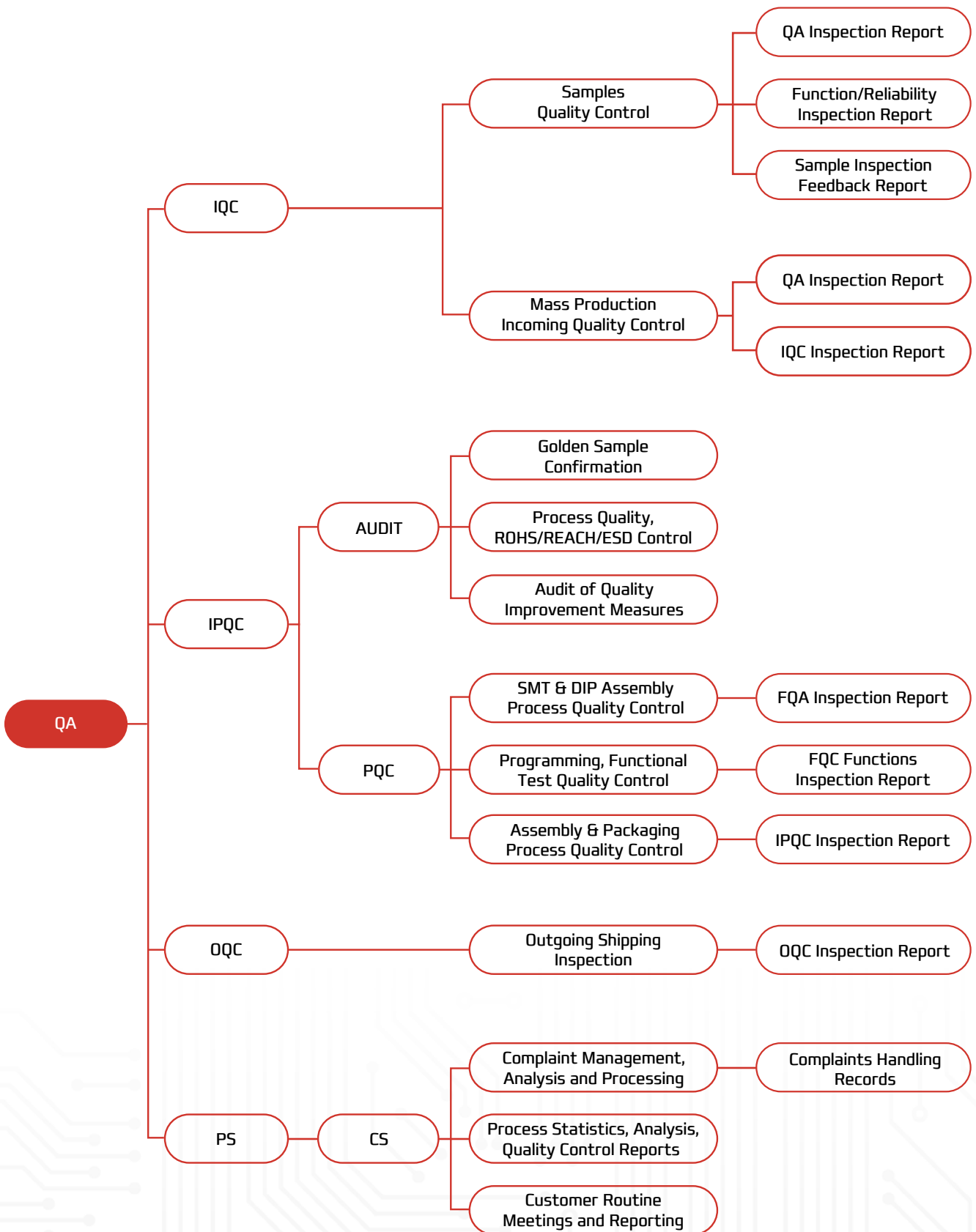


ISO 9001: 2015



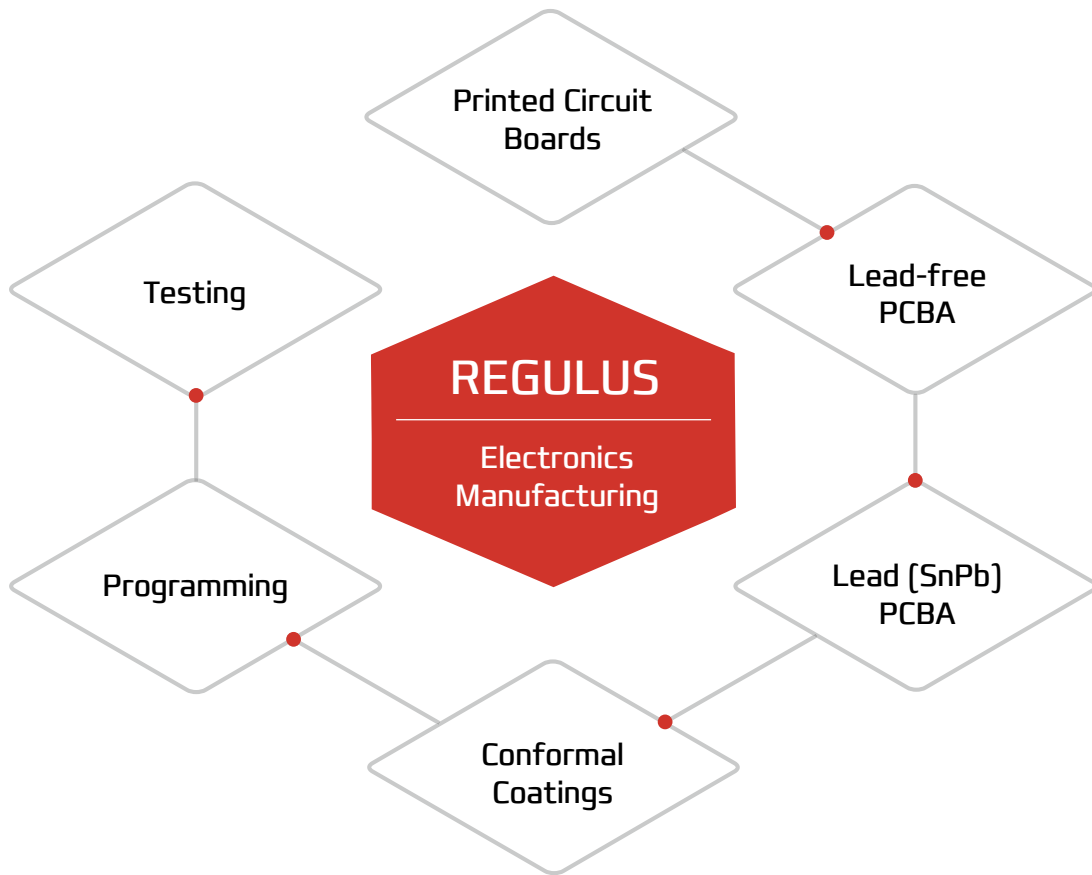
IPC-A-610

Quality Assurance





Electronics Manufacturing Services & Solutions



Engineering



PCB Assemblies



Rapid Prototyping



Machining & Turning



Metals & Alloys Fabrication



Plastic Injection Molding



Composite Material Molding



Silicone & Rubber Molding



Plating & Coating

Box-Build & System Integration

www.regulus-ems.com



Wireless Communication Electronics

- Networks – Internet & Wireless
- Satellite – Maritime & Land Terminals
- IoT Products
- Fiber Optic Communications
- Secure Communications
- Radio Frequency (RF) Applications



Consumer & Navigation Electronics

- LED Lighting
- Power Distribution
- Dashboards & UI devices
- Telematic & Tracking devices
- Safety and security systems
- Aftermarket products



Industrial Electronics

- HVAC & Water treatment systems
- Digital Projection electronics
- High speed inspection equipment
- Smart-grid infrastructure
- Biometrics electronics
- Environmental monitoring equipment



Medical & Health Electronics

- Medical imaging (X-Ray, MRI equipment)
- Laboratory automation products
- Oxygen generation devices
- Emergency Ventilators
- Remote Diagnostics
- Vision assistive systems

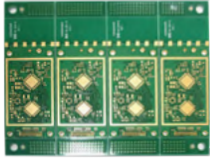
Production Solutions

- Complex Electro-Mechanical
- System Integration & Test (SIT)
- Complete Mechanical Assembly
- Battery Solutions
- EMI/EMS Solutions
- Full Box-Build and CTO
- Cable & Harness Assembly
- Customized Metal, Plastics, Silicone/Rubber Fabrication
- Waterproofing Solutions
- Opto-Electronics Solutions



PCB Board Capabilities

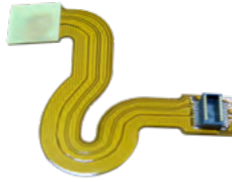
Types



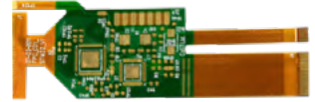
Rigid Printed Circuit (PCB)



Ceramic Circuit Boards (MCPCB)



Flexible Printed Circuit (FPC)



Rigid-Flex Circuit (RFPC)

Production Capacity

		Standard	High-end
Layer		2-12	8-22
PP Laminate			
Material		FR4 (TG130 ° ~170 °), FR4 (High TG150 ° ~200 °), FR5 (TG135 ° ~175 °), FR4 + Rogers, FR4 + polymer, TFE (RF-35), HALOGEN FREE, Ceramic base boards, Cu-base boards, Al-base boards, Arlon, FR2 (CAM 1)	
Largest panel size		18"x24" [457.2 x 609.6 mm]	24"x26" [609.6 x 660.4 mm]
Board thickness	Maximum board thickness	5.00mm	6.00mm
	Minimum board thickness	0.4mm [4L] 0.3mm [2L]	0.38mm [4L] 0.25mm [2L]
Thinnest PP thickness		0.064 mm	0.051 mm
Copper			
Inner layer copper thickness		0.5 ~ 2.0 oz	0.3 ~ 3.0 oz
Outer layer copper thickness		0.5 ~ 2.0 oz	0.3 ~ 4.0 oz
Via Holes			
Stack up		FPC or standard Printed board	blind vias / buried vias
Minimum Via		0.3mm	0.2mm
Smallest laser drill size		0.10mm	0.076mm
Aspect ratio		6/1	12/1
Trace			
Line width/spacing in outer layer		4/4 mil	3/3 mil
Minimum SMT spacing pitch		0.3mm	0.2mm
Minimum BGA spacing pitch		0.15 mm	0.1mm
Solder mask and surface treatment			
Minimum solder mask print width		0.102 mm	0.076mm
Solder mask print registration tolerance control		+/- 3 mil	+/- 2 mil
Surface treatment		HASL(Hot solder leveling), IMAU/ENIG(Immersion gold), Immersion Silver, Immersion Tin, OSP/Entek, Lead-free HASL, Soft gold, Flash gold	
Others			
Impedance control		45 ohm +/-10%	40 ohm +/-7%



PCB Assembly Capabilities

- Build-to-Order
- Component Purchasing and Sourcing
- High-Mix / Low-Volume, Low-Mix / High-Volume PCBA
- Wide Body PCBA Capability
- Clean / No-Clean Processes
- Press Fit Connector / Compliant PIN Assembly
- RoHS/REACH Compliant Manufacturing
- High Complexity & High Density PCBA
- In-House Conformal Coating



Type of Assembly

- THD (Thru-Hole)
- SMT (Surface Mount Technology)
- SMT & THD mixed
- Double-sided SMT and/or THD assembly

Technologies

- IPC Class 1,2,3 Assembly Processes
- μ BGA, PGA, LGA, BGA
- PoP and 01005s

Assembly Processes availability

- Lead-Free (RoHS)
- Leaded (SnPb)

Test Capabilities

- Test System Development
- ICT & 5DX
- Functional & AOI
- ESS & Flying Probe
- Burn-In Chambers

Certifications / Standards

- ISO 9001:2015
- ISO 140001:2015
- ISO 13485:2016
- IPC-A-610 Class I, II, III
- UL

Process Capability

- Minimum part size: 01005
- Minimum IC pitch: 0.25 mm
- Minimum BGA ball diameter: 0.2mm
- Minimum BGA ball pitch: 0.25 mm
- Maximum PCB size: 560mm x 330mm
(No minimum size limit)





Conformal Coatings

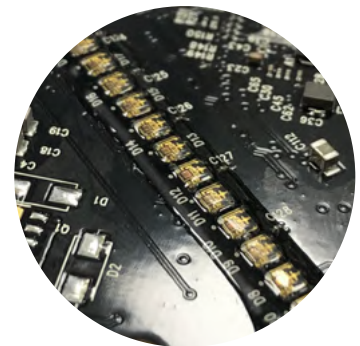
Environment-friendly coatings comply with EU's RoHS Directive. Additionally, we have lead-free, halogen-free and low VOC initiatives to support our customers.

Specific features:

- Dielectric properties
- Thermal stability
- Barrier properties

Ultra-thin and pinhole-free, we are providing conformal coatings with exceptional properties, including:

- Outstanding dielectric properties
- Outstanding chemical and moisture barrier properties
- Bio-compatible and bio-stable protection
- Ultra-thin, conformal coating of all exposed surfaces
- Outstanding multi-layer penetration
- Thermal stability up to 450°C (short-term)
- Unparalleled ultraviolet stability



Coating Selection Chart

	Methods	Cost	Functions	Advantages	Disadvantages
Acrylic	spraying, brushing, dipping	low cost	moisture / dust resistance, mechanical reinforcement	Easily applied and removed, easy rework and repair, rapid cure, -65°C to +125°C	Poor chemical and solvent resistance, low abrasion resistance, flammable, softens at high temperature
Urethane	spraying, brushing, dipping, printing	lowest cost	moisture / dust chemical resistance, biologically inert, mechanical reinforcement	Good chemical resistance, good adhesion and humidity resistance	Long cure time, difficult to remove and rework
Epoxy	brushing, printing	medium cost	moisture / dust chemical resistance, biologically inert, mechanical reinforcement	Good adhesion, opaque, excellent chemical, abrasion, moisture and humidity resistance	Difficult to remove, shrinks during curing, stress on components during thermal extremes
Silicon	spraying, brushing, dipping, printing	medium cost	moisture / dust oil resistance, mechanical reinforcement, thermal insulator	-55°C to +200°C, good humidity, corrosion and chemical resistance, adheres well to most PCB components / materials	Difficult to remove, poor adhesion, low abrasion resistance
Parylene	vacuum deposition	high cost	moisture / dust / oil / chemical / electrical resistance, antimicrobial	Coats almost everything, excellent chemical and abrasion resistance, excellent adhesion, best solvent and extreme temperature resistance, high dielectric strength	Difficult to remove, not ideal for long-term exposure outdoors, susceptible to contamination
Nanocoat	spraying, dipping, low pressure deposition	medium cost	moisture / dust / chemical resistance	Easy to rework, so nanocoat goes virtually everywhere	Sensitive to abrasion, long cure time, properties vary across industry

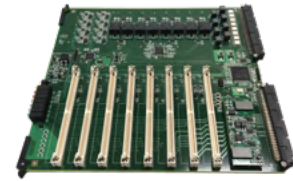
PCBA Portfolio



- Layer count : 10
- Board dimensions : 89.7*111.3 mm
- Board material : FR4 High Tg
- Board thickness : 1.8mm
- Copper thickness : 18 um
- Finishing : Immersion gold



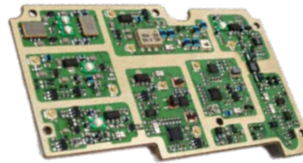
- Layer count : 10
- Board dimensions : 69.5*59.1 mm
- Board material : FR4 High Tg
- Board thickness : 1.5 mm
- Copper thickness : 18 um
- Minimum line width : 0.1 mm
- Minimum spacing : 0.08 mm
- Finishing : Immersion gold
- Vias coverage



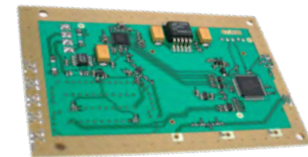
- Layer count: 4
- Board dimensions: 250x233.34 mm
- Board thickness: 1.80 mm
- Board material: FR4 High Tg
- Finishing: HASL (Hot solder leveling)
- Multi-board expandable



- Layer count: 14
- Board dimensions : 95*52 mm
- Board material : FR4
- Board thickness : 1.7 mm
- Copper thickness : 18/36/36/18
- Finishing : ImAu
- Edge plating : ImAu
- Impedance : 50 Ohm



- Layer count : 8
- Board dimensions : 95*52 mm
- Board material : FR4
- Board thickness : 1.5 mm
- Copper thickness : 18 um
- Finishing : ImAg



- Layer count : 4
- Board dimensions : 106x70 mm
- Board thickness : 1.45mm
- Board material : FR4 +Rogers
- Copper thickness : 18 / 36 / 36 / 18
- Silkscreen : Black
- Finishing : Immersion gold



- Layer count : 16
- Board dimensions : 189x175 mm
- Board thickness : 1.65 mm
- Board material : FR4 High Tg
- Finishing : Immersion gold
- BGA components



- Layer count : 4
- Board dimensions : 189.5 x 165 mm
- Board material : FR4 Standard
- Board thickness : 1.3 mm
- Copper thickness : 18um
- Finishing : HASL
- Press-fit connectors



- Layer count : 10, up to 1500 components
- Board dimensions : 56 x 139.2 mm
- Board material : FR4 High Tg
- Board thickness : 1.3 mm
- Copper thickness : 18/35 um
- Finishing : Immersion gold
- Multiple microBGA
- SMT Populated EMI Shields



Assembly, Programming, Tuning

Production Line

ANSI/ESD S20.20:2014 Certified Electrostatic Discharge Prevention Production Line



■ ESD Certified Production Line



■ Assembly Line



■ Programming and Tuning



■ Repairing and Debugging

SMT Assembly Equipment

- SMT High-Speed Chip Mounters
- Reflow Ovens
- Solder Paste Mixers & Printers
- Selective Soldering Devices
- De-Paneling Machines

Daily capacity

- SMT: 6 million points / day
- DIP: 100,000 points / day
- Group, test and package:
2 ~ 5 thousand sets / day
- 3 shifts 24 hours



Equipment for Testing, Tuning and Debugging



- Spectrum analyzers
- Digital Oscilloscopes
- Signal Generators
- Burn-In Chambers
- RF Shielded Enclosures
- Automated Optical Inspection (AOI) Equipment
- 3D Solder Paste Inspection (SPI) Machines
- X-RAY Inspection Systems



■ 3920 Aeroflex / Viavi Analog and Digital Radio Test Platforms



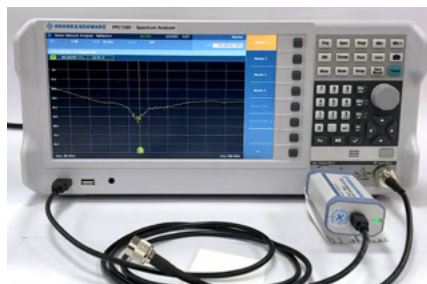
■ CMS52 Rohde & Schwarz Radiocommunication Service Monitors



■ MDO3000 Tektronix Mixed Domain Oscilloscopes



■ SMB100B Rohde & Schwarz 8 kHz - 3 GHz 50 Ω RF Signal Generators



■ FPC1500 Rohde & Schwarz Spectrum Analyzers with Tracking generators



■ Other Devices Programmable DC PSU Dual Display Digital Multimeter



Reliability Testing Equipment

1. Environmental Testing: High & Low Temperature Chambers
2. Reliability Testing Equipment
3. Thermal Shock Equipment
4. Salt Spray Testers



Turnkey Engineering and Manufacturing



Design Engineering of Rapid Prototyping



Plastic and Silicone Moulding Engineering



PCB Assembly Programming & Tuning



Machining & Turning Metals & Alloys Fabrication



Wide Variety of Plating, Coating and Surface Treatment



Box-Build Assembly Services, incl. IP5X/IP6X Solutions

- Flexible Volumes Manufacturing
- High-Mix/Low-volume; Low-Mix/High-volume
- Mechanical parts Design, Engineering and Production
- From prototype to Finished Product Solutions
- Cost Optimization Through Selection of Technologies and Sourcing
- Box-Build & Electromechanical Assembly
- System Integration Solutions
- Quality Control Team for the Consistent Quality Assurance
- ERP System for Materials Planning, Purchasing, Logistics, Quality and Manufacturing Management control
- DMS System for Technical and Managerial documentation
- Intellectual Property Protection Through Software-Based Access and Sharing Control Management

