

Texas Instruments Supplier Quality Expectation Document

Rev. 8.0

Contents

1.0	PURPOSE AND SCOPE.....	3
2.0	DEFINITIONS AND ACRONYMS.....	3
3.0	REFERENCE DOCUMENTS	4
4.0	SUPPLIER QUALITY MANAGEMENT SYSTEM.....	4
	- Quality Certifications	
5.0	SUPPLIER APPROVAL PROCESS.....	4
6.0	PART QUALIFICATION and CAPABILITY ASSESSMENT.....	4
	6.1 Material Specification	
	6.2 Change Control Management	
	6.3 Approval Process	
	6.4 PCN Requirements	
	6.5 Production Part Approval Process	
7.0	MATERIAL/PART DOCUMENTATION REQUIREMENTS.....	7
	7.1 Product ID or Traceability	
	7.2 Inspection and Test	
	7.3 Shelf-life, Date of Manufacture	
	7.4 Barcode/label requirements	
	7.5 CoA (Certificate of Analysis)/ CoC (Certificate of Conformance)	
8.0	SUPPLIER DEVELOPMENT PROCESS.....	8
	8.1 Supplier Performance Assessment	
	8.2 Supplier Corrective Action/Preventive Action	
	8.3 Continual Improvement Process	
	8.4 Supplier Disqualification	
	8.5 Supplier Re-qualification	

9.0 CONTROLLED SUBSTANCES.....11

Attachment 1 (Assembly Process Risk Assessment Form)12

Attachment 2 (Wafer Fab Risk Assessment Form)14

Attachment 3 (The 8D Process).....16

Attachment 4 (Blank 8D Form).....17

Attachment 5(Blank 3 x 5 Why analysis Form).....18

1.0 PURPOSE AND SCOPE

This manual is intended to provide suppliers to Texas Instruments Incorporated with its expectations for excellence. The ultimate goal is total customer satisfaction, beginning with conformance to this Texas Instruments Supplier Quality Expectation Document (TISOED), and benefiting not only the supplier, but also, TI and its final customers.

TISOED applies to all suppliers that supply products, equipment, materials, services, or software to TI. Compliance with all requirements called out in this document is mandatory, unless waived in writing, by an authorized TI Quality Manager. TI retains the right, at its option, to determine the level of compliance verification required for suppliers. The obligation and responsibility for compliance with the requirements called out in this document shall remain with the supplier.

TISOED defines the minimum expectations for excellence and encourages suppliers to achieve and maintain benchmark levels of performance. Should the supplier have questions, comments or concerns regarding the requirements set forth in this document, or suggested improvements, please contact your respective TI personnel.

2.0 DEFINITIONS AND ACRONYMS

- AIAG – Automotive Industrial Action Group
- CCB – Change Control Board
- CETRAQ – Scorecard for evaluating Supplier Performance in the categories of Cost, Environmental and Social Responsibility, Technology, Responsiveness, Assurance of Supply & Quality.
- CMS – Change Management System – used by EDM supplier
- CoA - Certificate of Analysis
- CoC – Certificate of Conformance
- CPT - Category Procurement Team
- DPPM – Defect Parts Per Million
- EDM – External Development and Manufacturing
- **EICC – Electronic Industry Code of Conduct**
- FIFO - First In First Out
- PCN – Process/Product Change Notice
- PPAP - Production Part Approval Process
- SIMT - Supplier Information Management Team
- TI - Texas Instruments Incorporated
- TI SQED – TI Supplier Quality Expectation Document – The document that defines TI’s minimum quality expectation for excellence and encourages suppliers to achieve and maintain benchmark performance.
- WPL - Worldwide Procurement and Logistics
- 8D – 8 Discipline corrective action document that describes the phases of problem solving.

3.0 REFERENCE DOCUMENTS

- 3.1 [QSM 000 – Texas Instruments Quality Policy Manual](#)
- 3.2 [WPL External Website](#)
- 3.3 [Foundry/Subcon External Manufacturing Communicate Website](#)
- 3.4 [CETRAQ Website](#)
- 3.5 [AIAG – Automotive Industry Action Group](#)
- 3.6 [EICC – Electronic Industry Code of Conduct](#)

4.0 SUPPLIER QUALITY MANAGEMENT SYSTEM

4.1 Suppliers are expected to have an effective quality system that ensures conforming product is delivered to TI. TI reserves the right to inspect records/evidence of a supplier's quality management systems at their facility. This may be included in the scope of a process assessment or a site audit.

4.2 Quality Certifications:
ISO9001 (latest version) is the minimum expectation required through a verification of 3rd party registrar. Exceptions may be granted on a case-by-case basis.

Demonstration of conformance to ISO/TS16949 (latest version) may be required as defined by the respective TI personnel.

The Supplier Information Management Team may accept additional quality system certifications as evidence of an effective quality management system. This letter of accreditation should be provided to the respective TI personnel in softcopy.

ISO14001 (latest version) provide guidelines on the elements of environmental management system and its implementation. Demonstration of conformance to this certification is not mandatory but encouraged by TI as an indication that the supplier is environmentally responsible.

5.0 SUPPLIER APPROVAL PROCESS

New suppliers must complete a registration form. This form initiates the approval process within TI at <https://wpl.ext.ti.com/sim/supplierinformation.htm>. Detailed explanation of the supplier registration process can be found on TI's external website.

6.0 PART QUALIFICATION and CAPABILITY ASSESSMENT

6.1 Material Specification

6.1.1 Qualifications may be initiated for the following:

- New supplier
- New piece part or material
- Proposed change in supplier manufacturing site or technology or part production process.

6.1.2 **Major Change Definition:**

- **The definition of a major change are those product or process changes that are verified to affect form, fit, function or adversely**

affect the quality or reliability of the product.

- The definition of a minor change are those product or process changes that are verified not to affect form, fit, function or adversely affect the quality or reliability of the product.

6.1.3 The category team may request additional assessments and information prior to supplier qualification. The supplier must meet all technical requirements and specifications as communicated by the respective TI personnel.

6.1.4 The supplier shall provide a process qualification package that includes the following as defined by the respective TI personnel:

- Production part approval process (PPAP) as necessary,
- Specifications used,
- All test or inspection plans,
- Reliability plans (if applicable), analysis, audit plans, etc. and
- Data that substantiates the decision to release the process from product development into manufacturing.

6.2 Change Control Management

6.2.1 All approved suppliers shall be made aware by the respective TI personnel of TI's supplier change control and notification procedure.

6.2.2 In the event that a supplier needs to implement a change to the product/equipment/material delivered to TI, approval or permission has to be granted from the respective TI Quality Assurance manager prior to implementation.

6.2.3 Change requests should be submitted via TI's Change Control Tool for Direct/Indirect materials. Materials controlled by EDM should be entered into CMS/eQDB by the manufacturing partner under the direction of the local EDM Quality Manager.

6.2.4 Suppliers shall make use of the TI-provided Risk Assessment form to review all changes in their product/process. (Refer to Attachment 1 and 2 for Assembly/Test and Wafer Fab changes, respectively.)

6.2.5 All Major and High-Risk Minor Supplier changes must be submitted to the affected CCB for review by WPL & EDM.

6.2.6 The affected CCB(s) will review and decide if a supplier proposed change will be classified as Major or Minor.

6.2.7 For Supplier Changes that are classified as Major or High-Risk Minor, TI will provide a qualification plan that needs to be completed before the change can be implemented.

6.2.8 The classification of changes as low-risk minor shall be verified by the CPT or EDM personnel. Upon verification of the classification by TI, implementation of changes classified as low-risk minor may take effect immediately once the supplier's change control board has approved.

6.2.9 High-Risk Changes include the following as a minimum:

- Change Location
- Change in Supplier's Supplier/Second Sourcing
- Change in Supplier's Bill of Materials
- Change in Supplier's Process Flow
- Change in Supplier Process Method
- Change in Supplier's Tool/Equipment
- Changes that could affect supplier Lead Time/Delivery Time
- Changes in Supplier's Packing Materials/Process/Labels
- Change in supplier process parameter that affects final material behavior such as moduli, interfacial adhesion, etc.
- Change in design which has a visible impact on cross section.
- Change in fiducial design and location.

6.3 Approval Process

- 6.3.1 For those changes which have been identified by TI as requiring notification, the Supplier will provide notification to respective TI personnel on a timely manner.
- 6.3.2 A TI sponsor (Process Engineer) will be identified by WPL or EDM. The TI sponsor will be responsible to submit and present the change in the CCB review and own the monitoring of the completion of the CCB requirements until Approval/Disapproval.
- 6.3.3 TI's CCB will define the minimum qualification requirements for the change being requested by the supplier.
- 6.3.4 Implementation of the change by the supplier (if approved) will take effect only after TI CCB provides a written approval in the form of a Release Memo and after reaching the proposed Implementation date identified in the PCN form.
- 6.3.5 During implementation, the supplier is required to provide to the CCB through their TI sponsor monthly monitoring data for at least 6 months or monitoring data for the next 6 deliveries which ever applies.
- 6.3.6 TI reserves the right to recall an approval given to a change request or require 8D reports if the supplier fails to meet the target improvement defined in the Supplier's Change Request Form.

6.4 TI PCN Requirements:

- 6.4.1 Once a supplier change is accepted by the CCB, the supplier is required to submit a Supplier PCN Letter (refer to Appendix 1 Assembly Process Risk Assessment Form) if this has not been submitted previously.
- 6.4.2 The Supplier PCN Letter shall contain the following as a minimum:
 - 6.4.2.1 Details of the Change
 - 6.4.2.2 Affected Part Numbers
 - 6.4.2.3 Qualification Requirements with Results
 - 6.4.2.4 Proposed Implementation date.

Note: Proposed Implementation date should not be any earlier than 30 days after the CCB Approval date unless with written consent from the CCB to implement earlier.

6.4.2.5 Signature of Supplier's Quality Manager

6.4.3 Suppliers will be held accountable for corrective action when changes to product specifications without prior notification to TI result in non-conformity to TI's product or processes.

6.5 Production Part Approval Process Overview (PPAP)

6.5.1 TI supplies products to automotive customers and one of the requirements is PPAP submission. The purpose of PPAP is to determine if all customer engineering design record and specification requirements are properly understood by the supplier, and that the manufacturing process has the capability to produce product that consistently meets these requirements during an actual production run.

6.5.2 PPAP is a requirement for certain material suppliers. Supplier will be notified if they are required to provide PPAP.

6.5.3 Contact the CPT if you have questions. PPAP manual is published by the Automotive Industry Action Group (AIAG).

7.0 MATERIAL/PART DOCUMENTATION REQUIREMENTS

This section applies to suppliers who deliver or store the following: finished goods, parts that become a component of TI's end product or raw materials used in manufacturing. Otherwise, skip this section and move on to controlled substances.

7.1 Product Identification and Traceability

The Supplier shall maintain documented procedures for identification of product from receipt and during processes of production and delivery. When traceability is a specified requirement, the Supplier shall establish and maintain a documented procedure for unique identification of individual product or batches. This identification shall be recorded and document(s) retained by Supplier for a minimum of 2 years.

7.2 Inspection and Test

7.2.1 The supplier shall provide and maintain suitable gauges, measuring instruments and test equipment to measure/test all material for conformance to Buyer's requirements.

7.2.2 Copies of quality conformance inspection data pertinent to material inspection must be provided by the supplier if required for each shipment or retained at Supplier's premises for future verification. If in doubt, contact the CPT to determine if this is required.

7.3 Shelf Life - Date of Manufacture

The supplier shall maintain a First-In, First-Out (FIFO) procedure. If the items supplied are subject to age and/or temperature control, the supplier must maintain FIFO procedure. Materials with specific shelf life requirement will be communicated by the respective TI quality personnel.

7.4 Barcode/label requirements

7.4.1 All intermediate containers must be labeled to identify the parts inside.

The labels should either be scanned, readable by human eye, and visible at all times. Do not cover the label with other forwarder label or manufacturing label.

7.4.2 Any discrepancy of label information versus actual shipment will warrant a discrepancy report to be filed against the supplier. The supplier has to respond with a proper 8D report in a timely manner.

7.4.2.1 Each inner pack must be labeled to include this minimum information:

- Material name or product name
- Quantity,
- Batch number, and
- Date code

7.4.2.2 If a shipment arrives on a pallet, labels must be placed on any of the four sides of the pallet load. These labels are used to identify and summarize the total contents of a pallet load.

7.4.2.3 If mixed loads are delivered, a mixed load label must be affixed on any of the four sides of the pallet load.

7.5 Certificate of Analysis (CoA)/Certificate of Conformance (CoC)

For products supplied to TI that require a 'Certificate of Analysis' (CoA) or Certificate of Conformance (CoC), this document must be together with the parts/materials or transmitted to TI via electronic data interchange or other means of transmitting data. Supplier should ensure that CoA/CoC data are within TI's specified spec limits.

8.0 SUPPLIER DEVELOPMENT PROCESS

8.1 Supplier Performance Assessment

CETRAQ is a tool used to assess key supplier performance. It is part of the process for managing and developing suppliers, awarding business and creating procurement strategies.

8.1.1 CETRAQ

TI will select and retain suppliers based on their ability to provide TI with a sustainable competitive advantage in CETRAQ. These are the areas of Cost, Environmental and Social Responsibility, Technology, Responsiveness, Assurance of Supply and Quality.

For new suppliers, CETRAQ and other related TI documents clearly states TI's performance expectations. For existing critical suppliers, CETRAQ metrics show their ranking with respect to other existing suppliers, and identifies areas of improvement

8.1.2 For direct material critical supplier, the 'Q' portion of CETRAQ will be defined by the Category Procurement Team with consideration for continually meeting or exceeding Texas Instruments's quality expectation. This will apply during the CETRAQ cycle (e.g., quarterly, bi-annually). Criteria to be considered may include the following:

Key Performance Indices	Example
Customer Disruption	0
# Supplier Issue/Incidents	0 or 50% reduction
Supplier Issue 8D cycle time	<10 days
Quality Indices	As applicable

- 8.1.3 Supplier Site audit. TI will perform a site audit as necessary.
 - Discrepancies resulting from the site audit are to be addressed by the supplier.
 - Failure to implement any required corrective actions may negatively impact the supplier’s qualification status.

8.2 Supplier Corrective Action/Preventive Action

Suppliers must embrace continuous improvement as a business and quality systems methodology. This methodology includes the following as a minimum:

- 8.2.1 Programs to correct and eliminate manufacturing/design/material defects.
- 8.2.2 Use of a structured problem resolution and corrective action methodology such as 8-Discipline problem solving method along with 3 x 5 why root cause analysis tool. The 8D process is defined in Attachment 3.
- 8.2.3 Sample of a blank 8D report is in Attachment 4.
- 8.2.4 Root Cause Analysis
 - The root cause analysis method must be defined in the 8D document by the supplier.
 - The analysis method may consist of any industry defined processes such 3 x 5 why, Fishbone or Ishikawa, Cause and Effect, etc. **3 x 5 why should be used as a root cause verification tool.** An example of 3 x 5 why analysis format is in Attachment 5.
- 8.2.5 The supplier shall have adequate procedures in place to effectively handle quality and reliability non-compliance issues including field alerts and product recalls. TI must be quickly notified of such events.

8.3 Continual Improvement Process

- 8.3.1 The supplier is expected to have documented plans to baseline, and improve, process capabilities for critical processes or parameters.
- 8.3.2 Continual quality improvement process must be demonstrated.
- 8.3.3 On time delivery, and other criteria defined in the supplier performance measurement process, or scorecard, will be monitored by the CPT. Information will be furnished to the supplier for action as necessary to improve.
- 8.3.4 Satisfactory performance is necessary to maintain qualification.

8.4 Supplier Disqualification

- 8.4.1 TI may remove a supplier from the qualified supplier status when sufficient justification exists. Justification includes but is not limited to:
- Quality, delivery, or service problems
 - Failure to achieve or maintain acceptable CETRAQ ratings
 - Continue to supply inaccurate data
 - Failure to implement effective corrective actions to correct findings from an assessment
 - Failure to notify TI of process or product changes as required
 - Failure to implement process or product capability improvements if deemed as necessary by WPL
- 8.4.2 The respective category team will document in writing the reasons for the disqualification.
- 8.4.3 TI has defined an escalation process for poor performing suppliers up to and including mandatory corrective action reviews with the Supplier's Executive Management representatives.
- 8.4.4 The respective category team will notify the supplier and request corrective action to bring the supplier back to a conditionally qualified status.

8.5 Supplier re-qualification

To obtain re-qualification, the supplier must present acceptable corrective action on the root cause of the reason for disqualification and demonstrate sustainable quality performance.

9.0 CONTROLLED SUBSTANCES

- 9.1 As a supplier to TI, you and your products and services are integral to our success. TI depends on suppliers in the creation of products and services that enhance the quality of life for customers and employees and progressively reduce the potential ecological impact of its activities by focusing on productivity and eco-efficient processes.
- 9.2 Because of stringent regulatory requirements, customers of TI are requiring that the products they buy from TI do not contain certain substances above specified concentrations. To meet customer's and regulatory requirements, TI has created a Specification, TI 6453792, "Controlled Chemicals & Materials Specification", identifying these substances and has updated the Terms & Conditions of Purchase. The document can be accessed online at [WPL external website](#). Click on "Controlled Chemicals".
- 9.3 The Specification is required of all TI suppliers who supply a chemical or material, which will become part of TI's final product or packing materials used to ship TI products. The respective category team will facilitate this topic with supplier, as needed, to ensure compliance to this specification.
- 9.4 The Specification requires these suppliers to report annually to TI a web form "Compliance & Analysis Certificate". The Supplier Specification, Certificate, and Terms and Conditions of Purchase can be accessed at the same web site. First click 'Controlled Chemicals' then click 'Compliance & Analysis Certificate'.

Attachment 1: (Appendix B of QSS 009-005)

Assembly Process Risk Assessment Form

RISK ASSESSMENT FORM

1. DESCRIPTION OF CHANGE

Change Title: _____ Date: _____

Engineer: _____

Description of proposed change:

From: _____

To: _____

2. MAJOR CHANGE DETERMINATION

Check one: Major _____ or Minor _____

3. CLASSIFICATION OF CHANGE

(Answer yes or no for each question.)

A process change is considered to be high risk until rationalized to be low risk. Where appropriate, include justification or explanation for the answer to each question.

PROCESS INTEGRATION/DEVICE AND RELIABILITY RISK FACTORS:

___a. Could the change result in a physical change in any measurable package dimension?

___b. Could the change impact baseline targets, controls or process margin of any prior or subsequent process/operation? If yes, propose plan to characterize impact.

___c. Could the change impact any electrical parameters, device performance, yield?

___d. Could the change impact device reliability such as wire bond integrity, package integrity, die crack susceptibility, solderability and lead integrity.

MANUFACTURABILITY/CUSTOMER DISRUPTION RISK FACTORS:

___e. Does the change involve a single machine operation or put more than 20% of the work-in-progress (WIP) at an operation at risk?

___f. Does the change have an impact that is only detectable at electrical test or later? If yes, propose plan to characterize at each process point.

___g. Does the change have a cumulative impact that would be difficult to characterize until a large volume of material has been processed?

___h. If the change affects inline measured parameters, will the measurement tool be less accurate or will the GR and R be unacceptable at the new target?

EQUIPMENT/SAFETY

___i. Does the change introduce unqualified tooling or material in the equipment?

___j. Could the change affect the original safety features of the equipment?

___k. Does the change require retraining of the operator on equipment operation?

CYCLE TIME

___l. Could the change increase the processing time at the process step and at subsequent Steps?

___m. Could the change increase the set-up time and modify the material handling sequence?

4. SUMMARY OF RISK

If the answer is NO to all of the above questions, the proposed change is considered a 'low risk' change. If the answer to any of the questions is YES, the proposed process change is considered "high risk" unless downgrade is approved by the change review board.

Attachment 2: (Appendix B of QSS 009-025)

WAFER FAB Risk Assessment Form

1. CLASSIFICATION OF CHANGE

A process change is considered to be high risk until rationalized to be low risk. Where appropriate, include justification or explanation for the answer to each question.

PROCESS INTEGRATION/DEVICE AND RELIABILITY RISK FACTORS:

- a. *Could/Does* the change result in a physical change in any measurable wafer structural dimension outside of the currently defined control limits? (i.e. etched feature profile, remaining film thickness, doping profile, wafer topography. *Note:* Some devices may not operate within the entire PCD/PARMS spec range and, therefore, could be negatively impacted by the change.) If yes, describe the structural change.
- b. *Could/Does* the change impact baseline targets, controls, or process margin of any prior or subsequent process/operation? If yes, propose plan to characterize impact.
- c. *Could/Does* the change increase surface contaminants such as particles, mobile ions, or other metallic contamination? If yes, propose plan to characterize impact.
- d. *Could/Does* the change negatively impact any electrical scrap parameters, speed performance, or device yield?
- e. *Could/Does* the change negatively impact device reliability? (ie. Increase in outliers, shorter lifetimes)
- f. *Could/Does* the change have a cumulative impact that would be difficult to characterize until a large volume of material has been processed? (i.e. metal target age impact, chamber build-up issues, etc.)

MANUFACTURABILITY/CUSTOMER DISRUPTION RISK FACTORS:

- g. *Does* the change involve a one-of-a-kind machine operation or put > 25% of the fab work-in-progress (WIP) at risk?
- h. *Could/Does* the change have an impact that is only detectable at parametric test or later? (E.g. increase in photo resist thickness that causes shadowing of angled implants)
- i. If the change affects inline measured parameters, will the measurement tool be less accurate or will the GR&R be unacceptable at the new target?
- j. *Could/Will* this change be impacted by another change that is in the process of being evaluated or implemented?
- k. *Could/Does* this change have a product dependent response? (i.e., will a limited release be required evaluate the change over multiple products?)

2. SUMMARY OF RISK

If the answer is NO to all of the above questions, the proposed process change is considered a "low risk" change. If the answer to *any* of the questions is YES, the proposed process change is considered "high risk" unless downgrade is approved per paragraph 6.3. If downgrade is recommended, provide supporting justification. To release a minor change that a risk analysis indicates could lead to decreased yield or increased parametric scrap, a 20 lot release strategy must be employed on each technology affected unless it is not feasible to use 20 lots in which case fewer lots may be used with the approval of the fab quality manager.

3. MAJOR CHANGE DETERMINATION

If the proposed change is deemed a Major change per QSS 009-001, the change is automatically classified as a high risk. Proceed with step 7 of the flow diagram and notify your Quality Manager of this major change.

EQUIPMENT/SAFETY

- i. Does the change introduce unqualified tooling or material in the equipment?
- j. Could the change affect the original safety features of the equipment?
- k. Does the change require retraining of the operator on equipment operation?

CYCLE TIME

- l. Could the change increase the processing time at the process step and at subsequent steps?
- m. Could the change increase the set-up time and modify the material handling sequence?

4. SUMMARY OF RISK

If the answer is NO to all of the above questions, the proposed process change is considered a "low risk" change. If the answer to any of the questions is YES, the proposed process change is considered "high risk" unless downgrade is approved by the change review board.

5. DOWNGRADE JUSTIFICATION

If downgrade is recommended, provide supporting data.

Attachment 3: (The 8D process)

When it is determined that the discrepancy is the responsibility of the supplier, the supplier shall provide an 8D document which addresses the root cause and implements corrective actions to resolve the root cause. The following are defined elements of the 8D:

- D1) Definition of the team: Establish a Champion, Select Team leaders/members. Check for cross-functional team representation & expertise.
- D2) Analysis of the problem: To solve a problem, it must be Precisely Defined. Construct basic information using the following:
- What: The object of part Concern (Defect)
 - Where: Seen on the Object. The location of the problem (In-house or physical).
 - When: Date when first discovered problem. When previously encountered, or when seen in the Process Cycle.
 - How Big: How big is the problem? (Pareto Chart) How many products have the defect (Quantity).
 - Once problem is identified, continue to ASK WHY until you reach a level that can be acted upon. Develop a Paynter Chart.
 - Start Chronological Action Plan.
- D3) Definition of containment actions: If a potential product defect, yield, capacity, or other problem/situation could negatively impact commitments to TI. The supplier must take immediate containment and corrective actions, then notify TI. Complete information concerning the effect on processes, part numbers, TI sites or customers, schedules and cost must be rapidly determined and communicated. Implementation of containment actions.
- D4) Determination of the root cause(s): Define Difference/Gap in the process. What changes happened that result to the problem. Re-evaluate problem description. 3X5 Why is a root cause analysis tool to identify problem root cause.
- D5) Definition of corrective actions: Continue with Info Database, Analyze best corrective action, Focus on Impact & Risk.
- D6) Verification of effectiveness of corrective action(s): Verify that Corrective Action eliminates root cause by duplicating failure and it does not create another type of defect.
- D7) Definition of actions to prevent recurrence of the same or similar problem.
- D8) Congratulation of the team: Determine appropriate recognition. Determine need to continue problem resolution.

Attachment 4: Blank 8D Form

PART DESCRIPTION:

Supplier Name	:	Package Type	:
TI Reference No	:	Site	:
Affected Product	:	Qty Returned	:
Material Name	:	Date Received	:

D1) TEAM MEMBERS:

Process Role		Name		E-mail
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D2) PROBLEM DESCRIPTION:

D3) IMPLEMENT AND VERIFY CONTAINMENT ACTIONS:

Action		Owner(s)		Due Date(s)
---------------	--	-----------------	--	--------------------

D4) DEFINE AND VERIFY ROOT CAUSE:

D5) DEFINE AND VERIFY CORRECTIVE ACTION:

Action		Owner(s)		Due Date(s)
---------------	--	-----------------	--	--------------------

D6) IMPLEMENT AND VALIDATE CORRECTIVE ACTION:

Action		Owner(s)		Due Date(s)
---------------	--	-----------------	--	--------------------

D7) ACTION TAKEN TO PREVENT RECURRENCE:

Action		Owner(s)		Due Date(s)
---------------	--	-----------------	--	--------------------

D8) CONGRATULATE THE TEAM:

Attachment 5: (3 x 5 Why format)

Problem Statement								
What was wrong?								
Where was it detected?								
When was it detected?								
Who was impacted?								
Non-Conformance Problem Statement	Why-1 <i>(Why the problem occurred? Should include the Direct Cause)</i>	Why-2	Why-3	Why-4	Why-5	Why-6 <i>Technical Root Cause (TRC)</i>	Why-7 <i>Systemic Root Cause (SRC)</i>	Corrective Action
0								
Therefore	Therefore	Therefore	Therefore	Therefore	Therefore	Therefore		
Non-Detection Problem Statement	Why-1 <i>(Why the problem was undetected?)</i>	Why-2	Why-3	Why-4 <i>(insert/delete columns as needed for more/less Why)</i>	Why-5 <i>Technical RC</i>	Why-6 <i>Systemic Root Cause (SRC)</i>	Corrective Action	
0								
Therefore	Therefore	Therefore	Therefore	Therefore	Therefore			

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IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

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In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

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