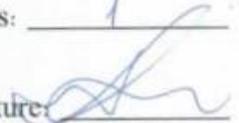
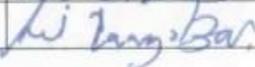


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# Suppliers Quality Requirements For Purchased Materials or Service PCB ASSY WI - 1620/ENG/7

Released date: 23/3/2023  
Copies: 1  
Signature: 

	Edited	Checked #2	Checked #3	Approved
Title:	Suppliers Quality Leader	Purchasing Manager	Quality manager	Division Manager
Name:	Avihai Zango -Bar	Racheli Sabach-Katz	Yael Laks- Abbou	Rotem Benichou
Date:	<u>22/03/2023</u>	<u>22/03/2023</u>	<u>Yael Laks</u>	<u>23/3/2023</u>
Signature:			<u>23/03/2023</u>	

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**Changes follow-up**

Revision	Date	Reason of change	Responsibility
A	May, 2016	Release	
B	March, 2017	Add sections 2.11, 2.11.1, 2.11.1.1, 2.11.1.2, 9-9.5	
C	March, 20, 2017	Additional requirements to comply with AS9100D <ul style="list-style-type: none"> <li>• Controls and activities to prevent counterfeit components (Clause 10)</li> <li>• Awareness to contribution to ethical behavior, product safety and conformity. (Clause 11)</li> </ul>	
D	July, 28,2019	Update for AS9100 requirements, sections 2.10.4	
E	July, 20,2022	Update all the clauses of the procedure, to meet operation and quality requirements, Collins Rockwell requirements	
<b>F</b>	<b>March 13, 2023</b>	<b>Indicator requirements, regards to NADCAP audit</b> <b>Update: 3.4.2.1,3.4.2.2, 4.3</b>	<b>Avihi Zango-Bar</b>

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## 1. Scope

This supplier quality requirements document defines the terms and conditions relating to the quality of materials or services supplied to PCB TECHNOLOGIES that are used in product (defined as products manufactured and sold by PCB TECHNOLOGIES) or in the production of product. The requirements herein apply to all supplier(s) and their sub-tier suppliers of materials and services provided to any PCB TECHNOLOGIES operation. Supplier shall supply materials and/or services in compliance with the terms stated herein.

It is supplier's responsibility to review and fully understand the requirements herein before accepting a PCB TECHNOLOGIES purchase order.

## 2. General Requirements

- 2.1. The supplier will establish and maintain a quality system in accordance with the relevant standards and regulations. A copy of any quality system certification will be sent to PCB TECHNOLOGIES (i.e. ISO 9001, ISO 13485 etc) upon request.
- 2.2. ELECTROSTATIC DEVICE PROTECTION  

Devices identified as electrostatic discharge sensitive shall be handled, stored, packaged, and shipped in such a manner as to preclude damage from electrostatic discharge. Electrostatic protection processes shall be compliant to ANSI/ESD S20.20 Protection of Electrical and Electronic parts, Assemblies and Equipment or equivalent. Electrostatic protection requirements specified on the component specification, drawing, or elsewhere on the order take precedence over this paragraph.
- 2.3. Unless specified otherwise and where applicable, supplier shall be in compliance with the latest revision of applicable standards including but not limited to JEDEC, IPC, ANSI and SAE.
- 2.4. The supplier agrees to supply only products complying with the purchasing specification developed and maintained by PCB TECHNOLOGIES for the specific material.
- 2.5. The supplier agrees to inform PCB TECHNOLOGIES of any changes to the material, such as changes to manufacturing process, testing methods, facility, site of manufacture etc., which may have impact on the quality system and products before the change is implemented for the materials sourced. Every change from PCB TECHNOLOGIES requirement documentation, should be approved by PCB TECHNOLOGIES, pre-production the purchased material.
- 2.6. The supplier agrees to inform PCB TECHNOLOGIES immediately of any errors or deviations to manufacture of the material that may have impact on the quality of the materials supplied. Every change from PCB TECHNOLOGIES requirement documentation, should be approved by PCB TECHNOLOGIES, pre-production the purchased material. The supplier agrees not to pass any information or any work regarding the supply of materials to a 3rd party without the prior approval of PCB TECHNOLOGIES.
- 2.7. The supplier agrees to be audited with respect to materials supplied by PCB TECHNOLOGIES personnel and relevant regulatory authorities as scheduled by mutual agreement.
- 2.8. The supplier agrees to investigate complaints regarding the purchased materials and issue a written report to PCB TECHNOLOGIES detailing the findings and applicable corrective actions.
- 2.9. The supplier agrees to supply with each shipment a Certificate of Assurance (COA) or Certificate of Compliance (COC) as applicable for the material.

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- 2.10. The supplier will furnish Certificate of Compliance (COC) according to the following classification (PCB ASSY WI-1600):
- 2.10.1. Manufacturer: Manufacturer Certificate of Compliance.
  - 2.10.2. Franchise Distributor: Distributor's Certificate of Compliance.
  - 2.10.3. Broker Distributor: Manufacturer Certificate of Compliance, Franchise Distributor Certificate of Compliance and Broker Distributer Certificate of Compliance.
  - 2.10.4. For built (per spec/per drawing) items, the supplier shall indicate Drawing number + Revision on each COC provided.
- 2.11. Military applications
- 2.11.1. supplier will furnish Certificate of Compliance (COC) that will contain DC/Lot number and the name of the manufacturer according to the following classification:
    - 2.11.1.1. Broker Distributor will provide Manufacturer Certificate of Compliance, Franchise Distributor Certificate of Compliance, Broker Distributer Certificate of Compliance.
    - 2.11.1.2. Broker should not supply materials without COC manufacturer or COT laboratory that qualified to examine the reliability and compliance of the material to manufacturer requirements.
  - 2.11.2. Mechanical parts will be provided with confirmation and validation report to the Raw material.
- 2.12. PCB TECHNOLOGIES is committed to achieving third party registration to ISO 14001. Suppliers needs to operate in environmentally responsible manner.
- PCB TECHNOLOGIES encourages suppliers to scrutinize its manufacturing process, identify potential hazards and use preventive measures to reduce or eliminate potential hazards. All waste material that is generated is to be disposed of in compliance with applicable laws.
- 2.13. Supplier, **which provide a special services / technology should have a disaster recovery and business contingency plan** in place that minimizes the risk to PCB TECHNOLOGIES in the event of natural disaster, labor dispute or other disturbances in the supply chain. Evidence of the process shall be made available for review upon request. Disaster recovery and business contingency plan for each supplier will be managed based on risk analysis and how it is impacts PCB TECHNOLOGIES
- 2.14. Supplier shall improve its processes, systems and performance and sustain both internal and external quality levels of its material or service.
- 2.15. Material manufactured date codes of supplied material shall not exceed 24 months at the time of material receipt by PCB TECHNOLOGIES unless agreed upon in writing prior to purchase order release.
- 2.16. Supplier should maintain a first in, first out ("FIFO") inventory control system, to ensure that non-conforming material or prior product versions or down-rev product is not inadvertently shipped to PCB TECHNOLOGIES.
- 2.17. Supplier shall permit PCB TECHNOLOGIES and/or its representatives, consultants, customers or regulatory authorities to enter supplier's facilities upon 48 hours' notice, except for emergencies where there shall be no notice period at reasonable times to inspect and/or audit such facilities and QMS including records, and any goods, inventories, machinery and equipment, or other items or processes used to manufacture PCB TECHNOLOGIES product as it relates to supplier's performance to this document.

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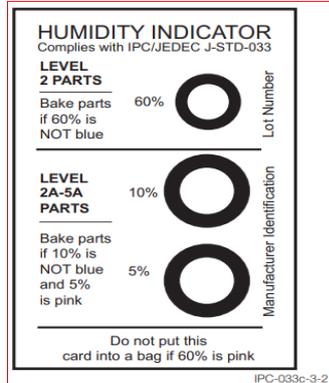
- 2.18. Supplier will ensure that PCB TECHNOLOGIES has the same rights of access with prior notice to any subcontractors of supplier who are involved in the supply of the products for purpose of carrying out an audit.
- 2.19. Supplier shall provide written responses and summaries of actions as a result of audits, corrective actions requests, or escalations raised by PCB TECHNOLOGIES.
- 2.20. Supplier should maintain and execute internal audits of its operation to ensure compliance with written processes, procedures, standards and agreements.
- 2.21. PCB TECHNOLOGIES reserves the right to perform periodic supplier performance reviews; measuring and providing feedback to supplier in terms of quality, performance, delivery, cost, responsiveness and communication. These reviews shall be performed as part of continuous improvement strategies.  
  
Supplier is expected to participate in these reviews, when necessary provide corrective action plans to improve performance, as required and at its expense.
- 2.22. Supplier certification
  - 2.22.1. Supplier acknowledges that certification may require an audit by PCB TECHNOLOGIES to assess supplier's capability to provide material(s) or services(s).
  - 2.22.2. Certification is contingent upon supplier performance and PCB TECHNOLOGIES reserves the right to change the certification at any time.
- 2.23. Changes to supplier's quality management system or any significant organizational changes, including changes of certification body or letter of concern from them , up to cancelation of the certificate, shall be communicated to PCB TECHNOLOGIES immediately.

### **3. Shipping, Packaging and Labeling Requirements**

- 3.1. FOD - The contamination of goods by foreign material or objects is not acceptable as it could eventually affect product appearance and performance. The supplier shall document and implement a program for the prevention, detection, and removal of Foreign Object Damage/Foreign Object Debris (FOD) in accordance with SAE AS9146, Foreign Object Damage (FOD) Prevention Program-Requirements for Aviation, Space and Defense Organizations. The program shall include training and the active involvement of employees. In addition, the supplier shall conduct audits and maintain records to demonstrate the program's effectiveness.
- 3.2. All electro-static sensitive devices (ESD) shall be properly packaged to provide protection from electro-static discharge and in accordance with JEDEC standard JESD625- (Requirements for Handling Electrostatic-Discharge Sensitive Devices). All ESD sensitive products shall be clearly identified with an ESD warning on each tray, tube, or tape and reel within the shipment.
- 3.3. Material packaging shall not negatively influence material quality or include any impurities.
- 3.4. All moisture sensitive devices shall comply to JEDEC standards J-STD-033, (Handling, Packing, shipping and use of Moisture/Reflow Sensitive SMD) and J-STD-020-, (Moisture/Reflow Sensitivity Classification for Non-hermetic Solid-State SMD).
  - 3.4.1. All products shall be packaged in an ESD moisture barrier bag.
  - 3.4.2. The moisture barrier bag shall meet MIL-PRF-81705, TYPE I requirements for flexibility, ESD protection, mechanical strength, and puncture resistance
  - 3.4.3. Each moisture barrier bag shall have desiccants meeting MIL-D-3464, TYPE II and a Humidity indicator card meeting J-STD-033 3.3.2.3 (See below).

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**3.4.4. Number of desiccants within a moisture barrier bag and their arrangement in relation to the MSD will meet J-STD-033 3.3.1 and 3.3.2.2.1, 3.3.5.1**



- 3.5. Materials supplied in tape and reel or tray shall comply with EIA industry standard specifications to ensure proper use in automatic component placement machines.
- 3.6. All products shall, where possible, be labeled with both human readable and bar code at the lowest level of packaging (reel, tube, bagged tray) and shall contain the following at a minimum:
  - 3.6.1. PCB TECHNOLOGIES part number.
  - 3.6.2. Supplier name
  - 3.6.3. Suppliers part number
  - 3.6.4. Manufacture name
  - 3.6.5. Manufacture part number
  - 3.6.6. Product description
  - 3.6.7. Manufacturing date code and lot code
  - 3.6.8. PCB TECHNOLOGIES purchase order number
  - 3.6.9. Quantity contained in individual reel, tube or other acceptable packaging.
- 3.7. All product for custom made parts requirements packaging slips shall contain RoHS compliancy statement which shall be attached to the hardcopy as an attachment in accordance with RoHS specifications.
  - 3.7.1. "RoHS 6 compliance" for product fully compliant to EU directive 2002/95/EC.
  - 3.7.2. "RoHS 5 compliance" for compliant product using one of the lead-in-solder exemptions only; "Not compliant to RoHS" for non-compliant product.
  - 3.7.3. Consult RoHS specification for requirements when using RoHS exemptions other than lead-in-solder or for additional information.

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#### 4. **Quality Acceptance Requirements**

- 4.1. PCB TECHNOLOGIES and suppliers goal is to achieve and maintain a zero defect level for incoming quality level (IQL). IQL measured in parts per million (PPM) is an ongoing measurement reviewed regularly by PCB TECHNOLOGIES. If deemed appropriate by PCB TECHNOLOGIES, mutually agreed upon interim targets shall be defined and communicated to supplier in order to achieve the zero defect target.
- 4.2. Supplier should use statistical process controls and a supporting process capability analysis to achieve continuous quality improvement and failure rate reductions. Supplier shall, upon request, provide PCB TECHNOLOGIES with evidence of such process controls and capabilities, including all supporting documentation.
- 4.3. Supplier shall maintain and make available upon request outgoing quality inspection, reliability records and applicable data as defined within this **document for a minimum of two years or by mutual agreement with the costumer** from the date of goods shipment.
- 4.4. Supplier shall provide traceability by either lot number or date code or where appropriate serial number for purpose of tracing any suspect shipment containing problems.

#### 5. **Product Change and Discontinuance Notification**

- 5.1. Supplier shall notify PCB TECHNOLOGY of all proposed changes that impact the form, fit, function, quality, reliability, or status of the material. Notification shall be provided via an engineering and/or process change request. All supplier notifications shall be sent to PCB TECHNOLOGIES via email to the following PCB TECHNOLOGIES address: [change.notification@pcb-technologies.com](mailto:change.notification@pcb-technologies.com)  
  
At PCB, the relevant personal will be notified ( the engineering and supplier's quality leader manager ). The types of changes, as an example, requiring notification include, but are not limited to:
  - 5.1.1. Changes in components
  - 5.1.2. Reduced inspection and/or testing
  - 5.1.3. manufacture site changes
  - 5.1.4. Changes in packing, shipping and labeling of product
  - 5.1.5. Product discontinuance
  - 5.1.6. Changes in supplier or manufacturer part number or name
- 5.2. Supplier shall provide written notice of planned product discontinuation per JEDEC standard JESD48-the most updated version (Product discontinuance) and specifically in accordance with the following timeframes:
  - 5.2.1. 6 months minimum from the notice for last order dates.
  - 5.2.2. 12 months minimum from any discontinuation to manufacture material or from final shipments whichever is a greater period of time.
- 5.3. Supplier shall maintain internal documentation for all ECN's and ECO's for a period of no less than 3 years (or greater as requested by PCB TECHNOLOGIES) for commercially used product.
- 5.4. PCB TECHNOLOGIES has the right to reject any and all intended changes required by supplier.
- 5.5. Supplier shall maintain procedures for changes notification to PCB TECHNOLOGIES which are in accordance with this document.

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## 6. Product Quality Notification

- 6.1. Where supplier suspects that non-conforming product may have been shipped to PCB TECHNOLOGIES, supplier shall immediately provide written notification to PCB TECHNOLOGIES and to the buyer that placed the purchase order for the product.
- 6.2. When supplier identifies non-conforming product prior to shipment and wishes to obtain concession or deviation permission for its use, release or acceptance, supplier shall immediately provide written request to the buyer that placed the purchase order for the product and obtain PCB TECHNOLOGIES final disposition of the non-conforming product applicable to that purchase order.

## 7. Failure Analysis and Corrective Action

- 7.1. Supplier shall have a written corrective action procedure in place that responds to complaints received from any PCB TECHNOLOGIES operation. To assure timely resolution of non-conformance issues, supplier shall apply appropriate problem solving techniques to identify root causes and implement permanent corrections.
- 7.2. When a non-conformance is identified, PCB TECHNOLOGIES will request a thorough documented root cause/corrective action plan be put in place. PCB TECHNOLOGIES will notify supplier of the non-conformance via supplier corrective action request form (SCAR).
- 7.3. The time frame of the response for the corrective action shall be no more than 3 weeks - an initial response after 5 working days is mandatory.
- 7.4. Supplier is expected to provide support as required by PCB TECHNOLOGIES including but not limited to on-site representation for failure analysis, to assist in the isolation, diagnosis and resolution of high severity issues in the field, factory, or development facility and new product introduction support.
- 7.5. In the event that non-conforming material is discovered at any state in the process or in the field (Customer Complain), supplier will assume responsibility for the costs incurred to PCB TECHNOLOGIES and/or its customers as a result of the non-conformance. This costs may include but not limited to:
  - 7.5.1. Testing, inspection and sorting as required.
  - 7.5.2. Process changes which become necessary in order to remedy non-conformity.
  - 7.5.3. Recall costs
  - 7.5.4. Travel incurred
  - 7.5.5. Cost of product(s) or additional material impacted by the non-conformity
  - 7.5.6. Any external analysis
  - 7.5.7. Any additional services incurred by PCB TECHNOLOGIES to the customer
- 7.6. If PCB TECHNOLOGIES rejects any goods as non-conforming, at its option, (a) reduce the quantities of goods ordered under this document by the quantity of non-conforming goods, (b) require supplier to replace the non-conforming goods, and/or exercise any other applicable rights or remedies PCB TECHNOLOGIES may have.

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- 7.7. PCB TECHNOLOGIES is not obliged to carry out a more detailed examination upon arrival. However, if defects are noticed during the initial examination, supplier is to be informed of them immediately and supplier waives any right to reject delayed notification of their deficiencies.
- 7.8. Supplier is required to furnish Return Material Authorization ("RMA") for the return of non-conforming product 3 business days from the request. In certain circumstances, by the purchasing recommendation or supplier's quality leader- the supplier is required to provide an RMA within 1 business day of the request.
- 7.9. Material identified as non-conforming material shall not be reworked and sold to PCB TECHNOLOGIES as new material unless prior written authorization has been granted.

## 8. Quality Records Keeping

- 8.1. Supplier will comply with obligations to keep quality record in accordance with the medical or **general** standards and customer requirements as applicable or as mutually agreed, upon and in no case less than 10 years and if needed for all shelf life of the product .
- 8.2. Quality records shall be kept and maintained to provide evidence of product conformance to supplier's quality management system.
- 8.3. For suppliers providing material used on medical products, records shall be retained for a period of time equivalent to the design and expected life of the device, but in no case less than 3 years from the date of release for commercial distribution by the manufacturer.

## 9. FAI (First Article Inspection) – for RAFAEL applications

Mechanical parts and PWB are subjected to RAFAEL's approved inspector.

- 9.1. The number of the items for the FAI Shall be 3, unless there is a special requirement or defined in the purchase order or related documents.
- 9.2. The following documentation shall be provided for each manufactured mechanical part and PWB:  
  
FAI – shall be provided with AS9102 and Serviceable TAG signed by aerospace and defense approved inspector, COC and COT.
- 9.3. FAI is mandatory in the following cases:
  - 9.3.1. Manufactured for the first time at your facility.
  - 9.3.2. It is passed 18 months since it was last delivered and after performing an FAI.
  - 9.3.3. There were a major change to the part (FFF).
- 9.4. Any delay delivering of the documentation is subjected to fine (1% per day \* Purchasing order value).
- 9.5. RAFAERL's requirements for FAI -
  - 9.5.1. Pay attention to requirements No': 93.00.63, 60422, 30051, 60754 attached.
  - 9.5.2. Serial production - shall be provided with Serviceable TAG, COC and COT, signed by RAFAEL's approved inspector.

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## 10. Special Processes – for Collins applications

The below special processes may require Nadcap accreditation, unless otherwise directed in the contract or on the drawing:

- Chemical Processing
- Plating/Electro-Deposition
- Electroless Plating
- Anodizing
- Wet Paint Application
- Passivation
- Chemical Conversion Coatings
- Dry Film Lubrication
- Coatings - effective 1-Dec-2022
- Thermal or Plasma Spray
- Vapor Deposition of metals
  - Heat Treating
    - Heat Treating
    - Annealing
    - Furnace, Vacuum, and Dip Brazing
    - Hot Isostatic Pressing (HIP)
  - Materials Testing Laboratories (see 2.10.10 for additional clarification)
  - Material Testing
  - Chemical Testing
  - Non-conventional Machining and Surface Enhancement - effective 1-Dec-2022 and when Special Process Provisions are indicated by Drawing or Specification
  - Electrical Discharge Machining (EDM)
  - Laser Beam Machining (LBM)
  - Shot Peening
  - Nondestructive Testing
  - Radiographic Testing
  - Penetrant Inspection
  - Magnetic Particle Inspection
  - Ultrasonic testing
  - Eddy Current Testing
  - Welding
  - Fusion Welding
  - Torch and Induction Brazing
  - Composites - effective 1-Dec-2022
  - Structural Carbon Fiber Layups and Moldings
  - Electronics- effective 1-Dec-2022
  - Printed Board Fabrication
  - Printed Board Assembly
  - Cable and Wire Harness Assembly
  - Non-Metallic Material Manufacturing - effective 1-Dec-2022, in support of Composites in support of Composites
  - Non-Metallic Material Testing - effective 1-Dec-2022, in support of Composites Note: Special process categories are defined by Performance Review Institute (PRI). Nadcap or International Laboratory Accreditation Cooperation (ILAC). Special processes within the above categories (e.g., Chemical Processing) but not listed above are out of scope and Nadcap is not required.

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- 11. The supplier will take measures and controls to prevent counterfeit components.**
  - 11.1. AS6174 may be used as guidelines for Mechanical Parts
  - 11.2. AS5553 may be used as guidelines for Electronic parts
- 12. The supplier will act to increase awareness and contribution to ethical behavior, product safety and conformity**
- 13. The supplier undertakes that in every standard mentioned in this agreement - PCB TECHNOLOGIES refer to the latest version of the relevant standard**

P.S. Accepting the purchasing order means accepting this Quality Agreement.