
Skyworks Supplier Quality Manual

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Revision History

Rev	Name	Change	Date
1	Carole Rosenberger	Initial Release	3/10/2003
2	Carole Rosenberger	Added definition of Team in Section 6.2, Process Objectives in Sec. 3.0, and updated Sec. 6.4.1 – 6.4.5 to add specific details of supplier monitoring.	5/1/2003
3	Carole Rosenberger	Updated Section 6.3.6 to add further reference to service qualification, added site document numbers in Section 4.0 and Section 6.4.	6/4/2003
4	Carole Rosenberger	Added Level 3 (site) documents in Section 4.0, Internal Applicable Documents	3/19/2004
5	Daniel Le Saux	Added reference to WB-W0082 – Supplier / Subcontractor Cost Of Quality (SCOQ) Program. Added Approved Supplier List, Supplier Audit Reports and Supplier Corrective Action Requests to Quality records section.	6/17/2004
6	Indi Jeyarajah	Complete rewrite. Removed supplier qualification section.	8/18/2005
7	Daniel Le Saux	Renumbered sections 5.10 through 5.17. Section 5.11 - corrected reference to Supplier Self Audit Assessment Survey from SQ04-0070 to SQ04-0005. Section 5.9.1 - modified supplier quality system requirements to specify mandatory registration to ISO 9001:2000. Sections 3 and 5.9.2 - added reference to SQ03-0145 Measurement System Analysis and use of the ANOVA method for such studies. Deleted reference to TL 9000. Added reference to SQ03-0133 Generating a Process Failure Mode Effects Analysis. Section 1.2 - modified scope to include reliability. Added reference to the AIAG PPAP manual. Changed supplier survey frequency to every three years or more frequent if so requested. Deleted RPN threshold.	8/24/2006
8	Daniel Le Saux	Removed reference to corporate supplier quality department. Removed requirement to have supplier provide a copy of the quality plan to supplier quality engineer for review and approval. Changed supplier corrective action containment time to 72 hours and submission of 8D to 30 days.	01/26/2007
9	Daniel Le Saux	Changed language in section 5.9.6 Maverick lot program.	02/13/2007
10	Daniel Le Saux	Added requirement in section 5.10 Reports to provide certificate of analysis and/or certificate of conformance with all shipments. Added definition for certificate of analysis and certificate of conformance	03/30/2007
11	Daniel Le Saux	Modified section 5.12 to increase Cpk requirement from 1.5 to 1.67. Added section 5.13 Control of Skyworks Owned Product or Equipment. Added references to SQ03-0041, SQ03-0044, SQ03-0047, SQ03-0050. Replaced SQ03-0133 and SQ03-0145 with AIAG FMEA and MSA manuals. Added requirements in 5.9.5 for formalized 8D process and associated training. Added section 5.9.9 addressing work environment.	06/28/2007
12	Fernanda Barraza / Daniel Le Saux	Modified section 3 Associated Documents to include the supplier portal for process related documents. SCAR timelines in Section 5.9.5 Corrective Actions and Failure analysis were updated to align Skyworks practices with customer expectations. Added section 5.10.1 for calibration reporting expectations.	12/10/2007

13	Daniel Le Saux	Updated environmental and social accountability requirements in sections 5.3.1 and 5.4	04/17/2008
14	Daniel Le Saux	Removed requirement for recurring supplier survey.	11/26/2008
15	Daniel Le Saux	Replaced 5.9.2 Process Flow Diagram with section entitled Process Controls that more accurately describes expected manufacturing controls. Clarified section 5.8 Product Traceability. Added reference to Advanced Product Quality Planning and Control Plan Manual in section 3. Updated SQ04-0005 Supplier Audit Assessment Survey accordingly.	01/30/2009
16	Daniel Le Saux	Added SQ03-0038 Wafer Acceptance Criteria and SQ03-0314 Silicon Diode Wafer Acceptance Criteria for Sub-Cons in section 3.0. Also added language confirming incorporation of referenced documents into the contractual agreement. Added requirement to adhere to referenced workmanship standard in section 5.9.2. Added section 5.9.3 Purchasing. Renumbered all other sections accordingly. Added Sub Tier Supplier in section 2 Acronyms / Terminology and Description / Definition. Section 5.9.1: Replaced reference to ISO9001:2000 with ISO 9001.	06/11/2009
17	Fernanda Barraza	Added SQ03-0319 Mounting Broken Wafer for Scribe at Sub-Contractors, SQ03-0268 Using SkyDocs System by External Partners and link to SkyDocs for external partners in section 3.0.	07/02/2009
18	Daniel Le Saux	Added requirement in section 5.9.1 Quality System to ensure suppliers notify Skyworks of any change in status of their Quality management system.	07/09/2009
19	Daniel Le Saux	Added section 4.1 to describe Supplier Performance Monitoring protocol. Added section 5.9 Reliability. Renumbered all other sections accordingly. Added definition Fitness For Use in section 2.0. Added requirement for accreditation mark in section 5.9.1. Corrected grammar in first paragraph of section 5.13.	02/11/2010
20	Daniel Le Saux	Replaced section 5.3 Green Procurement Supplier Specification with 5.3 Sustainability. Removed sections 5.3.1 Environmental Management, 5.4 Social Accountability and safety requirements from 5.9.11 Work Environment (i.e. all sustainability requirements are now stated in SQ03-0337). Added SQ03-0337 Skyworks Supplier Sustainability Specification to section 3.0 Associated Documents. Added section 5.3.1 Banned and Restricted Substances and added SQ03-0132 to list of applicable documents.	02/16/2010
21	Daniel Le Saux	Added reference to SQ03-0120 Skyworks Customer Labeling Requirements in section 3.0 Associated Documents and 5.6 Product Identification. Added reference to JESD-46 for product / process change notification criteria.	05/21/2010
22	Daniel Le Saux	Added reference to SQ03-0353 Component Supplier Reliability Requirements in section 3.0 Associated Documents as well as 5.8.5 Reliability. Also added reference to SQ04-0174 Process Control Optimization Checklist in section 3.0 Associated Documents as well as 5.8 Quality Plan.	11/04/2010
23	Daniel Le Saux	Reformatted section 3.0 Associated documents. Referenced SQ04-0019 General Terms and Conditions in section 4.0 Supplier Qualification. Added SQ04-0019 General Terms and Conditions to section 3.0 Associated documents	02/10/2011

24	Daniel Le Saux	Modified section 5.8.1 Quality System to add language regarding ISO/IEC 17025 accreditation scope.	03/10/2011
25	Daniel Le Saux	Modified section 5.4 Risk Management Policy to add "upon request, the supplier shall provide evidence that second sources for critical supplies, materials and components have been identified". Modified section 3.0 Associated Documents to change title of SQ03-0120 Skyworks Customer Labeling Requirements to Skyworks Labeling Requirements. Corrected double negative in section 5.5.1 Non-Conforming Product.	07/26/2011
26	Daniel Le Saux / Fernanda Lares	Corrected specification title 5.6 Product Identification. Revised section 5.8.1 to cover ANSI/ESD S.20.20 certification requirements. Added SQ03-0379 Wafer Labeling Requirement to section 3.0 Associated Documents. Removed following document references: SQ03-0044 and SQ03-0047, JESD-46. Modified 5.5.2 Product / Process Changes to require supplier to provide an As Is / To Be process map when submitting a Process Change Notification. Replaced reference to JESD46 with Skyworks work instruction SQ03-0393. Updated section 3.0 to incorporate reference to SQ03-0393 Supplier Product/Process Change Notification Requirements under Skyworks Documents applicable to all suppliers. Reiterated confidentiality expectations in section 5.1.1.	03/21/2012
27	Daniel Le Saux	Added section 5.5.1.1 Deviations and Waivers. Also added corresponding reference document SQ04-0211 in section 3.0. Added liability language in section 5.5.2 5.5.2 Product / Process Changes. Added sample size reference in section 5.8.5 Reliability. Added additional Maverick lot requirements in section 5.8.8.	12/16/2013
28	Mostafa Gorgzadeh	Updated section 5.9.1 Calibration Reports, to include revisions following engineering changes to cover ISO/TS 16949 standard (2009-06-15)	2/20/2014
29	Mostafa Gorgzadeh	Made correction to revision number in the footer	3/3/2014
30	Fernanda Lares	Added reference to document SQ03-0472 Supplier Production Part Approval Process to sections 3 Associated Documents, 5.8.6 Production Part Approval as a result of WB-CAR-1835	4/10/2014
31	Bonnie Mizuma	Added document SQ03-0467 as associated document in section 3. Footer Revision didn't get updated on the pervious change. Corrected footer revision.	4/16/14
32	Mark Maier Fernanda Lares	Modified 5.5.1, Non-Conforming Product, to address a Continental finding Corrected document links as it was requested by approvers. Updated list of approvers to reflect organizational changes Fixed revision number in document attachment from 31 to 32	5/15/15 2/26/16
33	Michael Goh	Modified 5.8.4 (FMEA) to ensure FMEA items with severity of 9 or 10 must be acted upon immediately and continuous improvement on top three highest risk items.	7/7/2016
34	Mark Maier	Corrected DocSys link in Section 3. Corrected reference in section 5.8.2 (from 5.12 to 5.11).	3/17/17

35	Carolene Huguenin	Demoted section 5.8.11 Work Environment to section 5.8.11.2. Renamed 5.8.11 as Resource Management. Added section 5.8.11.1 Human Resources, which explicitly requires suppliers to assess employee competence.	10/16/2017
36	Carolene Huguenin	Updated terminology per ISO9001:2015 throughout. Reorganized section 4 to explicitly call out: qualification, monitoring and development activities referencing the corresponding SOPs. Fixed typo in 5.5.2. Added reference to IAT16949 in 5.8.1. Added explicit reference to ISO9001:2015 quality management principles to 5.8.1.	3/26/2018
37	Carolene Huguenin	5.5.1. Added requirement for approval 'prior to shipment' of nonconforming material to SWKS. 5.5.2. Added requirements for manufacturing validation activities to be coordinated through SWKS TRBs and referenced additional Risk Assessment requirements for foundry supplier processes.	9/12/2018
38	Bonnie Mizuma / Lawrence O Manzano	- Updated Associated Documents Section by: Added SQ03-0590, SQ04-0092 and removed SQ03-0041 Added Ref to Agile System Removed Refer to SQ03-0268 Using SkyDos System by External Partners - Update approvers: Replace Jaydutt Joshi with Anuruddha Joshi	10-3-19

1 Purpose and Scope

1.1 Purpose

The purpose of this manual is to define the basic quality systems and business procedures required of external providers who currently or potentially manufacture and/or supply production material and/or services to Skyworks.

This manual also defines quality requirements, business practices and applicable documents for these external providers, in order to maintain their status as an approved supplier.

This manual, the Commercial Agreement, the Nondisclosure Agreement, and the Skyworks purchase orders are intended as the agreement on all the terms and provisions. This manual supersedes any prior written or oral agreements concerning any of the subject matter of this manual.

1.2 Scope

This procedure applies to Skyworks' external providers of Level 1 materials and Level 4 services that directly affect the form, fit, function, quality or reliability of the finished product.

2 Acronyms / Terminology and Description / Definition

Approved

The supplier status such that Skyworks' Sourcing may buy qualified products from that supplier

ASL

Approved Supplier List housed in the Lotus Notes "SWKS Supplier Management" database

Certificate of Analysis

Signed document that provides quantitative data for the items being delivered that certifies that the product conforms to all purchase order requirements and reference specifications

Certificate of Conformance

Signed document certifying that delivered products conforms to all purchase order requirements and reference specifications.

Disqualified

Supplier status such that no further orders may be placed.

Fitness for Use

Product or service that fits Skyworks' defined purpose, under anticipated or specified operational conditions (e.g. JEDEC or other industry standards)

Level 1 Material

Goods used in the manufacture of finished product that directly affect the form, fit, function or reliability of the finished product

Level 4 Service

Service provided by an external provider that directly affects the form, fit, function or reliability of the finished product.

RMA

Returned Material Authorization, typically a requirement for returning nonconforming products to the supplier

SCAR

Supplier Corrective Action Request, a formal request for improvement issued to an external provider

SQE

Supplier Quality Engineer

Sub Tier Suppliers

Suppliers used by an external provider to Skyworks, i.e., the supplier's supplier.

Supplier

An external provider of goods or services to an organization

3 Associated Documents

Access to generic Skyworks documentation our [Supplier Web Site](#). Access to product related documents is enabled through SkyDocs (For Chemical Suppliers ONLY) or Agile system (For all other Suppliers) Login required.

The documents listed below contain requirements that become part of the contractual agreement between the supplier and Skyworks.

Skyworks Documents

Referenced in this document and applicable to all suppliers:

SQ03-0132	Green Procurement Supplier Specification
SQ03-0138	Supplier Qualification and Monitoring
SQ03-0268	Using SkyDocs System by External Partners
SQ03-0337	Skyworks Supplier Sustainability Specification
SQ03-0353	Component Supplier Reliability Requirements
SQ03-0360	Process Control Optimization Manual
SQ03-0393	Supplier Product / Process Change Notification Requirements
SQ03-0472	Supplier Production Part Approval Process
SQ04-0005	Supplier Survey and Audit Questionnaire
SQ04-0019	General Terms and Conditions
SQ04-0099	Process FMEA Template
SQ04-0211	Skyworks Supplier Waiver / Deviation Request
SQ04-0308	Foundry TRB Change / Deviation Risk Analysis Form
SQ03-0467	Skyworks General Manufacturing Requirements for SMT Placed Components
SQ03-0590	Supplier Event Notification
SQ04-0092	Drill Deep / Read Across Worksheet

Applicable to wafer foundries and assembly suppliers:

SQ03-0038	Wafer Acceptance Criteria GaAs (pHEMT and HBT) and Silicon CMOS Wafers
SQ03-0314	Silicon Diode Wafer Acceptance Criteria for Sub-Cons Silicon Diode Wafers
SQ03-0319	Mounting Broken Wafers for Scribe at Sub-Contractors

Applicable to probe and test suppliers:

- SQ03-0050** Test Transfer Correlation Procedure
- SQ03-0120** Skyworks Labeling Requirements
- SQ03-0379** Wafer Labeling Requirement

National and International Standards

Referenced in this document and applicable to all suppliers:

- ANSI/ESD S.20.20** Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment
- ISO/TS 16949** Quality Management Systems – Particular Requirements for the Application of ISO 9001 for Auto-Motive Production and Relevant Service Organizations
- APQP** AIAG Advanced Product Quality Planning and Control Plan Manual
- FMEA** AIAG Failure Mode Effects Analysis Manual
- ISO 9001** Quality Management Systems – Requirements
- ISO/IEC 17025** General Requirements for the Competence of Testing and Calibration Laboratories
- JESD-50** Special Requirements for Maverick Product Elimination
- MSA** AIAG Measurement Systems Analysis Manual
- PPAP** AIAG Production Part Approval Process Manual

4 External Provider Management

Supplier terms and condition of purchase are outlined in **SQ04-0019 General Terms and Conditions**. Additional supplier quality expectations are included in Section 5 of this document. Conformance to these requirements is verified by means of supplier surveys, requested self-appraisals, and on-site assessments performed by Skyworks or a third party. All requirements in each applicable element shall be fulfilled for an external provider to be considered qualified to provide materials or services to Skyworks.

4.1 Supplier Qualification

Detailed work instructions regarding the assessment and qualification of external providers are contained in **SQ03-0138 Supplier Qualification and Monitoring**.

4.2 Supplier Monitoring

The procedures and requirements of the performance monitoring function for external suppliers are captured in **SQ03-0138 Supplier Qualification and Monitoring**. Supplier performance is monitored monthly based on a demerit system that gives equal weight to quality and delivery. Suppliers that fall below criteria specified in **SQ03-0138** are placed on probation and improvement actions are formally requested; suppliers that fail to show improvement may be disqualified.

4.3 Supplier Development

Development of Skyworks’ external providers is achieved by multiple means guided by the principles of engagement, customer focus, continuous improvement, and data driven decision-making. These tenets drive for quality improvements in all aspects of the supplier-customer relationship from delivery, cost, performance, to customer satisfaction. In addition to the sustaining relationships that drive improvement within the context of on-going qualification and monitoring activi-

ties, further development of external providers is actively targeted by Skyworks. The identification of risks and opportunities associated with external providers, as well as action plans to address these issues are fundamental to the supplier development function. Supplier development is further supported by the active use of the following tools:

Supplier Development Reviews per **SQ03-0037 Supplier Development Review**

PCO Assessments performed per **SQ03-0360 Process Control Optimization Manual**

Surveillance audits performed per **SQ03-0218 Supplier Audit Protocol**

5 External Provider Expectations

5.1 Corporate Policies and Objectives

It is the policy of Skyworks that materials and services used in the design and production of Skyworks products be procured in a professional and ethical manner that results in achieving the lowest total cost of ownership for Skyworks and for our customers. Further, all purchased materials and services must be in compliance with agreed upon requirements, be delivered on time, and have competitive lead times and prices

5.1.1 Confidentiality

Confidentiality shall be strictly maintained in accordance with supplier terms and condition of purchase outlined in **SQ04-0019 General Terms and Conditions**.

5.2 Regulatory Agency Compliance

It is the supplier's responsibility to ensure that their product is in compliance with all applicable regulatory agency and product safety requirements, and claims including that stated in supplier published product advertising, catalogues and data sheets. The supplier must be prepared at all times to substantiate compliance by providing copies of test reports and making records available for review if requested.

5.3 Sustainability

All requirements set forth in **SQ03-0337 Skyworks Supplier Sustainability Specification** apply.

5.3.1 Banned and Restricted Substances

Refer to **SQ03-0132 Green Procurement Supplier Specification** for all materials restrictions and reference to Skyworks' banned and restricted substances.

5.4 Risk Management Policy

The supplier shall have an up-to date documented Risk Management Policy ensuring that in the event of disaster or inability to perform, the supplier has plans to take necessary action in order to minimize and or eliminate such risk, from Skyworks. This needs to be provided with completion of **SQ04-0005 Supplier Survey and Audit Questionnaire**. Upon request, the supplier shall provide evidence that second sources for critical supplies, materials and components have been identified.

5.5 Notification of Product Quality or Delivery Issues

5.5.1 Non-Conforming Product

Delivery of product to Skyworks not meeting supplier's internal manufacturing specifications for measurements as identified on the control plan, acceptance criteria, outlier limits, Maverick limits or Skyworks specifications requires:

- Supplier to review non-conformance through a cross functional Material Review Board (MRB) to determine acceptability of shipping material to Skyworks. Additionally, the supplier must inform Skyworks of any critical defect detected that warrants a MRB, even if the MRB determines the product is not acceptable to ship to Skyworks. The defects are identified based on the supplier's critical defects list.

- Generation of a Non-Conforming Material Report (NCRM) to the Skyworks' Supplier Quality Engineer specifying nature of non-conformance, associated data with non-conformance, and why supplier believes non-conformance will not impact Skyworks' product performance, quality or yield.
- Approval by Skyworks Quality Department prior to any shipment of such material from the supplier to SWKS.

Suppliers may generate a waiver or deviation request in accordance with **SQ04-0211 Skyworks Supplier Waiver / Deviation Request** as follows:

- For a planned product or process change affecting a limited quantity of product or till a certain date
- For a planned variation from a documented requirement
- For a change that occurred inadvertently and will only affect a limited quantity of product

In all cases, the supplier shall submit the completed form with relevant supporting data to the Skyworks Supplier Quality Engineer for review and disposition prior to shipment of the material to SWKS.

5.5.2 Product / Process Changes

The Supplier shall have a process to manage and track changes in accordance with **SQ03-0393 Supplier Product / Process Change Notification (PCN) Requirements**

When submitting a Process Change Notice, the supplier shall provide a process map that clearly highlights the process changes that are being proposed. In case of non-conformance to Skyworks PCN process, the external provider will be responsible for all costs incurred by Skyworks (or its subcontractors) related to such non-conformance.

Manufacturing validation activities for new process qualifications must be coordinated in alignment with Skyworks' Technical Review Board processes. For foundry process qualifications, additional formal risk assessment analyses are required, e.g., "Change/Deviation Analysis" per **SQ04-0308** and "Wet Processes & Critical Queue Times".

5.6 Product Identification

The Supplier shall have a manufacturing control system such as a route card, run card, control software, etc, used for the identification of products with regard to: type, lot or serial number, and their status during all stages of production and test.

Shipments originating from any assembly and/or test location, including subcontractor shipments that are sent directly to customers shall be labeled in accordance with **SQ03-0120 Skyworks Labeling Requirements**.

5.7 Product Traceability

The external provider shall have a system for ensuring finished product traceability back to the subassembly, component and raw materials. Traceability shall be achieved by means of date code, lot and/or serial number.

5.8 Quality Plan

Skyworks being a leader in the wireless industry will continuously strive to improve Quality and provide world-class products to our customers. To ensure we are able to meet and maintain this objective, Skyworks expects the elements in this section to be present with its suppliers. In the event the supplier does not have an element of this plan, Skyworks will at its discretion, decide if we want to work and assist the supplier develop the missing element. The Quality plan may be reviewed by the Skyworks Supplier Quality Engineer prior to a supplier being qualified. For existing suppliers, Skyworks Quality Engineers may work with supplier to document and/or develop an acceptable Quality Plan.

The requirement of the Quality Plan is one of the most critical steps in becoming an approved supplier to Skyworks. Skyworks' intent is to purchase material from suppliers on a Ship to Stock Program. This is a process where Skyworks receives parts and materials from suppliers and uses them with a minimum of internal inspection and test costs or losses resulting from the supplier's fault non-conformances. Skyworks will not accept the cost of excessive testing and poor quality, and will not pay the cost of our suppliers doing extensive testing or the resulting poor yields and escapes.

The intent is to emphasize process capability improvement and controls and/or monitoring that will have the greatest impact on quality and reliability and ultimately zero defects, zero repeat issues and low cost of ownership goals. Skyworks has introduced a new concept called Process Control Optimization or PCO that may be used to reach these goals. PCO is outlined in **SQ03-0360 - Process Control Optimization Manual**. Each supplier will be responsible for defining critical processes and if required, report to Skyworks Supplier Quality Engineer the measurement index as well as a continuous improvement plan.

The Quality Plan will normally consist of the following elements as a minimum; additional requirements may be requested by Skyworks:

5.8.1 Quality System

Suppliers are expected to have an effective quality system in place that assures consistent on-time delivery of conforming product. Registration by an accredited third party certification body is required as follows:

- **ISO 9001** certification is required with *conformity* to **ISO/TS 16949 (IATF 16949)** as the long-term goal.
- **ISO/IEC 17025** is required for calibration and testing laboratories. The parameter and/or equipment applicable to the laboratory service being provided must be within the scope of accreditation.
- **ANSI/ESD S.20.20** certification is required for all assembly and/or test suppliers.

Note: All third party certificates must include a valid certification body accreditation mark.

Given the ISO9001 certification requirement, Skyworks' external providers shall have Quality management systems that support the principles of:

- Customer focus
- Leadership
- Engagement of people
- Process approach
- Improvement
- Evidence-based decision making
- Relationship management

External providers shall notify Skyworks of any change in status of their Quality management system (e.g. change of scope, registrar, standard, etc.) in accordance with section 5.5.2. This requirement shall apply to **ISO 9001, ISO/TS 16949 (IATF 16949)** and/or **ISO/IEC 17025**.

5.8.2 Process Controls

The supplier shall plan and carry out manufacturing processes under controlled conditions that shall include:

- The use and development of control plans as outlined in **the AIAG Advanced Product Quality Planning and Control Plan (APQP)** manual
- The use of documented work instructions available at point of use
- The use of suitable equipment supported by a preventive maintenance program for key process equipment
- The use of equipment for test, inspection and measurement of Skyworks product. This equipment shall require Gage reproducibility and repeatability (R&R) studies to demonstrate the capability of the equipment and measuring process. These studies shall be performed using the ANOVA method outlined in the **AIAG Measurement System Analysis (MSA)** manual. All such equipment with > 10% error needs to be reported to Skyworks.
- Adherence to Skyworks workmanship standards listed in section 3.0.
- The use of statistical tools such as Statistical Process Control (SPC) and capability studies (see section 5.11). The supplier shall initiate a reaction plan for characteristics that become incapable or unstable.
- A production scheduling system that supports Skyworks' delivery expectations

5.8.3 Purchasing

The external provider shall have a defined process for their purchasing process that includes:

- The use of approved sub tier suppliers for the procurement of materials and/or services that directly affect the form, fit, function or reliability of Skyworks products
- A supplier development program that emphasizes the flow down of the requirements set forth in this manual to sub tier suppliers
- The generation of purchasing information that clearly describes the product being purchased
- The implementation of verification activities to ensure that incoming product meets specified purchase requirements
- Sub tier supplier performance monitoring

5.8.4 Failure Mode and Effect Analysis (FMEA)

It is strongly recommended that the supplier develop a Process or Product FMEA and use those results to determine the appropriate test and inspection points as well as appropriate control methods. FMEA items with severity ranking of 9 or 10 must be acted upon immediately. Other than that, actions must be taken on the top three highest ranked risk items. In the case where 2 or more risk items have the same RPN, priority should be given to those with highest severity. Additional information can be found in the **AIAG FMEA manual**. The supplier may also use **SQ04-0099 Process FMEA Template**.

5.8.5 Reliability

Suppliers shall have a qualification process for their products, processes and/or components that ensure quality, reliability and fitness for use (see section 2.0). This process must be followed for new products as well as product or process changes (see section 5.5.2). This process must also include on-going (quarterly at a minimum) reliability testing that gathers and monitors reliability data on qualified production products and processes.

Component suppliers (e.g. capacitors, resistors, filters, etc.) are required to forward on-going reliability reports to Skyworks FA/Reliability department on a quarterly basis. This and other requirements are outlined in **SQ03-0353 Component Supplier Reliability Requirements**. Internal supplier qualification shall meet sample size requirements outlined in **SQ03-0353 Component Supplier Reliability Requirements** where applicable.

Other suppliers may be requested to provide these reports on an as-needed basis.

5.8.6 Production Part Approval

Skyworks may request suppliers to conform to the production part approval process as outlined in **SQ03-0472 Supplier Production Part Approval Process**.

5.8.7 Corrective Action and Failure Analysis

Skyworks will use a Supplier Corrective Action Request (SCAR) as the trigger to engage the supplier for a request for containment, root cause analysis, corrective action and verification. All responses from supplier need to be in an 8D format. The supplier should have a formal, 8D process with evidence that key personnel have been trained. Failure Analysis capabilities and support needs to be identified in the Quality Plan.

The initial response (3D) needs to be provided within 1 business day of the receipt of samples. The root cause analysis and corrective action plan (5D) shall be provided within 10 business days of the receipt of samples. The actual deployment and verification of corrective actions (6D through 8D) may take longer based on the complexity of the problem.

5.8.8 Maverick Lot Program

Skyworks encourages suppliers to have a Maverick lot program in the spirit of **JESD-50**. Where applicable, supplier shall use statistical methodology to set Maverick limits. Supplier shall notify and seek Skyworks Supplier Quality Engineering's approval prior to shipping any Maverick lots.

5.8.9 Document Control System

Skyworks requires suppliers to have a Document control system in place. Suppliers must ensure that the latest Skyworks specifications, work instructions, and other related documents are maintained in this system

5.8.10 Internal Quality Audits

Suppliers shall perform internal quality audits in accordance with documented procedures and control plans. The external provider shall review audit results, plan corrective action and perform follow-up verification of corrective action effectiveness.

The supplier will publish the frequency of internal audits performed in the supplier facility in the Quality Plan. Periodically, the supplier may be requested to share details of the internal audits and follow-up items with Skyworks Supplier Quality Engineer.

5.8.11 Resource Management**5.8.11.1 Human Resources**

External providers shall ensure that personnel performing work affecting product quality or the quality management system are competent on the basis of appropriate education, training, skills, and experience. External providers shall determine competency requirements, assess employee competence, and maintain associated records as evidence.

5.8.11.2 Work Environment

External providers shall determine and manage the aspects of the work environment necessary to achieve conformity to product requirements. Examples of aspects may include, but are not limited to: temperature, humidity, cleanliness and electrostatic discharge protection.

External providers who handle ESD sensitive parts are expected to establish and maintain an ESD management system in accordance with **ANSI/ESD S20.20** (see section 5.8.1).

5.8.12 Problem Resolution, Escalation and Key Contacts

The external provider shall define who has authority for resolving quality, technical and supply issues and the escalation process to the next level of management in the event that a decision can not be reached at any level.

The external provider is expected to designate a key contact person and furnish their name, daytime phone number, pager/mobile number, and email address. This individual will be the owner for taking action on quality alerts and ensuring all reports and corrective action request are rendered to Skyworks in a timely fashion. The external provider will be responsible for assuring the availability of this individual or an available back-up to Skyworks at all times.

5.9 Reports

All shipments must be accompanied by a certificate of conformance and/or certificate of analysis traceable back to the items being delivered.

The external provider may be requested to provide periodic reports or summary reports of inspection or test results. The Skyworks Supplier Quality Engineer may review the metrics and reporting formats and frequency. Additionally the supplier may be requested by Skyworks Supplier Quality Engineer to provide periodic summary reports of FA and evaluation results on SCARs / RMAs. These will need to be in the format prescribed by Skyworks Supplier Quality Engineer.

5.9.1 Calibration Reports

For calibration service providers, calibration reports must include evidence of conformance to requirements. Calibration shall be performed in accordance with manufacturer’s specifications unless otherwise noted on the purchase order. The calibration report shall include as a minimum the following information:

- Equipment identification, including the measurement standard against which the equipment is calibrated
- Any out-of-specification readings as received for calibration/verification
- A statement of conformity to specification after calibration/verification
- Revisions following engineering changes

5.10 External Provider Self Assessment Survey

SQ04-0005 Supplier Survey and Audit Questionnaire shall be completed by the supplier during the initial supplier qualification and will be kept on file by Skyworks. This form will also be used as the template for on-site audits performed by Skyworks. An updated survey may be requested by the Skyworks Supplier Quality Engineer if deemed necessary.

5.11 Capability Indices

The supplier shall establish a procedure to assure that critical Cpks are ≥ 1.67 . This procedure may be reviewed by the Skyworks Supplier Quality Engineer. For those critical Cpks which are < 1.67 for two consecutive quarters, documented improvement plans shall be made available to Skyworks upon request.

5.12 Control of Skyworks Owned Product or Equipment

Secondary materials (such as carrier tape, trays, packaging, etc.) and consigned material provided or specified by Skyworks shall be verified to meet Skyworks requirements and fitness for use before being accepted.

Custom-owned equipment and/or tooling purchased by Skyworks shall remain the property of Skyworks. All Skyworks-owned equipment and tools will be marked with Skyworks’ control numbers prior to shipment to an external provider.

Skyworks-owned equipment, tools, test correlation parts, secondary materials or consigned material shall be controlled, stored, handled and maintained in a manner that protects against loss and damage.