



# **Supplier Quality Assurance Manual**

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- Appendix 1 : IMI's PPAP Booklet
- Appendix 2 : IMI Group PCB requirements (*for PCB suppliers only*)
- Appendix 3: ZDAP request
- Appendix 4: Quality contract

## **Amendments to the SQA manual**

The contents of this guideline are subject to change and may be modified at any time by IMI group, without prior warning.

When any changes are made to this manual; suppliers will be notified and they will be required to update all hard copies and electronic copies with the new revision.

Suppliers are responsible to check the revision on IMI global web site <http://www.global-imi.com/expert-capabilities/suppliers-quality-engineering> to ensure they are following the most recent release.

This Supplier Quality Assurance Manual replaces all previous versions from IMI group and also from the former EPIQ group.

# IMI Group SQA Manual

## Foreword

This document is intended for current and/or potential suppliers and subcontractors for IMI group.

It is preferable that it is read before any business relationship is entered into, but may still be used as a reference during any given supplier contract period.

The SQA manual deals with the procedures applicable during the contract period. It deals with the products to be delivered - from advanced quality planning to the submission of samples.

It also covers the production process, product approval procedure (PPAP), and includes IMI methodology for the evaluation of mass production deliveries.

As a minimum, all suppliers of **specific/non-standard parts** on IMI's Preferred Supplier List (PSL) are required to return a signed copy of the acknowledgment of receipt form at the end of this document to demonstrate that they are in agreement with the requirements of this SQA manual

Suppliers of **standard parts/consumables** are also encouraged to do likewise, and will be requested to do so on a case-by-case basis, as deemed necessary by IMI group's procurement team.

## **1 Quality philosophy**

### **1.1 Quality and reliability**

IMI products are known worldwide for their long service life, safety performance and in particular, good quality. The resulting strong market position of IMI is due to Quality and Reliability. These two attributes form part of the identity of our products, and are a central competitive factor.

Quality and reliability are factors of decisive importance. With respect to the market, quality management at IMI generally goes further than is required. Irrespective of the obligation of our suppliers to produce and supply products zero defect, we depend not only on our partner's readiness to cooperate with us, but also on a climate of trust in our work with our partners.

Customer satisfaction cannot be attained unless product quality is secured throughout the entire added-value chain by means of ZERO DEFECT programs. To this end, we expect our automotive supplier partners to be ISO TS 16949 certified so they can demonstrate an effective quality management system for our automotive market requirements. If such a system is not in place, then the supplier must be able to provide a roadmap for accreditation in the short term. Otherwise, the supplier should have ISO EN 9001 accreditation as a minimum. The quality certification required depends on how critical the parts are that are supplied.

Unless otherwise specified and approved by IMI, the Supplier is required to meet ISO13485, AS9100, ISO26262 or the Supplier shall have a roadmap to work towards the standards.

ZERO DEFECT programs shall also include TQM and continuous improvement initiatives. Quality management at IMI not only qualifies and evaluates the quality and compliance with scheduled delivery time of supplied products, but also covers compliance of primary products at the supplier's premises, their production, testing and inspection procedures, their disposal programs and also guarantees regarding contractual products.

### **1.2 PPM agreement**

In order to work towards the 'ZERO DEFECT' target as quickly as possible, after a predefined period of time, 'ppm agreements' will be defined with the supplier, providing an object for a maximum quantity of nonconformity expressed in parts per million, for all defects. Acceptability criteria will be based on customer drawings and specifications, agreed Quality Contracts with IMI, and in conjunction with the appropriate international standard.

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If no quantifiable data is available, as may be the case with new developments for example, the supplier will determine the nonconformity rate to which he can initially adhere to. New agreements will be made on a regular basis aimed at securing the fastest possible reduction in nonconformity to meet the zero-defect objective.

Suppliers who have not signed a specific Quality Contract including agreed PPM target, or do not have agreed future targets, and whose present performance exceeds 50PPM for automotive/medical products, and 100PPM for non-automotive products, must develop processes and procedures within their company to reach 50PPM target for automotive/medical products and 100PPM target for other industries.

For suppliers whose current performance is below the above targets, the target shall be ZERO PPM.

In any case, all suppliers of IMI are expected to work towards ZERO defects as the final goal.

Unless otherwise agreed, PPM will be calculated using the number of confirmed defects divided by the total quantity of all part numbers delivered, by the supplier during the measured period x 1000000.

## 1.3 Quality basics

### 1.3.1 RELATED DOCUMENTS

1.3.1.1 The standard documents listed in section 1.3.1.1 below ("Related Documents") are referenced in this Manual and Supplier acknowledges and agrees that it has a copy of the Related Documents in its possession on the Effective Date. Supplier agrees to adhere to the terms and standards set out in the Related Documents (as they are updated and amended from time to time) and shall be responsible for ensuring that it is always in possession of the latest update version of the Related Documents.

The Related Documents are as follows:

- (a) IPC/JEDEC J-STD-033B – Standard for handling, packing, shipping and use of moisture/reflow sensitive surface mount devices.
- (b) JEDEC standard No. 46 (JESD46-B) – Guide for product/process changes.
- (c) JEDEC standard No. 671 (JESD671-A) – Failure Analysis and Corrective Action.
- (d) JEDEC standard No. 48 (JESD48-B) – Product discontinuance
- (e) JEDEC standard No. 625 (JESD625-A) – Requirements for handling electrostatic-discharge-sensitive (ESDS) device
- (f) IPC/EIA J-STD-002B – Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires
- (g) IPC/EIA J-STD-003A – Solderability Test Methods for Printed Wiring Boards
- (h) IPC/JEDEC J-STD-020C – Moisture/Reflow sensitivity classification for nonhermetic solid state surface mount devices
- (i) EIA-481 standard – tape and reel specification
- (j) IPC/JEDEC J-STD-075 – Classification of Non-IC Electronic Components for Assembly Processes
- (k) ANSI/ESD S20.20 – Protection of Electrical and Electronics Parts, Assemblies and Equipment

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- (l) IEC61340-5-1- Protection of electronic devices from electrostatic phenomenon – General requirements
- (m) ANZI/ASQC Z1.4-2003 – Sampling Procedures and Table for Inspection by Attributes
- (n) EU Directive 93/42/EEC Article 1 – the definition of a Medical Device (Europe)
- (o) US FDA Medical Device Classification – the definition of Medical Device (USA)
- (p) ISO 26262
- (q) ISO 2859

## 1.3.2 ORDER OF PRECEDENCE

If a conflict arises between the requirements of this document and other IMI documents, the following order of precedence shall apply:

- (a) Purchase order
- (b) Engineering drawings
- (c) Engineering Specifications and Material Specifications
- (d) IMI Group SQA Manual and IMI PCB Requirements&Specifications, PPAP booklet
- (e) Other specific IMI 's requirements
- (f) Referenced standards

The supplier shall guarantee adherence to the specified requirements before the acceptance of an order. All the technical data required must be made available to the supplier so that the supplier can review its capability to comply.

Ambiguity or insufficient information is to be clarified with Integrated Microelectronics, Inc. before the supplier can carry out the order.

All documents, specification and other technical information should be treated with strict confidentiality.

The fundamental elements necessary to achieve ZERO DEFECTS are derived from the binding specifications and drawings (with revisions index) which are supplied when an order is placed. This includes the standards listed, such as IMI factory standards, national and international standards, technical specifications, data sheets, statutory requirements, packaging regulations, specially agreed testing and inspection regulations and resources, other regulations and codes of practice, and so on.

In each case, the most recent version of these documents must be used. These documents also cover materials and parts purchased by the supplier.

For quality assurance purposes, intensive collaboration is required between IMI and its suppliers to establish a suitable evaluation procedure based on an objective appraisal of quality capability and quality performance. This may range from initial sample inspection to quality appraisal of parts from series production.



## **2 Quality capability of suppliers**

### **2.1 Quality management system**

The supplier will maintain a quality management system documented in written or electronic form which meets the requirements of ISO/TS 16949, for the automotive market: otherwise, they must have a minimum accreditation to ISO EN 9001.

Further, the Supplier is required to have a Quality Management System (QMS) in operation aligned with or similar to ISO13485, AS9100 or the Suppliers shall have a roadmap to work towards the standards.

The supplier will produce and inspect the products in accordance with the rules of this QM system. The supplier will apply quality measures wherever nonconformance or errors could arise and thereby keep at the forefront the basic concept of preventive, error-avoiding quality assurance of the ZERO DEFECTS principle.

The same quality system requirements shall apply to sub-suppliers, and the Supplier is responsible for the compliance of all sub-suppliers.

Suppliers shall use the latest versions of Advanced Product Quality Planning and Control plan (APQP), Potential Failure Mode and Effects Analysis (FMEA), Measurement System Analysis (MSA), production Part Approval Process (PPAP) and shall use Statistical Process Control (SPC) as the guideline for their system development in all processes. These same tools must be used to ensure that the supplier is capable to meet specific IMI or production requirements before submitting a quotation for a new project to IMI.

### **2.2 Supplier appraisal (audit)**

The quality management system of the supplier may be assessed by IMI and/or its customers. For this purpose, following prior agreement, qualified personnel from IMI, or representatives of IMI's customers will be permitted to examine the processes and procedures used in the supplier's quality assurance system, at the supplier's premises.

At the conclusion of this appraisal the supplier will be informed of the results, and a follow-up action plan be established where Corrective Action Requests are raised by the auditor and, remedial and preventive actions are proposed by the supplier. When necessary, a follow-up audit will be undertaken in order to evaluate the effectiveness of the remedial actions proposed.

Closure of the audit findings shall be within 1 month of the committed date.

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For customer imposed suppliers, where the customer requests an external audit to be done, it is IMI's policy that the customer participates and in a joint audit of the supplier, and jointly approves the audit report.

### 2.2.1 Audit frequency

Critical or strategic suppliers will be re-evaluated once every one year to eighteen months for compliance with IMI requirements. This frequency may be increased or decreased depending on the quantity and nature of any quality incidents encountered during a given evaluation period. Audit frequency is provided by group annual audit plan.

If there have been any serious or repeated quality incidents which indicate a Quality System failure, or if there have been any major organizational changes, then a new audit shall be organized.

IMI reserves the right to request self-assessments audits based on VDA 6.3 form. The purpose of this document is not to duplicate a third party audit but is intended to confirm that a good fit exists between IMI's needs and the supplier's quality system and process controls. The self-assessments may be conducted as appropriate:

1. With all new suppliers before the award of any contracts
2. Annually with selected suppliers, selection will be based on quality performance and previous results
3. As required as part of a corrective action resulting from a below-standard supplier performance rating
4. As required by IMI's customers
5. As imposed/recommended suppliers by our customers

Typically, IMI will conduct assessments only on suppliers that supply directly to IMI. IMI reserves the right to selectively request Self-assessments on sub-tier suppliers.

IMI may conduct a supplier audit follow up. For any identified non-conformance, the supplier must take corrective and preventive actions whenever follow-up results do not comply with the specified requirements.

Audit frequency for DAP/BAP (Distribution/Broker Alignment Program) and imposed suppliers is 3 years, but the frequency may be modified according to quality & customer requirements. The audit may be requested for a variety of reasons.

### 2.2.2 Audit format

A questionnaire based on VDA 6.3, or equivalent will be used for the audit. The result of the audit must be > 90% for the supplier's process to be qualified for automotive business, and > 80% for non-automotive business.

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For new or potential suppliers, the VDA 6.3 potential supplier audit template shall be used, since an audit on a current IMI part number in production would not be possible.

IMI reserves the right to conduct an audit for prototype suppliers based on the appropriate questionnaire.

### **2.3 Preferred Supplier List (PSL) and Approved Vendor List (AVL)**

IMI group will maintain a PSL by commodity which will identify target group suppliers to be that should be used for project quotation, that are approved for sourcing as well as suppliers that have been placed in New Business On Hold (NBOH) due to unresolved quality or commercial issues.

New or Potential Suppliers must successfully meet or exceed the minimum requirements in the evaluation process before they will be considered approved and added to the PSL.

Supplier Evaluation data for quality and service will be used to revise the PSL.

The PSL shall be reviewed using evaluation data at least once every 6 months, or according to the evaluation period for that commodity.

The AVL containing a list of all customer imposed suppliers/ manufactures and locally approved suppliers shall be maintained locally though the ERP system according to supplier accreditation status, supplier approval status and customer imposed requirements.

### **2.4 Project flow chart**

By accepting an order, the supplier undertakes to make available within 5 working days, a project flow chart which is to include the following information: starting date, procurement, production and optimization times for materials, machines, tools, equipment and inspection equipment.

Furthermore, the anticipated date for first parts, initial samples with initial sample inspection report, and the implementation in series information is required.

### **2.5 Supplier meeting**

If necessary, a meeting will be held at IMI or at the suppliers' premises to review the existing drawing documentation in order to establish a binding basis for the manufacturing ability of the parts as regards to dimensions, function, features, properties etc. Both partners undertake to point out identifiable risks with regard to manufacturing ability, process safety, further processing, environmental pollution and so on, and to suggest possible remedies for such problems.

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IMI and the supplier, upon agreement, can invite external technical advisers to this meeting. This shall not affect the responsibility of the supplier with respect to IMI.

## 2.6 Supplier De-sourcing

IMI Group reserves the right to de-source any supplier not able to meet the requirements as outlined in this manual.

Some examples of the reasons a supplier may be considered for de-sourcing are:

- Consistent inability to remain a target supplier on the PSL.
- Omitting to notify IMI of any changes in product, process or materials as required by this manual and/or the PO and Terms and Conditions.
- Critical quality concerns that jeopardize our business with our customer(s) such as field action, campaign, and yard hold, stop ship, excessive warranty costs, etc.
- Financial stress that could disrupt forecasted delivery quantities.

### 2.6.1 Imposed/Recommended suppliers (CCCS)

Imposed supplier means a supplier which is determined by the customer with whom IMI must cooperate - no alternative available.

Recommended supplier means a supplier which is recommended by IMI's customer, but for whom IMI is responsible for performance.

Recommended supplier for specific and standard parts are asked to follow all IMI's procedures in terms of validation based on IMI's internal sourcing procedure.

Imposed suppliers are managed in coordination with the customer, as required then audited by self-assessment, regular audit and validated based on IMI's internal sourcing procedure.

### **3 Quality Assurance before mass production delivery**

#### **3.1 Sampling**

Initial Samples must be submitted before the start of serial production. Documented evidence is required which demonstrates the supplier's capability of meeting the quality requirements agreed upon, not only in drawings and specifications, but also on other documents. For this purpose the supplier will draw up a production flow diagram showing all planned inspection steps from receiving controls to expedition of the parts, including references to the corresponding inspection and test plan, documentation and archives. The production flow diagram will be made available to IMI upon request.

#### **3.2 Types of samples**

Initial samples are contractual products and/or materials which are produced solely with series-production sources, under series-production conditions. They meet the drawing and specification requirements set out by IMI.

Other samples are products and materials which are not produced under series- production conditions but which meet the drawing and specification requirements of IMI.

#### **3.3 Supplier standard sampling level**

The Acceptance Quality Level (AQL) for sampling shall be defined by each IMI facility that receives the parts provided. It shall be defined according to the incoming inspection working instructions and the local Dock-To-Stock policy.

#### **3.4 Production and product approval procedures for supplied parts**

The procedure agreed with the supplier for production and product approval must always be applied with new parts, as well as with tool or mould repairs, or in the case of reworked parts. The procedure will also be applied in the event of modifications to documents (for example, drawings, specifications and so on). The supplier undertakes in the event of -

- Product modifications
- Production relocation
- Process modifications
- Material changes
- Extended suspension of production

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- New sub-suppliers
- IMI's ECN/other Requirements
- Location Change
- Tooling change
- Machine/line and gauges change

to request IMI's immediate approval in accordance with the specified regulations regarding production and product approval of supplied parts. Upon completion of each change, the supplier must send a documented internal approval procedure which can be verified by IMI.

It may be decided upon by mutual agreement to limit or extend these change parameters to the delivery of initial samples, or to the quantity of parts to be sampled.

The minimum requirements for sampling are as follows: all quality characteristics agreed by specification with respect to dimensions, material, function, reliability, visual appearance and other attributes.

If necessary, evidence must be provided to show compliance with statutory regulations (concerning the environment, safety, disposal, and so on). In addition, the approval documentation for and / or specially identified characteristics must include details of the Primary Process capability (Ppk). A copy of the production flow chart and the control plan will also be required.

In addition, no change, substitution or modification of any goods, component parts, tooling, sources of raw materials, processes, subcontractors, manufacturing sites, or shipment of alternate parts may be made without written notification to IMI. The Supplier shall not make the change without IMI's prior written consent. This will be confirmed to the Supplier within thirty (30) days of receipt of the Supplier's notification. Where changes are necessary the Supplier shall provide IMI ninety (90) days written notice prior to the change taking place, except in the case of End of life ("EOL") where an extended notice period is defined:

- 6 months prior notification of Last Time Buy dates
- 12 months prior notification of Last Time Ship dates

All changes should contain at a minimum:

Reason for the change, full description, list of all affected part numbers (including IMI's part numbers), proposed implementation date which must be minimum 90days, all data necessary to show that the change has been fully verified and validated, availability of samples for the change and identification to provide traceability.

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## 3.4.1 Supplier production process change log

For traceability purposes, IMI requests its suppliers to record in a change log all changes or modifications made to their production process, in accordance with the PPAP and APQP procedure submitted to IMI at the time. These changes include anything that involves method, machine, material or "milieu".

The change log is applicable to all relevant changes, and does not need to be limited uniquely to modifications that warrant PPAP resubmission. The supplier commits to providing a copy to IMI once per year for verification.

## 3.4.2 Product / part Change Notice (PCN)

Suppliers of passive and active components are required to submit a PCN for each change or modification to components currently supplied to IMI. PCN submission is also required for any modifications made to parts associated with samples, quotations and design requests for IMI during the previous 12 months for automotive projects (6 months for non-automotive projects).

## 3.4.3 Notification of Supplier Management Changes

All suppliers must notify IMI group in writing of any changes to key management staff. Key management staff would include but not be limited to; quality, materials, engineering, manufacturing, logistics and senior managers.

In addition, suppliers must notify IMI group in advance of any expiration of union contracts and of any potential work stoppage.

IMI must be notified prior to any change in man/ personnel as follows:

- If 50% of the manpower is replaced or changed
- If Quality Management Group is replaced or changed
- If contact person for Quality is replaced or changed

## 3.5 Other samples

Other samples are only to be provided at the request of IMI. Approval of other samples such as test or installation samples implies production release and have to be presented accompanied by corresponding drawings, specifications and Initial samples report.

## 3.6 Initial sample inspection by the supplier

The basis for the initial samples inspection is constituted by drawings and specifications agreed upon between IMI and the supplier. IMI requests a special marking and 100% checking of SC and CC signs. The characteristics which should be given priority and identified as such are those which affect function, installation and fitting, reliability, further processing and replacement.

The supplier will employ the inspection procedure, inspection and test equipment of their choice, such as allowance to check parts and assemblies of their process or of an outside production source or a suggested specification on a problem-oriented basis. Other inspection procedures must be finalized between the partners.

Should the inspections call for special inspection and test equipment which the supplier does not have at his disposal, he is permitted to commission a third party. The third party must be authorized by an external inspection authority accredited to ISO 17025 or comparable national standards. This shall not lessen the responsibility of the supplier towards quality.

### **3.7 Preparing the product approval documentation**

*(see IMI's PPAP Booklet, appendix 1)*

The inspection which is to be carried out at the supplier must be carried out on the basis of the valid technical documents supplied by IMI. Usually these are drawings, specifications and/or other supplementary documents. The following points should be noted in this regard.

- Initial sampling is not deemed admissible unless the initial samples have been produced and inspected entirely using quantity-production resources and under production condition corresponding to those of series production.
- Every instance of sampling, irrespective of whether it is an initial sampling or a re-sampling, requires the documentation corresponding to the agreed parts class.
- To ensure the correct identification of samples with the corresponding measured values and the clarity of this, the individual initial samples must be marked with object numbers irrespective of whether the parts come from single- or multi-cavity mould.
- The samples and documents must be sent together with a legally binding signed approval application (Part Submission Warrant PSW) to the delivery address required in the order.

### **3.8 Required Quality-Related Supplier Documents**

The supplier is required to document inspection results relevant to quality after its production and testing have been completed in such a way that a clear traceability is ensured at any time. Inspection Results should also be submitted to IMI together with the Certificate of Conformance/Compliance (COC). The COC will be the reference for mass production and initial/engineering run deliveries.

For environmental substances-related documents, see chapter 5 of this document. The supplier is also required to submit a laboratory test report from an authorized testing institution at the beginning of the project and



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for every change in process and product, as well as depending on customer requirements.

The supplier shall retain pertinent documents such as Engineering and Production-related documents and records for 15 years for automotive and medical projects and 5 years for non-automotive and non-medical projects.

### 3.9 Inspection by IMI

Upon receiving the initial samples with the corresponding documentation, IMI within the context of the agreed drawings and specifications, will carry out inspections as it sees fit. If necessary, a joint inspection can also be carried out at the supplier. On the basis of the results found, IMI will make decisions as per the PPAP Booklet (*appendix 1*).

### 3.10 Error proofing / Poka-Yoke

Suppliers are expected to utilize error proofing or poka-yoke when developing new products and processes to reduce the risk for quality concerns and to improve the product. Error proofing is defined as the use of preventative techniques during the design and development phase to ensure the product will perform as intended throughout the life cycle.

The manufacturing process should be assessed for risk and error proofing used where needed to minimize the risk. Preferably, this should be achieved through preventative techniques, but detection style error proofing is acceptable if the level of confidence in the technique is sufficient to mitigate risk.

IMI Group requires suppliers to consider error proofing when corrective or improvement actions are implemented. Warranty is considered as part of the life cycle of the product; thus error proofing must consider the environment in which the part will be used.

### 3.11 Primary capability and process capability

As part of preventive quality assurance and in the spirit of the "right first time" principle, the supplier will conduct Primary capability and Process capability analyses, at least for agreed and / or specially identified characteristics. The key quality figures will be documented in such a way as to be capable of demonstration.

Unless agreed otherwise, the supplier undertakes to approve (release) machines and processes only under the following conditions:

Primary capability  $Ppk > 1.67$   
Process capability  $Cpk > 1.33$   
If not capable 100% inspection

Documented evidence of process capability must be provided for the special characteristics as a measure accompanying the process at all times and taking the form of a quality control chart and supplier shall implement MSA for the special characteristics.

### **3.12 INSPECTION METHODS**

Consultation with IMI may be necessary in order to agree on the inspection methods and the inspection and test equipment used. An inspection resources capability analysis must be carried out for the special characteristics, in order to provide documented evidence of conformity, regarding reproducible measurement results. This is in the event of any measurement uncertainty.

The inspection and test equipment must be in the possession of the supplier or acquired by him and be subject to systematic inspection resources monitoring.

### **3.13 PRODUCTS PROVIDED BY IMI**

The supplier is responsible within his own production for the safety of the products which IMI provides him for further processing.

In the event of quality or quantity deviations in the products provided, IMI must be informed without delay. This does not free the supplier of his obligation to deliver conforming parts.

## **4 Quality Assurance at mass production**

### **4.1 Preventative and Predictive Maintenance**

Suppliers shall implement preventative and predictive maintenance practices to ensure regularly scheduled maintenance has been performed on any/all equipment and tooling used to build product for IMI Group.

The frequency and scope of the maintenance must ensure there are no quality or delivery concerns resulting from equipment or tooling problems. IMI expects suppliers to use predictive maintenance methodologies rather than reactive.

The supplier shall maintain records and evidence of the preventative and predictive maintenance and must make them available on IMI's request.

#### **4.1.1 Calibration system**

The Supplier shall establish and maintain a calibration system based on ISO TS 16949 or ISO EN 9001 and their related documents and/or ANSI/NCSL Z540-1. Calibration of inspection, measuring, or test equipment shall be conducted by a qualified in-house laboratory, or a recognized government agency. Commercial/independent calibration facilities shall be accredited to ISO/IEC 17025 or have evidence that they meet the intent of ISO/IEC 17025 or the national equivalent.

### **4.2 Emergency/Contingency Planning**

All suppliers to IMI Group must have an "executable" emergency/contingency plan to protect IMI and our customers from production stoppages or other disturbances that could impair the quality or threaten the delivery date or delivery quantity. The supplier must notify IMI immediately of any potential situation that might impact our quality or delivery of product.

The supplier shall take all precautions and implement preventative measures to ensure the correct amount of defect-free products complying with the agreed upon specifications can always be delivered on time.

Examples of precautions the supplier might include are:

- Emergency/Safety Stocks
- Alternative production possibilities (Approved and verified for capacity)
- Alternative supply sources for raw materials. (Must follow PPAP)
- Adequate back up IT measures.
- Regular risk assessments.
- Regular monitoring of raw material and subcontractors for financial stability.

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- Predictive and preventative maintenance methods.
- Back up energy plans.

### 4.3 Launch Control Plan (LCP) measures

Suppliers are required to implement a Launch Control Plan procedure for all new part launches. Suppliers may also be required by IMI to implement LCP for significant product or process changes.

Another potential application for LCP could be after long periods of down time between production runs.

The LCP will include additional controls, inspection audits, testing and other measures required to ensure a high level of confidence in the quality of the product produced during the containment period and also to verify the effectiveness of the control plan and inspection methods to be used during production.

These measures must take into account all known quality concerns, all critical characteristics of the part, areas identified in the FMEA as potential risk items and how their part will be used at IMI. All LCP measures must be documented, recorded, analyzed and provided to IMI as requested.

Examples of additional controls:

- Increased sample size and/or frequency at receiving, in process and at final inspections audits.
- Sub-supplier and Sub-contractor audits LCPs.
- Additional verification of error proofing devices and poka-yokes.
- Additional set-up verifications
- Increased predictive and preventative maintenance
- Increased tooling and gauging inspections.
- Increased verification of label accuracy and part identification
- Increased participation and involvement by top management.
- Early production containment shall be in place commencing with the start of production, for 90 days or until exit criteria specified by IMI Group has been satisfied.

Any/all non-conformances found during this activity will be recorded, promptly corrected and all documentation will be updated accordingly.

### 4.4 IMI Incoming Quality Control (IQC) and Dock To Stock (DTS)

IMI group uses IQC in order to verify the conformity of supplied parts to agreed specifications. This may include identity checks, or checking for agreed corrections to critical parts. Unless otherwise previously agreed, the conformity of incoming goods is evaluated against agreed customer specifications or drawings as well as the appropriate IPC and/or other relevant standards according to the commodity purchased. The minimum class for automotive is level 2.

For example, for PCB suppliers, IPC-A-600 is used; for component suppliers, IPC 610 is used, and so on. Acceptability criteria are not

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limited to the mentioned standards. IQC is performed as per Military standard guidelines 1916 on a sampling basis, and consequently, it is virtually impossible to uncover non-conformances in the PPM range. Nevertheless, it does provide an indication of conformity of parts delivered, and provide an opportunity to detect defects before they are used in IMI production.

It is IMI's policy to place as many articles in Dock-To-Stock (DTS) as possible, once appropriate historical data is available as evidence of conformity of delivered product. DTS means that delivered parts will be placed directly into stock.

During DTS, a flying control will be performed at defined intervals, depending on the product supplied, to verify continued product conformity. IMI will also continue to measure ionic contamination for PCBs where appropriate, at IQC, according to the appropriate standard, on received goods.

DTS is only applied upon mutual agreement with the supplier, and does not lessen the supplier's responsibility to produce, control before sending, and supply conforming parts. It is still the responsibility of the supplier to maintain adequate control measures (pre-DTS control levels) in order to assure that no defect parts are delivered to IMI.

Irrespective of the legally defined quality liability of the supplier, IMI must be able to rely on the efficiency of the suppliers QA measures – including

- Quality planning
- Measures placed at sub-suppliers to secure quality
- Securing process reliability, and production surveillance
- Effective quality measures

In the spirit of the zero-defect principle, sources of nonconformance must be prevented from occurring, even during the early phase of production. For this reason emphasis must be placed on process capability in the production process.

Reductions in reworking and reject rates leads to increases in productivity are linked with, and depend on, the prevention of sources of nonconformance, and increases in process reliability.

### 4.5 Quality incident treatment

Suppliers shall have trained (preferably certified) personnel with the ability to quickly and permanently resolve product and process issues using data driven problem resolution tools and techniques.

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Problem resolution must be conducted using a defined, structured process like the 8Discipline process, Six Sigma DMAIC (Define, Measure, Analyse, Improve, and Control), 5 Why, PDCA or any other process that includes verification of the root cause and validation of corrective action effectiveness.

Should IMI determine that parts supplied are non-conforming, the supplier shall be informed with data on the non-conformity and the impact on IMI's ability to deliver. Where required, a Return of Materials Authorization (RMA) will be obtained from the supplier before the merchandise is returned.

This shall be accompanied by a Supplier Corrective Action Request SCAR together with the corresponding test and inspection report, where possible. The supplier shall also be informed of where the defect was found, as per the incident definitions below:

- C1 : The defect was found by IMI's customer
- C2 : The defect was found on IMI's production line
- C3 : The defect was found at IMI's Incoming Quality Control (IQC)

IMI requires an 8D report to be provided by the supplier. The lead-times for treatment of the quality incident, after having been informed by IMI, are as follows:

- **WITHIN 24HRS**

Provide details of containment or palliative actions. This includes the verification of the supplier's stock and Work-In-Progress (WIP) for a similar defect; a recall of goods in transit to IMI, if applicable; organization of replacement stock; and agreement with IMI on sorting actions on parts already in stock or WIP at IMI.

A general agreement should also be reached on the accountability of costs concerning the sorting actions, even although final costs are not yet known.

- **WITHIN 5 WORKING DAYS**

Provide root cause analysis on the defect(s) found (where applicable, analyze the defective parts returned). Present corrective and preventive actions to IMI for the treatment and the prevention of reoccurrence of the problem.

- **WITHIN 10 WORKING DAYS (MAX)**

Implement the corrective and preventive actions, and validate their effectiveness. Ensure that the same these actions are implemented throughout all other IMI production which could be affected.

The Final 8D report shall be submitted within 7 calendar days upon receipt of complaint.

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Should the supplier require defective part samples to be returned for analysis, the above 5 day and 10 day rule will be applicable upon receipt of samples by the supplier. However this should not disrupt the working process of potential root cause analysis to be made by the supplier.

IMI reserves the right to check the effectiveness of the promised corrective measures on the spot.

IMI's customer may have specific requirements for the treatment and analysis of quality incidents (ex. Valeo PDCA), in which case the supplier will be asked to complete the template required by the final customer. Otherwise, the supplier should send their standardized 8D report to IMI

Unless agreed otherwise, the costs of all detected nonconforming units, rework, unusable WIP, exceptional transport costs, sorting at IMI or at IMI's customer, etc arising from the quality incident will be invoiced to the supplier. (*see "within 24hrs"*)

### **4.6 Controlled Shipping Level-1 and Level-2 (CSL-1; CSL-2)**

Occasionally, supplier response may not be adequate to prevent recurrence or to effectively contain suspect product and safeguard IMI and our customer from potential field issues or production stoppage.

Should this occur IMI will have suppliers implement special measures such as a Controlled Level Shipping process to help reduce the risk. IMI will inform the supplier in writing to define the controls chosen and where those controls should be implemented.

#### **4.6.1 Controlled Level Shipping 1 (CLS-1)**

CLS-1 typically includes a problem solving process as well as redundant inspection process. The CLS-1 is implemented at the manufacturing location and utilizes in-house staff for the process. The primary goal is to ensure that NO defects leave the production facility and that all corrective actions and controls implemented are effective. CLS-1 is normally signed-off by someone on the management team.

#### **4.6.2 Controlled Level Shipping 2 (CLS2)**

CLS-2 includes the same processes as CLS-1 with additional inspection and auditing performed by a third party representing the customer's interests specific to the containment activity. Normally the third party is selected by the customer, approved by the customer, but paid for by the party under controlled shipping. CLS-2 can be implemented at several

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locations in the supply chain depending on where the action will be most effective. (Manufacturing plant, Customer Plant, off site, etc...)

Data must be collected for either level of containment to ensure the effectiveness of the containment, batch control and traceability of all suspect or "controlled" parts and to demonstrate the permanent corrective actions are effective. In some cases the controlled shipping task team may verify "interim actions".

### **4.7 Supplier quality evaluations & Top Worst Suppliers (TWS)**

IMI uses a supplier evaluation system to ensure the optimum surveillance of the quality of the product supplied. In conjunction with preventive quality assurance measures, it is intended that the supplier evaluation system creates conditions whereby no nonconforming goods can arrive in the production process

Evaluation criteria will include metrics such as quality, delivery, on time responses and documentation.

The ratings are monitored and updated on a monthly basis.

A bi-annual group evaluation is made and Top Worst Suppliers (TWS) are determined, based on the predefined criteria.

TWS evaluation actions may include the following:

- Request a QIP from supplier
- Program an audit at the manufacturer's site
- De-sourcing
- Revision of PSL status – NBOH, removal etc
- TWS meeting

IMI's target is to include at least the top 10 TWS in its action plan for the following evaluation period.

Where a TWS meeting is held with chosen suppliers, the supplier will present a Quality Improvement Plan (QIP) and will present corrective and improvement actions, through which better quality results may be observed during the next semester.

The results of the supplier rating process are used to define the PSL and as a yardstick for continuity and expansion of business relationships with our suppliers.

### **4.8 Zero Defects Action Plan (ZDAP)**

IMI group's zero defect policy for customers must also be driven by IMI's zero defect suppliers. Therefore IMI reserves the right to request that key or strategic PSL suppliers implement a ZDAP when improvement in quality performance is required.



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ZDAP is a kaizen based program which is driven by continuous improvement on a step-by-step basis in a controlled and targeted manner. The Plan-Do-Check-Act technique is applied to ensure the correct implementation and effectiveness of improvement actions, before moving on to the next action.

This measure requires top management commitment from the supplier to ensure that the necessary means and resources can be attributed to achieving the target results in the predefined lead time.

Regular meetings between IMI ZDAP SQE and the supplier shall be held to ensure that progress is being made according to the schedule.

IMI and the Supplier's goal is to maintain a Zero Defect Policy. Therefore IMI reserves the right to request the Supplier to implement the ZDAP quarterly. The Supplier agrees to support IMI by adapting ZDAP and to work with IMI on a mutually agreeable process to meet the Zero Defect Policy and targets. The ZDAP will be followed based on "Zero defect action plan request" for each quarter, monitored each month. (Appendix 3).

The Supplier shall be able to demonstrate continuous improvement in the performance of their manufacturing processes. This shall be done by internal monitoring, and the results should be submitted to IMI. In the absence of particular manufacturing processes specified by IMI, the Supplier shall define the critical processes to be monitored in order to demonstrate continuous improvement.

In the case where continuous improvement cannot be demonstrated during the quarter, the Supplier shall submit an improvement action plan which is quantifiable and achievable within the next quarter that follows.

### 4.9 Contamination and surface cleanliness

Unless specific requirements on cleanliness have been previously agreed, the surfaces of the parts must not exhibit any form of contamination such as lubricant residues from processing activities, with the exception of the agreed anti-corrosion protection. The cleaning procedures, cleaning agents and corrosion protection agents used must be agreed on with IMI and this recorded in writing.

This also applies to the degree of cleanness targeted as well as the corresponding inspection and test equipment and procedures. Any changes to these procedures must be notified in writing before being implemented and also approved by IMI.

In the case of Printed Circuit Boards (PCB) or Flexible Printed Circuits (FPC), surface contamination will be measured at IMI IQC, according to limits defined in IMI's PCB specification document (*appendix 2*)

#### **4.10 Cost of Non-Quality (CNQ)**

All the losses due to quality/delivery/environment issues by supplier will be claimed by IMI, the detailed charged rule for sorting actions made by IMI is different according to each IMI site in different regions, and will be communicated to the supplier before the sorting action commences.

IMI reserves the right to charge the CNQ to the Supplier based on the "Quality claim cost" document which is a part of the Quality contract (Appendix 4).

#### **4.11 Nonconforming Products**

A non-conformance is any disruption created by Supplier which impacts IMI or IMI's customers' process. Typical examples of non-conformance include but are not limited to:

- A non-conformance related to the component specification (e.g. drawing, environmental specification, impact on Fit, Form and Function...)
- A PPM/Quality level over committed target
- An unsatisfying response to a complaint (e.g. no timely response, no efficient containment action...)
- A delay or error in delivery which leads to disruptions in IMI determined and real delivery requirements)
- The usage of non automotive capable lines/machines/gauges

For all non-conforming material discovered at any stage in the process or in the field the Supplier will bear all risk of loss with respect to all non-conforming materials and will promptly pay or reimburse all costs incurred by IMI. Non-conforming material costs incurred may include, but are not limited to:

- Cost for material
- Scrap or replacement
- Unusable finished products
- Line stop cost
- Filed losses
- Disposal by IMI
- Testing, inspection and sorting as required
- Recall costs such as shipping and packaging
- Costs that are directly related to the resolution of the non-conformity
- Cost of products or additional material impacted by the non-conformity
- Lost contribution margin
- Transportation and handling costs of returned non-conforming material

In case where time is of the essence and IMI must disposition the product, sorting and/or reworking costs performed by IMI will be paid by the Supplier. If the Supplier does not respond to return request for defective products within 4 weeks of request, IMI reserves the right to dispose of rejected products with all disposal costs borne by Supplier.

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In accordance to ISO TS 16949, chapter 8.3.1 Control of nonconforming product – Supplemental, product with unidentified or suspect status shall be classified as nonconforming product (see 7.5.3), if IMI considers some product "suspect", then IMI treats it as nonconforming with all resulting consequences.

## 5 Environment

### 5.1 ISO 14001 Certification

It is preferred that the supplier has current ISO 14001 accreditation. However, if the supplier does not have this certification, a plan for implementation in the short term should be made available.

### 5.2 IMDS (International Material Data System)

All suppliers are required to provide material data in electronic format per the requirements defined in the International Material Data System (IMDS). For specifics and further information relating to this requirement; visit <http://www.mdsystem.com>. Suppliers of components are also responsible for the on-time provision of all IMDS relevant material data for their products and the products of their suppliers.

PPAP packages will not be approved without this evidence.

### 5.3 Conflict of minerals

Supplier shall ensure that any or all conflict minerals (defined as Tin, Tantalum, Tungsten or Gold mined and smelted from the democratic Republic of Congo or adjoining countries) are not used in any products sold to Buyer. Should Supplier identify conflict minerals sourced and used within their supply chain, Supplier shall take immediate action to identify alternatives from known non-conflict sources.

### 5.4 REACH (Registration, Evaluation and Authorization of Chemicals) and RoHS (Restriction of Use of Hazardous Substances)

IMI's expectation is that all suppliers understand and comply with the REACH and RoHS legislation, particularly the pre-registration and registration requirements, since it is relevant to all IMI- procured products.

Suppliers must comply with European Union Regulation Registration Evaluation Authorization and Restriction of CHEMicals (REACH) and Restriction of Use of Hazardous Substances any/all amendments. This applies to suppliers that provide substances on their own, in preparations or in articles. For information about how to comply with this requirement and you can also obtain information from the following web site regarding REACH: <http://www.echa.europa.eu>.

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A written confirmation by the companies REACH and RoHS responsible must be sent to IMI Purchasing department.

PPAP packages will not be approved without this evidence.

It is the responsibility of the suppliers to work directly with the IMI procurement organization to ensure up-to-date communication of compliance.

It is also the responsibility of each supplier to verify its legal requirements under the legislation.

## **6. WARRANTY, LIABILITY AND SPARE PARTS**

### **6.1 Warranty**

The Supplier expressly guarantees that the goods are free from defects in accordance with the agreed specifications (in accordance with drawing, data sheet, specifications or other prescribed data) and suitable for the known application. If the Supplier is unaware of the intended purpose he shall inform IMI of this and request this information. In addition, the Supplier guarantees the conformance of his delivery or service with statutory provisions and with the state of the art technology.

The warranty agreement concluded with the Supplier shall apply. Otherwise the following provisions shall take its place:

IMI shall be entitled without restriction to all statutory rights under warranty and including claims for damages.

IMI has the right to demand a replacement delivery of fault-free goods or remedying of the defect (reworking) by the Supplier within a reasonable period set by IMI. Before returning defect goods, IMI shall give the Supplier the opportunity to out-sort the defective goods and rework them or replace them with fault-free new goods, provided that this is reasonable for him. If this is not acceptable for IMI or if the Supplier refuses or does not remedy the defect within the set period or is unable to do so, IMI has the right to remedy the defect himself or to have this done by a third party or to purchase a replacement. In cases where immediate action is essential, IMI shall be entitled to do this without prior notice or setting a time limit.

The Supplier shall bear all costs arising from the remedying of defects including the consequential costs of claims by third parties or shall reimburse IMI for such costs. This shall apply in particular to the costs of removal and installation, transport, fault analysis, reimbursement of

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expenses, extra costs for covering purchases, material, scrapping, etc., and claims for damages by third parties.

If it is necessary in the course of a product recall campaign (including an unreported/confidential recall) to replace a complete series of products or components into which defective products from the Supplier were installed, the Supplier shall also reimburse the accruing costs for that part of the affected series which is free from defects.

At the request of the Supplier, IMI shall return those defective goods to which IMI has access. In this context it is stated that for cost reasons defective goods shall only be returned for analysis purposes by IMI's customers on the basis of random samples. To this extent the Supplier waives the complete return of all defective goods. The Supplier shall bear the costs of the return transport of defective goods including all related costs.

The warranty shall terminate on expiry of twenty-four (24) months after 60 days of delivery of the final products to IMI's place, provided that longer statutory or contractual warranty periods are not designated, which will then apply in this case, if not defined differently in each commodity requirements and specifications.

Warranty rights shall not arise if the defect is the result of a breach of operating and installation instructions, unsuitable or incorrect use, defective or negligent handling and normal wear and tear, as well as damage caused by intervention in the product by IMI or a third party.

If a complaint arises that cannot be resolved within the warranty period, the supplier waives in so far his right to plead statute of limitations.

### **6.2 Liability**

Unless a different liability stipulation is agreed elsewhere, IMI has the right to reimbursement of all costs (direct or indirect) for which the Supplier is responsible because of a defective delivery or other behaviour in breach of contract. This shall include among others the costs of safeguarding against damage, precautionary measures, recall actions, etc.

In case of damage or precautionary measures to safeguard against damage, IMI shall inform the Supplier to the best of his ability, advise him of the measures to be taken and co-ordinate these within the framework of IMI's abilities.

If others and not only the Supplier are jointly responsible for the damage, the Supplier shall be liable pro rata to the amount that he, his representatives or his sub-suppliers contributed pro rata to the damage.

Regarding claims by third parties, in particular in respect of product liability or infringements of industrial property rights, the Supplier shall

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indemnify the buyer on first demand against all costs, including the necessary expenses for prosecution of an action as well.

Upon request from IMI, the Supplier shall join the legal action with the third party at his own expense. In all legal disputes associated with his deliveries and relating to official regulations and inspections, the Supplier shall support IMI actively at his own expense and make available all the necessary documents, witness statements, etc.

The Supplier confirms that his offer has been used for nomination for a project is stated and the Supplier is liable to produce and deliver the parts (samples and mass production) according to our initial technical specification and requirements. If the Supplier refuses to produce the part that was the subject of the project nomination then IMI reserves the right to transfer the production of the part to a third party and the Supplier will be charged by overall cost for the transfer.

### **6.3 Spare parts**

The supplier undertakes to guarantee the supply of spare parts for fifteen (15) years after the cessation of full production (vehicle/final product). Deviations from this shall be valid only if they are expressly agreed.

Tools shall be kept ready for use. The Supplier bears the risk and costs for storage and readiness of the tools.

Tools, and equipment may be scrapped only with the Buyer's express consent on expiry of this period of 15 (years).

### **6.4 Counterfeit Components**

Supplier expressly warrants that all Products will be free from any counterfeit material. Counterfeit material shall mean any component, part and/or material that is made in imitation of the original device, forged, or copied or contains in whole or in a part any component, part of material that is made in imitation of the origin device, forged or copied.

Upon IMI's request, Broker and Distribution suppliers are required to demonstrate their ability to identify counterfeit components prior to shipment to IMI, report instances of counterfeit components and take all appropriate legal actions necessary related to them, and mitigate any potential impact to IMI or IMI's customers.

Suppliers who are found to supply counterfeit components or who do not conform to the requirements above may be immediately disqualified by IMI and may only be requalified through a full qualification process with demonstrated evidence of corrective action.

## **7 PACKAGING, TRACEABILITY AND SHELF LIFE**

Unless otherwise agreed, the goods to be delivered shall be suitably packed as is customary in the trade. Packaging for electronic elements or components shall be packed according to their expected usage and purpose, meeting all concerned European directives. PCBs are packed in accordance with IMI's suppliers Requirements & Specifications document. The Supplier shall be liable for damage resulting from unsuitable packaging.

IMI reserves the right to re-pack or remove the original packaging if preferable internally to facilitate storage. This step will have no impact on the guarantee and warranty of the parts.

Supplier shall provide a trace code (lot-, date-, batch code) on the elementary pack which will allow trace back of all materials and process steps (including sub-tier suppliers).

If a product is usable within a time limit only, the Supplier must indicate the expiration date on the product or on the package. Special storage requirements must be indicated on the package.

If any additional special marking is required, IMI will provide the specifications prior to purchase order placement.

Material delivered to IMI shall have a minimum of 6 months remaining prior to date code expiration. Products older than 1 year as measured by date code on the date of delivery to IMI will be returned to the Supplier for replacement, unless IMI has agreed otherwise in writing.

Material shelf life for solderable components (with exception for Printed Circuit Boards - PCBs) shall not be less than 12 months. The supplier shall provide IMI with solderability testing analysis and obtain IMI acceptance if shelf life should be exceeded.

IMI's customer requirements may dictate shorter shelf life requirements, which will be communicated to Supplier at the time of purchase order release.

## **8 ACKNOWLEDGMENT OF RECEIPT FORM**

(BLOCK CAPITALS)

Company name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Your name: \_\_\_\_\_

Document read and approved

*Or*

Document read and approved with addendum

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

The name of your SQA contact at IMI: \_\_\_\_\_

**Within one month of receiving this document, please complete the above form, sign it and return a scanned copy by email or a hard copy by post to your SQE contact at IMI.**

**Any other comments should be sent to IMI in a separate Vendor Addendum.**



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GLOBAL MODIFICATION SUMMARY				
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Revision 2013.10	1.1 Added requested certifications	6	1.3.1 Related documents	7
	2.1 Added requested certification	9	1.3.2 Order of Precedence	8
	3.4 List of events modified	14	2.2.1 Audit frequency	10
	3.4 Change management	14	2.6.1 Imposed/Recommended suppliers	12
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