



# Supplier Quality Requirements Manual SQRM

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## Revision Summary

<b>Rev. Level</b>	<b>Description of Revision</b>	<b>Date</b>	<b>Approved By:</b>
R	Revised wording in 20.1 for clarification Added section 21.0 NDT Added Triumph requirements for marking and hardness and conductivity to 29.2 – 29.3 Revised wording in 37.7 for clarification Added 39.1 for Embraer EQRS	02/12/13	C. Cue
S	20.3 Added Clarification for when a re-submittal of FAI is required. 33.1 APB - Added “The CATIA (CATPart) is the sole geometric dimensional authority except as defined by drawing” to APB requirements 33.16 / 33.1.7 APB – Added Inspection Plan requirements and clarification.	05/15/13	C. Cue
T	Extensive changes throughout document	7/14/2015	N. Armstrong
U	Revised Addendum A to add missing Israeli Aircraft Programs & Products in Rev T.	8/21/2015	N. Armstrong
V	Changes throughout- note change bars.	4/15/2016	N. Armstrong
W	Added Ferra as a Customer	5/25/2016	N. Armstrong
X	Added Net Inspect requirement for FAI submittals to LMI; added FACC to addendum; other changes through-out the document made for clarity. Addendum Reduction. Reference to record retention appendix.	4/18/2017	SQA
Y	Administrative changes only	7/18/2017	E. Hunnicutt

## Table of Contents

<b>1.0</b>	<b>Scope</b>	<b>4</b>
<b>2.0</b>	<b>Quality System Requirements</b>	<b>4</b>
<b>3.0</b>	<b>Configuration Management</b>	<b>6</b>
<b>4.0</b>	<b>Access</b>	<b>6</b>
<b>5.0</b>	<b>Acceptance</b>	<b>7</b>
<b>6.0</b>	<b>Subcontracting</b>	<b>8</b>
<b>7.0</b>	<b>Counterfeit Part Prevention</b>	<b>8</b>
<b>8.0</b>	<b>Designs, Tools, Dies, Customer Provided Material, etc.</b>	<b>9</b>
<b>9.0</b>	<b>Records</b>	<b>11</b>
<b>10.0</b>	<b>Raw Material</b>	<b>11</b>
<b>11.0</b>	<b>Notice of Escapement (NOE)</b>	<b>11</b>
<b>12.0</b>	<b>Nonconforming Material</b>	<b>12</b>
<b>13.0</b>	<b>Supplier Corrective Action</b>	<b>12</b>
<b>14.0</b>	<b>Disposition Authority</b>	<b>12</b>
<b>15.0</b>	<b>Part Mark</b>	<b>13</b>
<b>16.0</b>	<b>Sampling</b>	<b>14</b>
<b>17.0</b>	<b>Packaging &amp; Delivery Documentation</b>	<b>14</b>
<b>18.0</b>	<b>Digital Product Definition (DPD)</b>	<b>15</b>
<b>19.0</b>	<b>Certificate of Conformance (CoC)</b>	<b>16</b>
<b>20.0</b>	<b>Critical Components</b>	<b>17</b>
<b>21.0</b>	<b>Source Inspection</b>	<b>17</b>
<b>22.0</b>	<b>First Article Inspection</b>	<b>18</b>
<b>23.0</b>	<b>Nondestructive Testing (NDT)</b>	<b>19</b>
<b>24.0</b>	<b>Inspection Delegation Authority</b>	<b>20</b>
<b>25.0</b>	<b>Key characteristics</b>	<b>20</b>
<b>26.0</b>	<b>Foreign Object Damage Control</b>	<b>20</b>
<b>27.0</b>	<b>Calibration Requirements</b>	<b>20</b>
<b>28.0</b>	<b>Customer &amp; Program Specific Requirements</b>	<b>21</b>
	<b>Addendum A- Customer &amp; Program Specific Requirements</b>	<b>22</b>
	<b>Appendix A – Aviation Partners Boeing</b>	<b>28</b>

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## 1.0 Scope

- 1.1 This Supplier Quality Requirements Manual (SQRM) constitutes an extension to the contract between the Supplier and LMI Aerospace, Inc., or one of its subsidiaries, covering the items (Products) as described in the Purchase Order. Supplier's acceptance of the Purchase Order (PO) shall constitute Supplier's agreement to the requirements in this document. In the event of any inconsistencies between the Purchase Order and the requirements set forth below, the terms and conditions of the Purchase Order shall take precedence.
- 1.2 LMI's Terms and Conditions can be reviewed by the Supplier at the website [www.lmiaerospace.com](http://www.lmiaerospace.com) under the "Supplier Management" tab or requested from the Buyer representative.

## 2.0 Quality System Requirements

- 2.1 To be set up as a LMI Supplier, the Supplier shall complete the LMI Supplier Approval Questionnaire, form F7.4-03A, or an equivalent, and provide any other requested documentation. All of the documentation will be submitted to the LMI Buyer, for Supplier Quality review.
- 2.2 The Supplier shall have a quality system which meets or exceeds the requirements as shown in Table 1. LMI may choose to use a Supplier that does not meet these requirements based on business needs as long as it does not conflict with the customer requirements.

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## Table 1

	Quality System Level	Applicable Minimum Quality System Document	Supplier Description
Aerostructures	Subcontract	AS9100, EN9100 or JISQ9100	Manufacturer with design authority (Major Assemblies, Sources/Spec. Control Product); Engineering Services with design/release authority; Manufacturer (Build-to-Print)
	Partial Subcontract	AS9100, EN9100, JISQ9100, or Internal QMS*	Manufacturer only performing specific operations on material provided by LMI (Machining, Welding, etc.)
	Processors	Nadcap AC7004 or AS9100 Special Processes must be approved by LMI's customer and/or Nadcap	Processor
	Raw Material Manufacturer	AS9100 or as defined by customer	Raw Material Manufacturers
	Raw Material and Hardware Distributor	AS9120, AS9100 or ISO9001	Distributors
Tooling	Production Tooling	AS9100 or ISO9001	Tooling with design authority/Tooling (Build to print), directly relates to product conformity
	Support Equipment	N/A	Tooling that does not affect product conformity
Other	Quality Services	I ISO17025 or ANSI Z540 for calibration; Internal QMS for (inspection services)	Calibration/Inspection Services, etc (e.g. CMM)
	Chemical/Material Testing	ISO10012-1, ISO17025 or ANSI Z540 (as applicable)	Laboratories
	Chemical, Paint, Solution, and Instrument Distributor	Internal QMS	Distributors

\* Must be accompanied by an on-site audit of Supplier's facility by LMI Supplier Quality

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- 2.3** When industry specifications are noted in Table 1, LMI requires 3<sup>rd</sup> party certifications. Suppliers shall make available, a copy of their certifications to LMI. Any changes to the certifications such as a change of the registrar, update, withdrawal or disapproval must also be forwarded to LMI immediately.
- 2.4** Supplier shall notify the LMI buyer and LMI Supplier Quality Manager in writing within 48 hours of any changes of status to its Quality Management System, relocation, or changes in top management including the Quality Management Representative.
- 2.5** Supplier shall maintain satisfactory performance to remain on LMI's approved supplier list (ASL).
- a. Supplier Performance Standards are defined on the LMI Supplier Portal located at <https://suppliers.lmiaerospace.com>. To gain access to the portal the supplier shall contact their LMI Buyer for the user request form. Once completed, the supplier shall submit the form to the LMI Buyer or Quality for review and submittal.
  - b. Supplier's performance will be reviewed on a monthly basis. Suppliers not meeting performance standards may be subject to any of the following, as determined by subsequent review/evaluation:
    - Initiation of a Supplier Corrective/preventative Action Request (SCAR)
    - An on-site audit at the Supplier's facility
    - Supplier's placement on probation status (P1 or P2)
    - Supplier's removal from LMI's ASL
  - c. All performance scores will be held in the strictest confidence between the supplier and LMI Aerospace.

### **3.0 Configuration Management**

- 3.1** Supplier shall comply with specifications stated on the face of the Purchase Order and with applicable engineering drawings, including industry, association, society, regulatory and United States Government specifications and standards. Any questions regarding requirements should be directed to the LMI Buyer.
- 3.2** Supplier shall notify the Buyer if any engineering revision levels received conflict with the revision levels on the Purchase Order.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- 3.3 These documents shall be controlled, maintained and issued as the latest revision in effect at the time of the Purchase Order unless otherwise stated.
- 3.4 Supplier shall maintain a change control management and verification system for documents and electronic media, including applicable government, association, society, industry and customer furnished configuration data.

### 4.0 Access

- 4.1 Supplier shall grant LMI (or customers of LMI or any governmental regulatory agencies) access to Supplier's premises or manufacturing facilities. This includes the freedom to witness and audit all phases of fabrication, testing, storage or goods sold to LMI, pertinent documents and records related to the contract, subject to any limitations or controls required to ensure compliance to ITAR/EAR US Governmental regulations. LMI will provide advance notice to the Supplier (typically 48 hours minimum).
- 4.2 If this Purchase Order is a subcontract under a government prime contract or FAA approved designed data, Supplier agrees that its books, records, and its facilities, engaged in the performance of this Purchase Order, shall at all reasonable times be subject to inspection and audit by any authorized representative of the applicable Department of United States Government.

### 5.0 Acceptance

- 5.1 If any goods are found to be defective or otherwise not in conformance with the requirements of the Purchase Order, LMI may, in addition to its other rights and remedies, reject such goods and require their prompt correction or their replacements at the Supplier's expense, including shipping and packaging charges. Alternatively, LMI may repair or replace such non-conforming goods at the Supplier's expense.
- 5.2 Some shipment or delivery dates on LMI's Purchase Order may extend beyond the current engineering level protection time frame. Fabricating in advance of Supplier's proposed lead time or 12 weeks (excludes hardware, forgings, or raw material which routinely exceed 12 weeks) before the stated due date is at the Supplier's risk.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

### 6.0 Subcontracting

6.1 Supplier agrees that it will not enter into a subcontract for the procurement of any goods covered by this Purchase Order, in their complete or substantially complete form, without prior written consent of the Buyer.

#### 6.2 Control of Sub-Tiers

- a. No material substitutions, omissions or modifications will be allowed without prior written consent of the Buyer.
- b. The Supplier will assure that all material, services, and software procured from, or performed at sub-tier suppliers is in conformance to contractual requirements and specifications.
- c. The Supplier will ensure that all such requirements/specifications are flowed down to their sub-tier suppliers.
- d. All special processes must be performed by processors approved by LMI's customer (refer to Addendum A of this document for customer specific reference). Any questions regarding special process approvals should be directed to LMI through the LMI Buyer.
- e. See section 27.0 for calibration flow down requirements.

### 7.0 Counterfeit Part Prevention

7.1 The supplier shall have a counterfeit detection process for all electrical, electronic, electro-mechanical and electro-optical component parts that meets the intent of SAE standard AS5553, Counterfeit Electronic Parts, Avoidance, Detection, Mitigation, and Disposition.

7.2 For all electrical, electronic, electro-mechanical and electro-optical component parts delivered and/or used in the manufacture of deliverable products shall be from the Original Component Manufacturer (OCM)/ Original Equipment Manufacturer (OEM) or franchised distributors or Authorized Aftermarket Manufacturer (AAM).

7.3 The supplier shall have a counterfeit detection process for all non-electrical standard parts, like fasteners, nuts, washers, springs, o-rings, inserts, and pins that meets the intent of SAE standard AS6174, Counterfeit Material; Assuring Acquisition of Authentic and Conforming Material.

7.4 For all non-electrical standard parts, like fasteners, nuts, washers, springs, o-rings, inserts, and pins, must have a certification from the Original Component Manufacturer (OCM)/ Original Equipment Manufacturer (OEM) or Authorized Aftermarket Manufacturer (AAM) or authorized distributor.



## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- 7.5** In the event a part is not directly available from the OCM/ OEM/ AAM or franchised distributors (electronics) or authorized distributor (non-electronics), purchase from independent distributors may be made but the evidence of supply chain traceability (chain of custody) back to the OCM/ OEM/ AAM shall be provided. The Certification shall clearly identify the name and location of all of the supply chain intermediaries from the original manufacturer to the final source of the product delivered to LMI. NOTE: Distributors shall, in addition to the above, include their company's certification for each part number shipped.
- 7.6** Supplier's that deliver next higher assemblies shall flow this requirement down to all their sub-tier suppliers to prevent the inadvertent use of counterfeit parts and materials. Component certifications from the OCM/ OEM/ AAM must be readily retrievable and made available upon request.
- 7.7** If evidence of supply chain traceability (chain of custody) to the OCM/ OEM/ AAM is not available, the supplier must notify LMI immediately and get authorization to purchase this product.
- 7.8** Confirmed counterfeit parts will be segregated from conforming parts and controlled until rendered unusable by physical destruction. Suspect or confirmed counterfeit parts may not be returned to the Supplier for refund or replacement except under controlled conditions which would preclude the resale or re-introduction into the supply chain. The Supplier shall be notified and authorization to scrap obtained before product is destroyed.
- 7.9** Confirmed counterfeit parts will be reported to the Government Industry Data Exchange Program (GIDEP) and applicable US Government investigative authorities.
- 7.10** Suppliers shall be liable for all costs relating to the removal and replacement of Counterfeit Work, including without limitation LMI's and LMI's customer's costs of removing counterfeit items, of reinserting replacement Work and of any testing necessitated by the reinstallation of items after counterfeit items have been exchanged.
- 8.0 Designs, Tools, Dies, Customer Provided Material, Etc.**
- 8.1** If the goods are to be produced by Supplier in accordance with designs, drawings, blueprints, mylars, tooling or fixtures furnished by LMI, the Supplier shall return the same to LMI at LMI's request upon completion or cancellation of this Purchase Order.
- 8.2** Such designs shall not be used by Supplier in the production of materials for any third party without LMI's written consent. Such designs involve valuable property rights and proprietary information and shall be held confidential by Supplier.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- 8.3** Unless otherwise agreed herein, the Supplier shall supply all materials, equipment, tools and facilities required to perform the requirements of the Purchase Order at its cost.
- 8.4** Title to, and the right of immediate possession of, all property furnished by LMI to the Supplier shall remain with LMI, except that title to such tooling or material which is identified as Government property shall remain with the Government.
- 8.5** Title to any LMI furnished property shall not be affected by the incorporation or attachment to any property not owned by LMI, nor shall any such property, become a fixture of the Supplier or lose its identity for any reason.
- 8.6** LMI furnished and/or owned property condition shall be identified, maintained and inspected regularly for suitability of use. Supplier shall notify LMI immediately if the property is lost, stolen, or unfit for use for any reason. LMI makes no warranties of any nature with respect to any property or data it may furnish to Supplier hereunder.
- 8.7** Property furnished by LMI shall be used solely in the performance of work ordered by LMI or the Government, if the Government has title or rights in the property.
- 8.8** Property shall be subject at all times to disposition as LMI may direct. Supplier agrees to maintain inventory control of all such tooling and property and to furnish inventories thereof when required by LMI.
- 8.9** Unless otherwise specified, Supplier shall be liable for any loss or destruction or damage to property furnished to Supplier by LMI. Supplier shall be responsible for returning property in a suitable for use condition as when received at a time specified in accordance with the provisions of the Purchase Order.
- 8.10** Supplier shall comply with the provisions of FAR Subpart 245.5, "Management of Government Property in the Possession of Contractors" for all property used on US Government contracts. Property must be permanently identified showing the Government prime contract number (if one is indicated on this Purchase Order), the part number, and tool code number. If tooling is property of the Government, it shall be so identified.
- 8.11** Supplier shall notify LMI prior to destruction of any furnished materials, or equipment.
- 8.12** If LMI has provided the raw material for this order, no material substitution is allowed unless authorized in writing by LMI. The Supplier shall not return any furnished material without prior approval of LMI.

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## 9.0 Records

- 9.1 Quality records, material, and process certifications that are created and/or retained by the Supplier must be complete, legible and identifiable to the corresponding product. These records shall be retained for a minimum period of 10 years or as specified by Customer retention requirements (<http://www.lmiaerospace.com/supplier-management/supplier-quality-requirements/>). These records will be made available upon request by LMI or its customers at no charge.
- 9.2 Quality records, material and process certifications will be maintained in English, unless written authorization from LMI and/or LMI's customer is provided.
- 9.3 Prior to disposal of quality records, LMI will be notified. LMI may request shipment of the records, at no cost to LMI.

## 10.0 Raw Material

- 10.1 The Supplier is required to verify the correct material type, and temper (where applicable), to engineering prior to fabrication of product. Evidence of verification shall be on the Supplier's shop traveler, work order, planning, or other inspection status (including FAI) documentation.

## 11.0 Notice of Escapement

- 11.1 The Supplier shall notify the Buyer, within 24 hours of discovery, of any non-conforming product shipped (escapement) and/or any changes in product or process definition.
- 11.2 In the event of an escapement, the Supplier shall send a "Notification of Escapement" in writing to the Buyer and shall contain the following as a minimum:
- a. Supplier Name
  - b. Description of Non-Conformance
  - c. A list of all affected part numbers
  - d. Part number and traceability number which identifies the Non-Conforming parts, if applicable
  - e. All affected Buyer's purchase order numbers
  - f. Packing sheet numbers
  - g. Quantities and date shipped
  - h. Information regarding quarantine of all related work-in-process and/or finished goods.
  - i. Any other information that is required.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

### 12.0 Non-Conforming Material

- 12.1** When a nonconforming product is discovered at the Supplier's facility, and it requires an engineering review/disposition, the Supplier shall submit a Nonconforming Material report to the LMI Buyer.
- 12.2** When nonconforming product is reported to LMI Supply Chain, by the customer and/or LMI Quality, and it is determined to be the responsibility of the Supplier, immediate containment and evaluation of all such Product at the Supplier's facility will take place. The Supplier will notify LMI of any additional product impacted, by the discovery, and evaluate the condition for possible NOE category.
- a. A copy of the LMI Nonconforming Material Document (NMD) will be provided to the Supplier as notification of the discovered discrepancy.
  - b. If requested, the Supplier shall provide a Root Cause and a Corrective Action statement, within the appropriate sections of the NMD, and return it to the LMI Buyer.
- 12.3** The Supplier will receive a copy of the NMD with the disposition, from the LMI Buyer or LMI Supplier Quality, upon the completion of the engineering review/disposition process.
- a. For deliverable product associated to a NMD the part marking will include the NMD number (e.g. NMD#123456), per Section 15 of the SQRM.

### 13.0 Supplier Corrective Action

- 13.1** If the Supplier is issued a Supplier Corrective Action Request (SCAR), the Supplier's response shall be submitted to LMI Supplier Quality Assurance (SQA), and the Buyer, within the date specified in the SCAR notification.
- a. Requests for an extension may be submitted to SQA for consideration. The supplier must provide the following:
    - Status of SCAR at the time of request
    - Circumstance to justify the extension
    - Proposed completion date(s), for the remaining section(s) of the SCAR
- 13.2** Failure of a Supplier to respond may result in a change in approval status. At a minimum a meeting will be held with the supplier to review the issues.

### 14.0 Disposition Authority

- 14.1** Supplier disposition authority for non-conforming product is limited to: Rework, Return-to-Vendor, and Scrap. The Supplier shall notify the

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

Buyer in writing immediately if disposition actions taken have an effect on the ability of the Supplier to deliver product as specified or agreed upon.

Note: Rework is defined as a process performed entirely within the confines of the drawing and referenced specifications that will result in characteristic(s) that conforms completely to the drawings, specifications, and contract requirements.

Note: For Scrap:

- Non-conformance document shall be submitted to LMI for LMI/Customer furnished material; regardless of the supplier's MRB status.
- If material is procured solely by the supplier, they retain the authority to Scrap at their discretion.

### 15.0 Part Mark

**15.1** When a part mark specification or direction is provided by the drawings, specifications or Purchase Order, the following shall be applied below those part mark requirements.

- a. The manufacturing date
- b. The Supplier's name or cage code for traceable to the Supplier
- c. The number used by the Supplier to provide traceability of their quality records (e.g., Serial Number, Lot Number, Control Number, Work Order/Traveler Number)
- d. LMI non-conformance document number (when applicable)

**15.2** When a part mark specification or direction is not provided by the drawings, specifications or Purchase Order, the part mark shall be applied in accordance with MIL-STD-130 or equivalent, which shall include the following:

- a. The part number specified on the Purchase Order
- b. The manufacturing date
- c. The Supplier's name or cage code traceable to the supplier
- d. The number used by the Supplier to provide traceability of their quality records (e.g., Serial Number, Lot Number, Control Number, Work Order Number)
- e. LMI non-conformance document number (when applicable)

**15.3** Traceable items that size and/or application that do not allow the part number and serial number identification shall be individually packaged and identified by an appropriate label.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

### 16.0 Sampling

**16.1** The Supplier shall perform 100% inspection of products being delivered. Sampling may only be performed when authorized in writing by LMI SQA through the LMI Buyer.

Note: Sampling plans may need to be approved by the OEM customers.

### 17.0 Packaging and Delivery Documentation

**17.1** When a packaging specification or direction is not provided by the engineering drawings, specifications or Purchase Order, the packaging shall be in accordance with:

- a. Commercial: ASTM-D3951, Standard Practice for Commercial Packaging
- b. Military: MIL-STD-2073-1D, Standard Practice for Military Packaging

**17.2** Supplier shall provide a Packing Sheet for each separate shipment that includes as a minimum:

- a. Supplier's name and address
- b. Buyer's Purchase Order number, change order number and applicable line item number
- c. Part number and quantity
- d. Applicable engineering drawing revision levels and engineering drawing changes (ADCN, EO, etc.) as stated on the Buyer's Purchase Order or subsequent Purchase Order revision

**17.3** Foreign Suppliers shall additionally provide:

- a. Custom's Declaration Letter
- b. Declaration of Origin

**17.4** A bar coded shipping label is required to be affixed on the outside of each package shipped to LMI. Use Code 39 bar code font, with no start/stop characters. The following items are an explanation of the requirements and a sample bar code label:

- a. LMI Purchase Order number: Usually a letter followed by five numbers
- b. Line Item: Usually three or four digits. The fourth digit (usually a letter) is used on non-reoccurring items and it indicates the PO line item type
- c. Part Number: Part number as reflected on the PO
- d. Quantity: Reflects how many items are in the package
- e. Shipment Number: Indicates if this is a first, second, third, etc. shipment against a specific PO




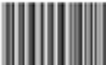

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

f. Box \_\_\_ of \_\_\_ for the PO/Line Item being shipped

## Sample Bar Coded Label

<b>From: Supplier Name</b>	<b>To: LMI Aerospace</b>
<b>Address</b>	<b>Address of Delivery Location</b>
<b>City, State, Zip</b>	<b>City, State, Zip</b>

LMI Purchase Order Number: G12345	
	
Item Number: 001T	
	
Part Number: 00222112211222	
	
Quantity: 5	Shipment Number: 1
	
Box 1 of 3	

## 18.0 Digital Product Definition (DPD)

**18.1** When LMI, or LMI's Customer, provides electronic engineering definition of the product, the Supplier shall have a documented procedure for:

- a. Verifying the integrity of the file transfer
- b. A system for storing and maintaining the file
- c. A system for the security (limited access) of a file and,
- d. A system for change verification and notification
- e. Full traceability of all derivative data back to the original Customer provided definition
- f. When models are provided by LMI, along with other configuration control documents (engineering drawings, specifications, condition of supply...etc.), the Supplier is to ensure that all documents have been properly reviewed prior to production. This includes the evaluation of all imbedded notes in the engineering model. Any conflict between these documents and files shall be brought to the attention of LMI, through the LMI Buyer for resolution.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

**18.2** See Section 22 of the SQRM for information regarding evaluation of Supplier reduced dimension or model based definition First Article Inspection.

### **19.0 Certificate of Conformance**

**19.1** When a LMI Certificate of Conformance (C of C) document form is not specified on the Purchase Order, the Supplier may use their Certificate of Conformance if it contains the following minimum requirements:

Note: See section 7.0 for additional requirements for electrical, electronic, electro-mechanical, electro-optical, electronic components and non-electrical standard parts.

- a. Supplier's name and address
- b. Part number
- c. Purchase Order number and line item number
- d. Quantity
- e. All drawing, parts lists, sheet numbers, revision levels, amendments, and models
- f. A certification statement that meets the intent of the following:  
“(Supplier) certifies that these parts were purchased, and/or manufactured, and/or processed, and/or assembled, and inspected and meets all applicable OEM customer and Buyer requirements.”
- g. An authorized Quality Assurance stamp (where applicable), signature and date
- h. The number used by the supplier to provide traceability of their quality records. This should be the same number applied in the part mark per Section 15.1, above.  
Note: The following should be listed in the C of C, or attached in the form of certifications, unless otherwise noted in Addendum A:
  - i. Material type, alloy, temper, thickness or other size dimension(s), lot number, manufacturer's name and address, and specification number and revision level
  - j. Heat treat facility's name and address, lot number, process name, quench method, specification number and revision level
  - k. Hardness and conductivity readings (required and actuals) and percentages tested.
  - l. All other special processes performed, to include the processor's name and address, specification name, specification number and revision level.



## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- m. If a NMD was initiated by LMI to cover product being shipped under this C of C, the C of C and the shipper must state the NMD number and a copy of the NMD must be attached to the C of C.

### 20.0 Critical Components

- 20.1 Parts designated as Fracture Critical, Fatigue Critical, Durability Critical, or Maintenance Critical by the Purchase Order, LMI/Customer/OEM engineering or specifications, require the submittal of the Supplier's manufacturing plan 30 days prior to start of production.
- 20.2 Upon approval of the Supplier's manufacturing plan, the Supplier shall control all processes as stated in the plan.
- 20.3 No deviation from the approved plan is permitted without written approval from LMI and/or LMI's customer, through the LMI Buyer.
- 20.4 Record retention requirements for Critical Components are typically longer than the standard 10 year requirements. Supplier is to ensure that the retention period is applied in accordance with the Engineering and Quality requirements for the program and product, and/or Addendum A.

### 21.0 Source Inspection

- 21.1 Source Inspection is required for all FAIR's unless otherwise waived by LMI SQA, or noted as such in the LMI Purchase Order.  
Note: The Supplier is not permitted to initiate Source Inspection without written authorization from LMI SQA.
- 21.2 The Supplier will notify the LMI Buyer a minimum of 24 hours prior to completion of product so that Source Inspection can be arranged. The FAIR will be presented to the LMI Source Representatives at the time of Source Inspection, and copies will be shipped along with the First Article part(s). With the submission of FAIRs the Supplier will include copies of all work orders and process certifications associated, unless the information is proprietary.
- 21.3 LMI retains the right to invoke source inspection of product, processes and goods at the Supplier or sub-tier Supplier's facility. When invoked, the Supplier shall provide adequate resources to the LMI representative requested in the course of verifying conformance to requirements.
  - a. Source Inspection requirements may be a result of the Supplier's quality performance or other mandates, at LMI's SQA discretion. The cost of such services may be the responsibility of the Supplier.
- 21.4 LMI's verification of goods, by source inspection, shall not be deemed to constitute acceptance of any goods which do not conform to the specifications. Source Inspection does not waive any of the Buyer's rights

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

or remedies arising by virtue of such defects or non-conformances being discovered at a later time.

**21.5** Source Inspection may be waived at the discretion of LMI SQA.

### **22.0 First Article Inspection**

**22.1** A First Article Inspection Report (FAIR) is required for all products produced for LMI on their initial shipment and shall be compliant with the latest revision of AS9102. The “LMI Aerospace AS9102 (B) FAI Report Guideline (FAI STD-001)” and “Customer-specific FAI Requirements Document (FAI APP-001)” are available for use at: <http://www.lmiaerospace.com/supplier-management/supplier-quality-requirements/>.

- a. All First Article Inspection reports shall be submitted via Net Inspect.
  - Suppliers can acquire a “limited-use” license from Net Inspect, for FAI submittal to LMI, at no cost. Go to the Net Inspect web-site at <https://www.net-inspect.com/> to acquire the “limited use” license. Use the “Request an Account” button in the lower left section of the site to proceed with the acquisition. Be sure to provide LMI Aerospace, as your customer’s name, when asked.
- b. The FAI submittals are to be complete, with all material and process certifications, test reports, and supporting documentation attached. Unless otherwise mandated by LMI’s customer, at a minimum, the Net Inspect Form1 will be completed in its entirety, with the remaining Form 2 and 3 attached, along with all other supporting documentation. A printed copy of Form1 is to accompany the Supplier’s shipping documentation. The supporting documentation will include, but is not limited to:
  - “bubbled” B/P, Engineering Notes, etc . . .
  - Material Certifications
  - Process Certifications
  - Special Manufacturing Instructions
  - CMM Reports
  - (see FAI STD-001 and FAI APP-001 for additional req’ts)
- c. All supporting documentation shall be traceable to the FAI package. This shall be accomplished by including reference to the part number, and Manufacturing Process Reference number and/or the FAI Report number within each document.

**22.2** When the shipping requirement changes to a different LMI facility/location, a copy of the original FAIR may be requested, for the first shipment.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

**22.3** [Note: Contact LMI SQA for additional guidance, as needed]Evaluation of Supplier reduced dimension or model based definition First Article Inspection:

- a. For all dimensions checked with a CMM the Supplier shall provide an AS9102 submittal with all dimensions specifically called out in the model listed in Form 3. (ex: GD&T, hard call out dimensions, drive to points, etc.)
- b. For all other measurements taken from the model but not specifically called out, as in letter (a) above, include a bubbled drawing of the dimensions taken from the model or bubbled screen shot showing where the points were taken. There must be correlation between the bubbled features and the CMM report.
- c. A CMM report that identifies the tolerance for each feature point and the amount of deviation from the nominal. The report must clearly indicate any out of tolerance conditions.
- d. The CMM report shall be traceable to the specific part and retained by the Supplier. The CMM report shall be given a naming convention that can be identified on the AS9102 form 3. A copy of the CMM report shall accompany the FAI. If the size of the CMM report is not feasible to include a copy, it shall be retained in such a manner that can be made available immediately upon request.

**22.4** For dimensions not checked with the CMM the Supplier shall provide a bubbled drawing of dimensions taken from the model or bubbled screen shots (these must be controlled in the same manner as an engineering drawing) showing where the points were taken. These manually inspected features shall be recorded on form 3 of the AS 9102 form. There must be correlation between the bubbled features and the Form 3 report.

**22.5** Documents must reference the model file name/drawing and revision level.

### **23.0 Nondestructive Testing (NDT)**

**23.1** Supplier shall review the purchase order and associated drawings, notes and related documents to determine if NDT is required. Submittal to and approval of NDT general procedures and part-specific techniques by the Customer (Special Process Owner) is required prior to performing NDT. After initial approval, any changes to subject documents must be resubmitted to the Customer for approval.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

**23.2** Suppliers using outside sources for NDT shall ensure that the selected NDT sub-tier has Customer approval for the NDT procedure/technique used. On-site validation of procedures/techniques to verify specification compliance may be performed at the discretion of the Customer.

### **24.0 Inspection Delegation Authority**

**24.1** The Supplier, when issued a “Delegated Authority Stamp” is authorized to inspect products on behalf of LMI SQA.

- a. The Supplier’s Delegation Authority is subject to the limitations specified within LMI form F8.2-03A “Supplier Stamp Control Record”, and/or the Purchase Order/Contract.
- b. The application of the “Delegated Authority Stamp” will accompany the Supplier’s Inspection stamp, on the relative documentation being submitted to LMI.
- c. LMI SQA reserves the right to conduct product integrity audits, quality system assessments, verify Supplier’s conformance to delegation requirements and to revoke the Supplier’s delegation authority at any time.

**24.2** If a Supplier elects to delegate product verification to a sub-tier Supplier, the Supplier must conform to the requirements of AS9015.

### **25.0 Key Characteristics**

**25.1** When identified on the Engineering drawing, model, or documentation, all key characteristics will require a statistical process control plan.

- a. This statistical process control plan is subject to review and audit by LMI at any time during the conduct of the contractual work.

### **26.0 Foreign Object Damage Control**

**26.1** The Supplier will ensure that product delivered to LMI is controlled in a manner that will prevent FOD from being introduced into the final product.

### **27.0 Calibration Requirements**

**27.1** Calibration Control:

- a. The supplier shall control the Calibration of all Measuring and Test Equipment (M&TE) against Certified Measurement Standards, traceable to the NIST.

**27.2** Calibration Suppliers:

- a. Calibration Suppliers must comply with ANSI Z540.1, ISO 17025, or ISO 10012.
- b. Measurement standards used for calibration or verification shall be traceable to international (SI) or national measurement standards and be supported by certification.
  - Where no such standards exist, the basis for calibration will be defined and documented

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- c. Certificate or record of calibration performed will be maintained by the Calibration Focal. Records will include the following at a minimum:
  - Equipment Type
  - Identification number/Control number
  - Manufacturer
  - Calibration date
  - Due date
  - Interval
  - Range of measurement
  - Standards used/Instructions used
  - Acceptance criteria/Tolerance
  - Test measurement results
- d. Record retention 10 years unless otherwise directed.

### **28.0 Customer & Program Specific Requirements**

- 28.1** In addition to the requirements noted in the LMI SQRM, there are Customer and Program related requirements that apply based on the type of product being provided by the Supplier and the Buyer's end item Customer.
- 28.2** The Supplier is required to implement the Customer and Program specific requirements as applicable, contained in Addendum A of this document.

**SQRM Addendum A**

**Customer Product & Program Specific Requirements**

**NOTE:** Where conflict exists between these requirements and the SQRM/PO requirements, contact LMI SQA for guidance. In all cases where end user customer requirements dictate interface activity with the customer, these activities will be administered through LMI Aerospace (e.g. digital data submittal, non-conforming material submittal, corrective action submittal, etc.)

**NOTE: For Customer specific FAI requirements, go to:**

<http://www.lmiaerospace.com/supplier-management/supplier-quality-requirements/>

**Record Retention Requirements for Customers is available online at the same address above.**

**1.0 Aviation Partners Boeing**

1.1 See Appendix A

**2.0 Bell Helicopter**

2.1 SQRM-001 Bell Supplier Quality Requirements Manual.

2.2 In addition supplier must comply with applicable sections of Appendix VIII: “Digital Design Media” Control and Use Requirements”

**3.0 Boeing**

3.1 X31764 Quality Purchasing Data Requirements (BCA)

3.2 D6-82479 Boeing Quality Management System Requirements for Suppliers and the requirements listed below, as applicable:

- a. D6-51991 Quality Assurance Standard for Digital Product Definition at Boeing
- b. Special processes must be performed by Boeing D1-4426 approved processors. See D1-4426 Appendix D for Purchase Order flow down requirements.
- c. D950-11059-1 IDS Seller Special Tooling Requirements for any Boeing IDS Tool
- d. DPAS Rating: Boeing BDS general clause H200

3.3 D33200 Boeing Supplier Tooling Document

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## **4.0 Bombardier Aircraft**

**4.1** QD4.6-40 Quality Requirements for Suppliers.

**4.2** For PCCN 1 designated parts, the seller will submit a manufacturing & inspection control plan for LMI Aerospace approval. At a minimum, the plan will delineate the sequence of manufacturing operations to be performed, the type of each inspection specified, and, if applicable, the specifications that define each inspection requirement. This plan will be submitted to the LMI Aerospace purchase order originator and approved by LMI Aerospace Quality Assurance.

## **5.0 CPI Aero**

**5.1** SQAR-001 CPI Aero Supplier Quality Requirements Manual.

## **6.0 Embraer**

**6.1** EQRS Embraer Quality System Requirements for Suppliers

**6.2** Supplier shall obtain the most current version of all Embraer specifications through LMI's PartnerWeb portal. To gain access to this site, please contact your LMI Buyer.

**6.3** Supplier shall establish procedures for controlling special processes., including but not limited to:

- a. Qualification or initial approval: Special processes shall be qualified or approved by LMI before manufacturing the first ship set. .

## **7.0 FACC**

**7.1** FQS 05 008 02 Quality Requirements for Suppliers.

## **8.0 Ferra**

**8.1** Supply of FSC 5935 electrical connector parts must comply with the following clauses:

- a. Buy American Act (41 USC §§ 8301-8305)
- b. Specialty Metals Restrictions (10 U.S.C. 2533b, as implemented by Defense Federal Acquisition Regulation Supplement (DFARS) 225.7003-1)
- c. Prohibition on acquisition of United States Munitions List items from Communist Chinese military companies (Sections 1211 and 1243 of the National Defense Authorization Acts (NDAA) for Fiscal Years (FY) 2006 (Pub.L. 109-163) and 2012 (Pub.L. 112-81), as implemented by DFARS 225.770-2)

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- d. Counterfeit Electronic Part Detection and Avoidance Systems requirements (Section 818(c) of the NDAA for FY 2012 (Pub.L. 112-81), as implemented by DFARS 246.870)

### **9.0 GoGo**

- 9.1** D14521 Supplier Quality Requirements.

### **10.0 Gulfstream**

- 10.1** SQAR-9100 Supplier Quality Assurance Requirements

- 10.2** The following configuration information shall also apply:

- a. Parts with -800 in the part number (i.e., 1159B12345-800-123):  
Make per GAC CTTR file. If no CTTR file exists, make per GAC inspection stamped tooling. If no GAC inspection stamped tooling exists, contact the Buyer for instructions. Features not controlled by the CTTR file or the GAC inspection stamped tooling, make per engineering.
- b. Parts without the -800 in the part number (i.e., 1159B12345-123):  
Make per GAC inspection stamped tooling. Features not controlled by GAC inspection stamped tooling, make per engineering. If no GAC inspection stamped tooling exists, make per engineering.

- 10.3** Supplier shall obtain the most current version of Gulfstream Bonded Panel Program specifications through LMI's PartnerWeb portal. To gain access to this site, please contact your LMI Buyer.

### **11.0 Honda Aircraft Company**

- 11.1** HACI P 10-1 Supplier Requirements Manual.

### **12.0 Honeywell**

- 12.1** SQR-004 Supplier Requirements Manual.

### **13.0 Israeli Aircraft**

- 13.1** CAG-9000 Quality Requirements.

### **14.0 KLM (Formally known as B/E Aerospace)**

- 14.1** QAP 33 Quality Clauses: A, A1, A2, A3, A6, B, C, E1, F, F1, G, H, U, and V.

### **15.0 Lockheed Martin**

- 15.1** QCS-001, Appendix QJ, and Appendix QX.



## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- 15.2** The seller will submit a manufacturing & inspection control plan for LMI Aerospace approval. At a minimum, the plan will delineate the sequence of manufacturing operations to be performed, the type of each inspection specified, and, if applicable, the specifications that define each inspection requirement. This plan will be submitted to the LMI Aerospace purchase order originator and approved by LMI Aerospace Quality Assurance.
- 15.3** DPAS Rating: In accordance with the Code of Federal Regulations 15 C.F.R. 700.

### **16.0 Middle Rivers Aircraft Systems**

- 16.1** MRAS-9000 Supplier Quality System Requirements.
- 16.2** Product Acceptance Records and Serial/Lot Number Assignment records:
  - a. Non-serialized Parts- Five (5) years
  - b. Serialized Parts- Ten (10) years
  - c. Administrative Records- Two (2) years
  - d. Radiographic Film- Five (5) years

### **17.0 Mitsubishi Aircraft Corporation (MITAC)**

- 17.1** MRJ-SQC-01 Quality Management Requirements.
- 17.2** Supplier shall notify LMI/MITAC at least three months in advance when major changes in key elements of Supplier's manufacturing processes are planned (e.g. facility, sub-tier Supplier, equipment, production process, etc.)
- 17.3** All special processes must be approved by Mitsubishi Heavy Industry, Nagoya Aerospace System Works (MHI NASW) Quality Assurance in accordance with MSJ4064 Apendix-3, Procedure for Special Process Approval. Special Processes are defined in section 2 of MSJ4064 Apendix-3.
- 17.4** Any deviations from MHI NASW special processes must be approved and documented according to MSJ4064 Apendix-3 section 5.4 Approval to Specification Change.
- 17.5** The following documents in addition to SQRM/PO requirements must also accompany each shipment of Product(s):
  - a. Certificate of Conformance
  - b. Nonconformance records list
  - c. Regulatory documents (as applicable)
  - d. Test report and/or inspection report (as applicable)

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- e. As Built Configuration List- Parts list (as required and defined in configuration management flow down documents). This is typically required on kits, assemblies and sub-assemblies.

**17.6** The Japan Civil Aviation Bureau (JCAB) is the regulatory authority for the MRJ aircraft. They, or their delegate, may require access to all facilities involved with the production of any product intended for MRJ program, including access to witness Certification Testing.

### **18.0 Northrop Grumman**

**18.1** SQAR Supplier Quality Assurance Requirements.

**18.2** Records: The records shall be retained for a period of not less than seven (7) years from completion of purchase order. The supplier must impose this requirement on their sub tiers.

### **19.0 Sikorsky Aircraft**

**19.1** ASQR-01 Aerospace Supplier Quality Requirements.

**19.2** Supplier must provide an inspection checklist in accordance with Sikorsky ASQR-01 paragraph 5(J).

**19.3** Suppliers are required to provide the specification and specification revision level on all certifications, and to ensure that all specification revision levels are compliant to the Sikorsky Standard Part Index and the Material Processing and Specifications (SS7777 and SS9999) index revision levels that are provided by LMI Aerospace.

### **20.0 Spirit Aerosystems**

**20.1** Supplemental Purchase Order Provisions (PF) listed in 18.2.

Supplemental Purchase Order Provisions by program:

- a. PF-100 G650 POP: Gulfstream G650/Purchased Outside Production
- b. PF-100 G280 POP: Israeli Aerospace Industries G280/Purchased Outside Production
- c. PF-100 B787 POP: Boeing 787/Purchased Outside Production
- d. PF-100 B Sus/POP: Boeing Sustaining/Purchased Outside Production
- e. PF-100 737 MAX POP: Boeing 737 MAX/Purchased Outside Production
- f. PF-515 MRJ: Mitsubishi Regional Jet Program

**20.2** Suppliers are required to complete and submit all FAI documentation through the Net-Inspect portal. The FAI submittals are to be complete,

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

with all material and process certifications, test reports, and supporting documentation attached.

### **21.0 Triumph-Vought Aircraft**

- 21.1** SQAR Supplier Quality Assurance Requirements.
- 21.2** Supplier Requirements for First Article Inspection SQR-011 applicable to all purchase orders with a First Article Inspection requirement.
- 21.3** Supplier Requirements for Tooling SQR-008 applicable to all purchase orders for Tooling.
- 21.4** Hardness Conductivity SQR-010 applicable to all purchase orders for metallic parts.
- 21.5** Control and Use of Digital Product Definition SQR-004 applicable when Triumph authority dataset/s derivatives are used for manufacturing or product acceptance.
- 21.6** The Supplier shall also identify all parts with the LMI- Vought assigned supplier code 534208. This is not required for the following:
  - a. Metallic raw materials (excluding castings & forgings)
  - b. Non-metallic raw materials
  - c. Mechanical standard parts/hardware
  - d. Electrical components/hardware
  - e. Paints, sealants, and chemicals

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## APPENDIX A

### AVIATION PARTNERS BOEING

The following requirements are unique to the 767/737/757 Wing Mod Programs.

- The CATIA (CATPart) is the sole geometric dimensional authority except as defined by the drawing. Should a conflict arise between the requirement in the model and the requirements on the drawing, the drawing has precedence unless otherwise stated contractually.
- Source Inspection is required on all first article parts and delta first article parts. Source inspection is required for the assemblies and assembly details.
- All General notes, flag notes, standard drawing notes, standard process specifications and part specific notes must be addressed within the FAIR and bubbled along with all applicable dimensions. For non-applicable notes, state actual results as “Acceptable” or “N/A”.
- All hard dimensions on provided drawings must be inspected and documented on FAI documentation. Reference dimensions should not be included.
- CATIA model file name and revision level must be listed on all FAI documentation.
- Functional testing on first article parts must be witnessed by a LMI Source Representative.
- Supplier shall perform a verification of all engineering dimensional requirements on all products or shall submit a statistically valid sampling plan for LMI approval.
- A recurring production inspection plan will be required and must be verified by LMI. All applicable general notes, flag notes, standard drawing notes, standard process specifications and part specific notes must be addressed within the inspection plans. (Completed inspection plan and other required documentation must be sent with each shipment.
- This inspection plan must include at a minimum:
  - Part Name
  - Part Number
  - PO Number
  - Revision Level
  - Date

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- Item Number
- Engineering Requirement
- Specification
- Tolerance
- Measurement Device
- Actual Results
- Accept/Reject Status

### Records:

- All certifications and manufacturing records must be maintained for 10 years. LMI and APB approval is required prior to record disposal.
- Any Deviations or Waivers must be listed on the packing sheet.
- Product cannot be shipped with an open non-conformance.
- Supplier shall have available objective evidence that eddy current or hardness testing has been performed on at least one part from each lot/batch of material and/or on at least one part after being processed through a heat treating process. If a sample fails to meet the specification's requirements, then 100% testing of all parts is required. The results of the eddy current or hardness testing must be recorded and retained in accordance with the Supplier's record retention requirements.

### PMA Part Marking Requirements:

- Current part marking specifications and/or stamps, and notification of any change in PMA marking will be communicated to the Supplier through the LMI Buyer.
- The following is required to be marked on each detail part. No deviations are permitted.
  - LMI AEROSPACE
  - FAA-PMA
- If needed, an ink stamp will be provided by LMI Savannah, GA. Please notify LMI SQA or LMI Buyer to get a stamp sent to your facility.

## LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

- The requirements for application are to be consistent with the LMI SQRM and 14CFR 45.15a, Marking requirements for PMA articles, TSO articles and Critical Parts.
- All marking must be complete and legible to the unaided eye. Marking method and correction is per BAC 5307 RO unless specifically prohibited.
- Each detail component shall have the PMA marking applied to the part near the part number identification.
- Items supplied as inseparable assemblies require only one PMA marking located near the assembly part mark.
- Where the part does not allow an adjacent PMA marking, another suitable surface may be used, as near to the part marking as practical.
- Components with a surface too small, fragile or of unsuitable material for the PMA stamp, are to have separate tags or labels with the identical PMA verbiage included in individual bags with each part or on a sticker applied to each individual bag.
- Product identified with PMA marking may not be sold or shipped to any location other than LMI Aerospace Savannah, GA.
- The application of PMA marking may be applied in conjunction with other part marking applications.
- Application of the PMA information, without verbiage change, may be applied using alternative ink application devices as allowed by BAC 5307.
- Any questions regarding the application or use of PMA marking should be directed to the Quality Manager of LMI Aerospace, Savannah, GA.

### Inspection Template-

- The following is a sample template that can be used to satisfy the requirement of Aviation Partners Boeing and LMI.

# LMI SUPPLIER QUALITY REQUIREMENTS MANUAL

## Inspection Plan

Inspection Plan Number		Revision Level	Inspection Plan Date (Orig.)	Inspection Plan Date (Rev.)				
Part Number		PO Number						
Part Name/Description								
Supplier		Supplier Code						
Item Number	Process Name /	Engineering Requirement	Specification	Sample Size	Control Method	Reaction	Results	Date
	Operation					Plan		
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
12								