JOINT JEDEC/ECIA STANDARD

Special Requirements for Maverick Product Elimination and Outlier Management

JS-050

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SPECIAL REQUIREMENTS FOR MAVERICK PRODUCT ELIMINATION AND OUTLIER MANAGEMENT

Contents

Foreword

This standard replaces JEDEC JESD50C.

Introduction

The quality and reliability performance of electronic products today has improved to such a level that product anomalies have become a major impact to the end user. Product with such anomalies are called "Maverick Product". Maverick Product can occur in any commodity and the difference in the performance of Maverick Product can significantly impact the expected performance of the end user's product. Causes of Maverick Product can vary across the entire spectrum of processes including, but not limited to, product fabrication, assembly, test, packing, and shipping operations.

Maverick Product can result in one or more populations of material having an actual or potential problem that may go undetected until its use in the final application. The impact of this product on user quality, functionality and field reliability is costly, in terms of replacement costs, loss of business, and user satisfaction.

The primary consideration is to protect the user from the potential impact of processing variation anomalies. Problem prevention is accomplished by eliminating atypical product and by using failure mechanism-based product monitors, process controls, and user data. Yield improvement programs do not necessarily provide this protection. Maverick products are often eliminated using statistical quality control techniques including lot acceptance inspections. Statistical techniques can be applied to data gathered from fully automated, semi-automated, and fully manual processes; as well as data from tests that have results with a range of values or just pass/fail. With that said, due to inadequate, incomplete, or impossible to characterize product performance possibilities, some product characteristics or parameters may be incompletely tested or inspected or not tested or inspected at all; thus, cannot be eliminated by standard statistical quality control based on manufacturer determined data only.

Maverick products may occur within either specification or statistical control limits but are not part of the normal distribution that describes the population or process.

Outlier products are a subset of maverick products that are within specification limits but unusual when compared to the prevailing distribution.

SPECIAL REQUIREMENTS FOR MAVERICK PRODUCT ELIMINATION AND OUTLIER MANAGEMENT

(From JEDEC Board Ballot JCB-25-71, formulated under the cognizance of JC-14.3 Committee on Silicon Devices Reliability Qualification and Monitoring.)

1 Scope

The Maverick Product Elimination (MPE) and Outlier Management Standard was created to identify supplier requirements to improve the delivered quality and reliability of electronic products, and to develop the programs and discipline required to minimize the probability of the user of electronic products from receiving Maverick Product.

This standard applies to the identification, control, and disposition of Maverick Product that can occur during fabrication, assembly, test, packing, or shipping of any electronic product. This standard may be applied to all components used in the assembly of electronic products including, but not limited to:

1) transistors, integrated circuits, and modules and sub-assemblies consisting mainly of integrated circuits,
2) resistors, capacitors, relays, inductors, and passive modules,
3) cables, connectors, sockets, mechanical switches, and external wiring,
4) mechanical components (including enclosures, heatsinks, etc.), and
5) higher level assemblies consisting of the above listed products.

This standard can be implemented for an entire product line, a process within a product line, or a sub-component used in the assembly of the electronic product.

This standard can also be used to segregate product that has a higher probability of adversely impacting quality or reliability. These activities may require special effort and therefore can only be activated by mutual agreement between the customer and the supplier. This system is known as an Outlier (or otherwise Maverick) Identification and Management System (OIMS)

An Outlier Identification and Management System (OIMS) can be used to identify process and defect anomalies, improve process controls, improve end-user quality and reliability, and identify the root cause of an Outlier product. A subset of OIMS, known as Part Average Testing per AEC Q001 Guidelines for Part Average Testing (PAT), is applicable for semiconductors used in automotive applications.

2 References

JEP121, *Requirements for Microelectronic Screening and Test Optimization*.

JEP131, *Potential Failure Mode and Effects Analysis (FMEA)*.

JEP132, *Process Characterization Guideline.*

JESD659, *Failure-Mechanism-Driven Reliability Monitoring.*

J-STD-046, *Customer Notification Standard for Product/Process Changes by Electronic Product Suppliers*.

JESD671, *Device Quality Problem Analysis and Corrective Action Resolution Methodology.*

JESD557, *Statistical Process Control Systems*.

JESD16, *Assessment of Average Outgoing Quality Levels in Parts Per Million (PPM)*.

ISO 9001 *Quality Management Systems – Requirements.*

AEC-Q001, *Guidelines for Part Average Testing.*

3 Terms and Definitions

affected customer: Any organization that

1) has purchased from the supplier product that was assembled within the timeframe of the maverick or outlier incident, or
2) has requested (and the supplier has agreed to provide) maverick or outlier incident information, or
3) is an approved supplier agent and has purchased product that was assembled within the timeframe of the maverick or outlier incident.

approved supplier agent: A direct sales channel, an authorized manufacturer's representative, or an authorized distributor.

authorized distributor: A distributor that has an ongoing, contractual relationship with the supplier and a written agreement to sell the supplier's product.

contract manufacturer: An organization contracted by an original equipment manufacturer (OEM) to purchase the electronic product affected by a maverick or outlier incident for assembly into the OEM's electronic product per the OEM's specifications but is not responsible for the design, reliability, or quality of the OEM's fully assembled product.

lower specification limit (LSL): The lower specification limit as defined in the product specification.

3 Terms and Definitions (cont'd)

maverick product: Product that exhibits significant anomalous characteristics that may cause a higher-than-normal level of failure anywhere in the user's application or user's manufacturing line.

NOTE 1 In this definition, "product" includes the finished electronic product, a component or subcomponent within the finished product, the first level packing (e.g., tray, tube, and tape and reel), the shipping container, labeling, and paperwork.

NOTE 2 These significant anomalous characteristics can include initial quality defects, time-dependent reliability defects, defects that affect next level of manufacturing, defects in product delivery process (such as labeling or shipping media), and defects in business process (such as shipping information). The characteristics may or may not be part of an existing product or process monitor, test, or inspection activity.

NOTE 3 Maverick product may come from known noncompliant product, from compliant product that has a significant difference when compared to "typical" product (but is still within specification limits), or from "normal" product due to some previously unknown or unmonitored cause.

noncompliant product: Product that fails to comply with user requirements, manufacturer's specifications, or statistical process control levels that the supplier has deemed critical to reliability.

outlier product: Product that meets manufacturer specifications and user requirements but exhibits anomalous characteristics with respect to a normal population (an example of which is depicted by the histogram in Figure 1) and may be subject to a higher-than-normal level of failures in the user's application.

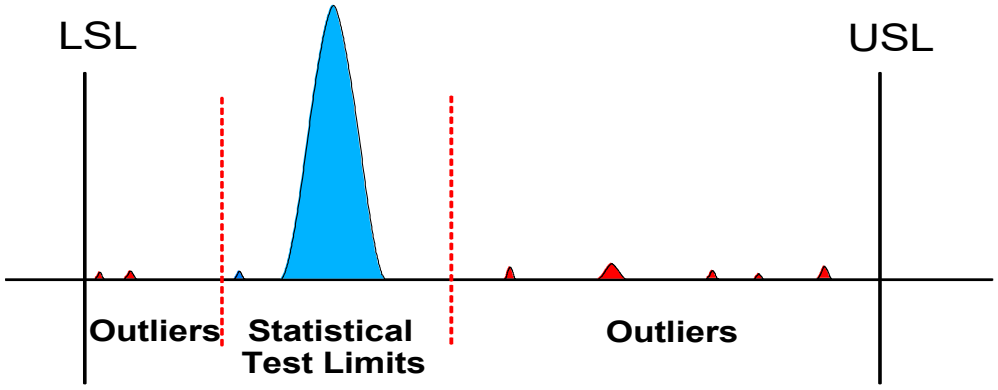

Figure 1 — Depiction of Eight Outliers, Seven of Which are Outlier Products

product traceability: A methodology for tracing products, forward or backward, through the manufacturing flow to isolate materials that could be similar to product identified as having quality or reliability problems.

NOTE 1 For forward traceability, all products associated with a process step must be identifiable.

NOTE 2 Backward traceability is the identification of the product at all stages from shipped product through raw material.

3 Terms and Definitions (cont'd)

rework: (1) The repetition of any operation or process step or sequence that creates or changes a portion of the product's structure, assembly, testing, or packing.

(2) The intentional execution of operations not normally part of the manufacture of the product.

robust mean [robust variance]: A mean [variance] calculated using a robust estimation procedure.

robust estimation: A procedure for estimating statistics, e.g., mean and variance, that performs well when there are departures (outliers) from the ideal conditions that have been postulated for the model.

NOTE The estimate of the sample mean and/or variance is often made robust by a rejection-of-outliers procedure or the use of a trimmed mean.

supplier: Any organization that

1) is the original product manufacturer and is thus responsible for generating the Maverick Product Alert/Notification, or
2) is an approved supplier agent, or
3) is a contract manufacturer.

NOTE Any organization that receives a Maverick Product Alert/Notification for a product that is a component within their own product is not considered to be a 'supplier' for purposes of this document and is not required to forward the Maverick Product Alert/Notification on to its customers; however, depending on how its product is affected, said organization must determine whether it needs to generate its own Maverick Product Alert/Notification for its own customers.

upper specification limit (USL): The upper specification limit as defined in the product specification.

4 General Requirements

4.1 Prerequisites

4.1.1 Statistical Process Control (SPC) Program

Each supplier shall define and implement a Statistical Process Control (SPC) system involving all critical process nodes. Other useful references to correlate product characteristics and parameters, where applicable, to process controls include JEP121, JEP132, and JEP131.

4.1.2 Failure Mechanism Driven Reliability Monitoring Program

Each supplier shall have a failure mechanism-driven reliability-monitoring program for design and control of processes and products. (Ref. JESD659 or equivalent.)

4.1.3 Product Change Notification (PCN) Program

Each supplier shall have a PCN (Product Change Notification) Program in place. (Ref. J-STD-046 or equivalent.)

4.1.4 Outlier Identification and Management System (OIMS) for Electronic Products

Each supplier shall have an outlier identification and management system in place for setting low yield trigger limits. For integrated circuits, another name for low yield trigger limits is yield cut limits.

4.1.5 Closed Loop Failure Analysis

Each supplier shall have a closed loop system that ties all failure analysis results back to the manufacturing process to determine if the failure was from a maverick or outlier.

4.2 Documentation

4.2.1 Maverick Product Elimination (MPE Documentation Requirements)

Each supplier shall maintain documentation (per the Quality Records requirements in ISO 9001) supporting the following items.

a) The details of the supplier's implementation of MPE.

b) Records of all cases of suspected Outlier and Maverick Product. For each case the results of the investigative activity shall be documented along with all corrective actions implemented. Updates made to all appropriate process documents which may include:
   - Failure mode and effects analysis (FMEA) documents with new failure mode(s) and corresponding controls,
   - Out of control action plans (OCAPs) with new criteria and suggested procedures to correct the out of control issue, and
   - Lessons learned documentation.

4.2.1 Maverick Product Elimination (MPE Documentation Requirements) (cont'd)

c) Records of all significantly higher fallout as reported by customers. This fallout could be at board assembly, at system assembly, or in the field. A summary of the supplier's investigative activity shall be recorded. If the higher fallout was verified to be a maverick product incident, then the supplier must document the following:
   1) action(s) taken to resolve the customer's problem,
   2) root cause of the Outlier or Maverick Product, and
   3) corrective actions taken to eliminate recurrence. (Ref. JESD671 or equivalent.)

NOTE These records may be shared with the user at the discretion of the supplier.

4.2.2 Record Retention

All incidents recorded in 4.2.1 b) and 4.2.1 c) shall be retained for a minimum of 2 years. Where practical, retention of these records for 5 years is recommended.

4.3 Maverick and Outlier Identification and Management System (OIMS)

OIMS test limits represent the application of statistical techniques for the removal of abnormal products during product level testing of a product lot (see Figure A.2). A product's specification defines the requirements needed for the product to work properly in the end user's application. Every product part number is built with a particular design and process that, if processed correctly, shall yield a certain consistent set of characteristic test results. OIMS uses statistical techniques to establish the limits on these test results. OIMS test limits are set up to remove outliers (products whose parameters are statistically different from the typical product) and should have minimal yield impact on correctly processed products from a well-controlled process. The test limits may represent test data having either a symmetrical or skewed distribution. This test methodology is not limited to the standard product specification tests but may also include extended operating tests (tests beyond the product specification requirements) to improve the ability to detect special abnormal conditions and increase the sensitivity of this testing technique. The only restriction on extended operating tests is that the test shall not reduce the reliability of the products that pass the test, and test data must be obtained under the same test conditions.

The following sub-clauses establish the minimum implementation requirements for this standard

4.3.1 Test Limits

The supplier shall establish a minimum and maximum acceptable yield at critical process steps (at least one) by product or product family (Ref. JESD557 or equivalent). Any product above the maximum acceptable yield must be evaluated to determine whether the product was tested properly. Generally accepted statistical methods shall be used to set minimum and maximum yield limits.

NOTE Small lot sizes may be exempted from the maximum yield calculation.

In addition, the supplier shall establish outlier limits for important characteristics with the greatest probability of affecting quality and reliability.

Where applicable, the supplier shall establish minimum and maximum criteria for acceptable sampling results (Ref. JESD16 or equivalent).

4.3.1 Test Limits (cont'd)

The supplier shall establish and use a statistical method for identifying and removing products with electrically abnormal characteristics (outliers), with defined outlier electrical test limits. A guideline of how to apply outlier identification and removal can be found in Annex A**.**

Test limits may be-either static or dynamic. Static limits are established then used without modification for some period of time. Dynamic limits start with static limits but establish new test limits on a continual basis. (Dynamic limits better accommodate shifts in the distribution against which outlier behavior is judged and minimize false rejection.)

4.3.2 Noncompliant Product

All noncompliant products, which includes product that fails to comply with user requirements, manufacturer's specifications, or statistical process control levels that the supplier has deemed critical to reliability, shall be evaluated to ensure that it is not Outlier (or otherwise Maverick) Product.

Evaluation may be in the form of an Out of Control Action Plan (OCAP) or similar documented process to determine whether the noncompliant product is "Maverick", after which a Materials Review Board (MRB) or equivalent personnel may be convened to assess what to do with the Maverick Product. Examples of common criteria used on whether to convene an MRB include, but is not limited to, the product is out of specification, and three consecutive lots have been scrapped.

A production, assembly, or test lot that is out of Statistical Process Control may still meet specifications.

Out of control material could be a potential Outlier (or otherwise Maverick) lot, but it is not guaranteed. Normally this kind of excursion shall trigger an MRB to determine suitability for customer use.

Some customers may have procurement documents that shall not allow the shipment of noncompliant product without formal notification and documented approval.

4.3.3 Continuous Improvement Techniques

4.3.3.1 Robust Product

Suppliers must drive actions to reduce the exposure of the user to failures due to design related sensitivities to process variations.

Tools for producing robust product include ensuring quality by design and continuous actions based on inputs from user assembly and applications conditions, incorporating best-industry-practices such as lean and total quality operations and/or custom-developed techniques into all applicable operations, and strive for achieving "first time right". For problems (known issues, defects, etc.) implement "predict and prevent" and strive for early resolution of abnormalities (unusual events and observations) that can become future problems.

4.3.3.2 Supplier Process Migration/Automation

Processes (e.g., manufacturing, assembly, testing, packing, shipping, control, notification) that are sensitive to variations that are known to impact product quality, functionality, or reliability should migrate where beneficial to automated methods to minimize these variations.

Techniques to prevent product defects caused by human error (error proofing) are recommended. Eliminate the source of variations, defects, and delays at the point of occurrence. Consider applying automated screens, tests, and other checks with the ultimate intent of eliminating variations, defects, and delays and not just removing product that does not meet specification. .

4.3.3.3 Enhanced Flows

Where processes are not robust or there has been a history of past Outlier (or otherwise Maverick) product, enhanced flows shall be developed. These enhanced flows can include burn-in, PPM monitoring, variables testing, special stresses/tests, and other enhancements designed to further reduce the risk of the user receiving Outlier (or otherwise Maverick) product.

4.3.4 Product Traceability

Product traceability is required to facilitate containment, as it allows

1) (backward) the supplier to identify the affected lots based on failures identified by SPC data or reliability stress tests and customer reports of failures,
2) (forward) the supplier to identify and notify affected customers, and
3) (forward) affected customers to identify which of its products contain the maverick product and which of its customers may be affected.

Both forward and backward traceability is required. Exposures to the user must be defined and bounded if an Outlier (or otherwise Maverick) Lot/Product has been identified. Suppliers must be able to identify product(s) affected and provide distinguishing marking (lot/date code) of affected product.

It is recommended that if a maverick or outlier lot was submitted and approved for shipment by an MRB or similar review process, that the supplier identify this product in its internal systems as having been approved for shipment by an MRB, such that, if a customer has an issue with the product, it can be easily identified as having been a maverick or outlier lot.

4.3.5 Failure-Mechanism-Driven Reliability Monitoring

Failure-Mechanism-Driven Reliability Monitoring as described in JESD 659 should be used to keep failure mechanisms, which are known to contribute to Maverick products, under control.

4.3.6 Rework

The supplier shall:

1) Maintain updated documentation of all allowed rework operations.

NOTE SMT soldering iron "touch-up" (e.g., to remove solder bridges, etc.) is not considered to be rework.

2) All documented rework operations should be qualified to ensure that the reliability and general quality of reworked product is equivalent to or better than non-reworked product.
3) Each lot of reworked product should be assessed to ensure that the rework operation was performed properly so as to ensure equivalence to non-reworked product.
4) Periodically review the need for continuation of each rework operation or obtain approval from the customer as required by contract.
5) If the root cause of a maverick product incident is determined to be related to a rework step or process, the justification for continuing that step or process must be re-evaluated.

NOTE This information may be shared with the user at the discretion of the supplier.

4.4 Maverick Product Alerts and Corrective Actions

The supplier's quality system shall include a provision for notifying all affected customers of any product quality, reliability, or delivery jeopardy as a result of failed requirements or verified Outlier (or otherwise Maverick) Product.

Once a supplier has made the determination that shipped product has been subjected to a maverick product or outlier incident, the supplier shall notify their affected customers of the maverick product or outlier incident as soon as possible from when the scope of the deviation has been determined, or within a timeframe agreed to between supplier and customer.

The alert should include the following information:

- product(s) affected,
- distinguishing marking (lot/date code information) of affected product,
- any directions for initial actions (i.e., return product, customer screens),
- root cause,
- corrective action, both short term and long term (if appropriate), and
- corrective action implementation dates.

5 Self Audit

A self-audit or self-assessment that includes each area of the MPE program shall be performed at least once a year. More frequent audits or assessments are recommended for new technologies, new lines, new or changed processes, critical areas (as defined by the supplier) and after corrective actions have been implemented. These should include supplier's sub-contractor's MPE programs and implementation of supplier's MPE program requirements at sub-contractors. A schedule for audit or assessment shall be developed and maintained (reference ISO 9001).

Annex A (Normative) Guidelines for Outlier Identification and Removal

A.1 Scope

This guideline presents a statistics-based method for identifying and removing products with abnormal characteristics (outliers) from the product population. The test limits used are based on a sample of the test results for that particular product with its unique design and processing. Each product design and its associated processing tend to show a unique distribution of test results for each test requirement, and this data is the basis for establishing outlier identification and management system (OIMS) limits. The principles described in this guideline are applicable to any finished product, component, or subcomponent.

A.1.1. Purpose

This guideline is intended to provide a general method for identifying and removing abnormal products and thus improve the quality and reliability of the resulting products. Meeting the intent of this guideline, by performing either this method or some other similar method, is highly recommended. Using this technique may also identify process shifts and provide a source of rapid feedback information that can prevent significant quality problems from escaping to the end user.

A.2 Utilizing static OIMS limits

Collect test data from at least six, statistically significant product lots that have passed the initial test limits as defined by the product specification. Determine the robust mean and sigma values for each test by randomly selecting the test data from a minimum of 30 products from each lot (see Figure A.1). If test data is for a product that is manufactured in a wafer or panel form, select data from at least 5 products located in different areas of each wafer/panel from a minimum of 6 wafers/panels per lot. Early in production of a product, when data from six lots is not available, data from characterization lots may be used. This data should be updated as soon as production data is available. Set the test limits as follows:

Static OIMS Limits = Robust Mean ± 6 Robust Sigma

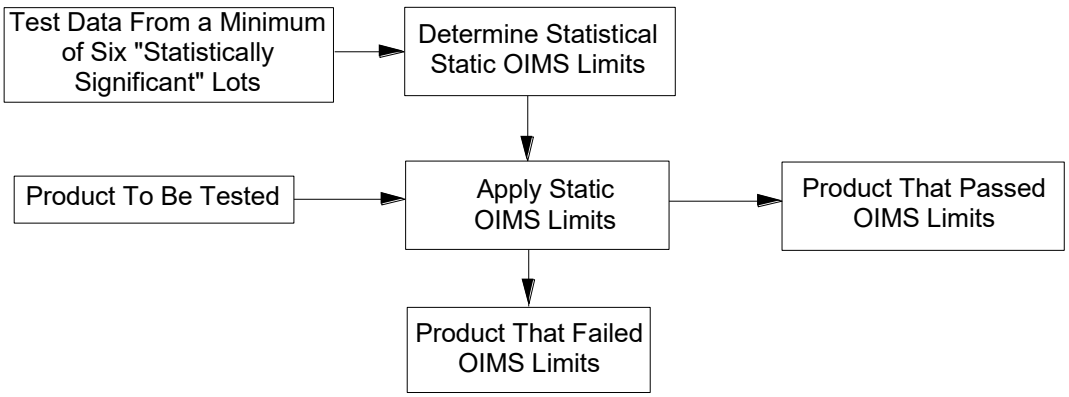

Figure A.1 — Determining Static OIMS Limits

A.2 Utilizing static OIMS limits (cont'd)

OIMS limits should be used for as many tests as possible. OIMS test limits should not exceed the product specification limits and should be reviewed and updated as required using current data during the first 6 months of production of finished products. If products are tested in wafer/panel form then use the first 6 months of production or the last 8 wafer/panel lots, whichever occurs first. Older data should not be used.

After 6 months, the static OIMS limits should be reviewed and updated as needed on a quarterly (every 3 months) basis. This review interval may be extended if data indicates the process is not requiring any changes to the OIMS test limits.

A.3 Dynamic OIMS Limits

Dynamic OIMS Limits provide another degree of refinement over Static OIMS Limits because the reference population is the same as the products being tested. Dynamic OIMS can provide tighter limits without causing rejection of good products because it does not have to consider the lot-to-lot variation that is part of Static OIMS Limits. Dynamic limits may be the preferred method for OIMS if very low PPM limits are required on a particular product. Before dynamic limits can be established, static limits, as defined in A.2, must be established. Dynamic OIMS limits are determined in the same manner as static OIMS limits except that the limits are established using the data from the current lot of products under test that have passed the static limits. To use this method, after the lot of products has been tested to the static limits, they must be held in a manner that allows further statistical analysis of the test data. This analysis may establish new tighter test limits for that particular lot and remove additional outliers (see Figure A.2).

Set the test limits as follows:

Dynamic OIMS Limits = Mean ± 6 Sigma

Mean and Sigma are statistical values calculated for the particular lot after the products in the lot have passed the static OIMS limits. The 6 Sigma limit may be reduced to increase the effectiveness of this method.

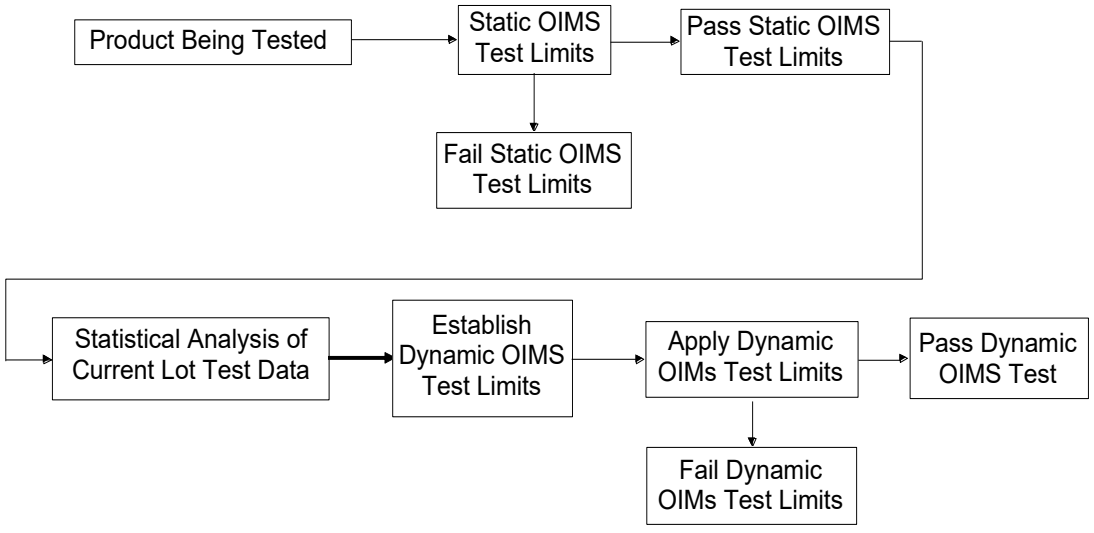

Figure A.2 — Determining Dynamic OIMS Limits

Annex B (Informative) Differences between Revisions

This annex describes most of the changes made to the entries that appear in this joint standard, JS-050, compared to its predecessors, JESD50C (January 2018), JESD50B.01 (November 2008, Reaffirmed June 2012), JESD50B (October 2008), and JESD50A (December 2004).

B.1 Differences between JS-050 and JESD50C

Clause	Description of Change
All	This publication was brought into style/formatting compliance with the latest style standard, *Style Manual for Standards and Other Publications of JEDEC*, JM7A (July 2024).
Introduction	Replaced the terms “component” and “device” with “product” throughout document, modified text to improve clarity throughout the document, and added text to state that statistical techniques can also be applied to semi-automated and manual operations
1	Added list of commodities that are now in scope for this joint standard, in last paragraph clarified to what products AEC Q001 can be applied.
2	Updated the document number and/or title as needed.
3	Added definitions for the terms “affected customer”, “approved supplier agent”, “authorized distributor”, “contract manufacturer” and “supplier; and made minor modifications to the definitions for the terms “lower specification limit (LSL)”, “maverick product”, “outlier product”, “rework”, and “upper specification limit (USL)”.
4.1.4	Added the acronym OIMS in the clause title and elsewhere within the document, added the general term low yield trigger limits and stated that for ICs yield cut limits may be used instead.
4.1.5	New subclause requiring F/A on fails check to see if product was from a maverick lot.
4.2.1	Defined acronym MPE in title, updated reference to latest ISO document here and elsewhere, made multiple minor grammatical improvements, added examples (bullet list) of types of process documents, and replaced “MPE” with “maverick product” in item c) and elsewhere in the document where it contextually made sense.
4.2.3	Reiterated the definition of “noncompliant product” in the first paragraph, reference was made to OCAP and similar processes that may be used to determine if an MRB should be convened.
4.3.3	New subclause, “Continuous improvement techniques” that pulled together 3 previously existing subclauses (4.3.3, 4.3.4, and 4.3.6 becoming 4.3.3.1, 4.3.3.2, and 4.3.3.3) that were all examples of such techniques, several new techniques were added to 4.3.3.1 and 4.3.3.2, and all subsequent clauses were renumbered as necessary.
4.3.4	Added descriptions of backward and forward traceability (new first paragraph) and added a third paragraph recommending that the supplier identify in their internal systems all lots shipped that were approved by the MRB process.
4.3.6	Added note that SMT soldering touch-up is not rework per this clause, stated that all rework operations be qualified, but that not all reworked lots need be qualified, but should be assessed to ensure that rework was performed properly.
4.4	Added 2nd paragraph which includes criteria for when affected customers should be notified that they may have received maverick product.
Annex A	Modified text to align with expanded scope of document from wafer fab specific to any manufacturing process that could use OIMS, and corrected Figure numeration error.

B.2 Differences between JESD50C and JESD50B.01

Clause	Description of Change
1	Added last sentence recognizing similarity to Parts Average Testing from AEC
2	Introduced “References” section
4.2.1	Remove reference to ANSI/ASQC 90
4.3.1	Change EIA557 to JESD557 and EIA554 to JESD16
5	Remove reference to ANSI/ASQC 90

B.3 Differences between JESD50B.01 and JESD50B

Clause	Description of Change
Annex A	In A.3 **“**(see Figure 2.4.1).” corrected to “(see Figure A.3).”

B.4 Differences between JESD50B and JESD50A

Clause	Description of Change
Title	Added “and outlier management”.
Introduction	Added last 2 paragraphs.
1	Added “and outlier management” in first paragraph. Added “and disposition” and last sentence to second paragraph. Added third paragraph.
2	Added definitions for “lower specification limit”, “outlier product”, “robust mean”, “robust variance”, and “upper specification limit” from JESD62. The second definition for “rework” and the definition for “robust estimation” are new. Three terms not used in this standard were not carried forward: “parts per million (PPM) monitoring” from JESD50A and “important characteristic” and “outlier incident” from JESD62A. The entire clause was reformatted with some minor editorial changes.
3.1.1	Deleted reference to EIA-557.
3.1.2	Changed reference from JESD29 to JESD659.
3.1.4	Deleted reference to JESD62.
3.2.1b	Changed “Maverick” to “Outlier (or otherwise Maverick)”.
3.2.1.c.2	Changed “Maverick” to “Outlier (or otherwise Maverick)”.
3.3	Replaced with 3.3 from JESD62.
3.3.1	Replaced with 3.3.1 from JESD62 with following changes: The note was added following the first paragraph. The fourth paragraph was editorially changed. The fifth paragraph was omitted.
Old 3.3.2	“Yield cut limits”, subclause was deleted.
3.3.2	Changed “Maverick” to “Outlier (or otherwise Maverick)” in two places. Changed “will” to “shall” in two places.
3.3.4	Added second paragraph.
3.3.5	Changed “Maverick” to “Outlier (or otherwise Maverick)”.
3.3.6	Changed “Maverick” to “Outlier (or otherwise Maverick)” in two places.
3.3.7	“Failure-Mechanism-Driven Reliability Monitoring”, new subclause added.
3.3.8	“Rework”, new subclause added.
3.4	Changed “Maverick” to “Outlier (or otherwise Maverick)”.
Annex A	Transferred from JESD62A.

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1. I recommend changes to the following:

☐ Requirement, clause number _____

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The referenced clause number has proven to be:

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