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Rev	Change/Reasons	Date Updated	Originator
A	Create	13 December 2005	Neo Ah Chee
002	Replaced the MatrixOne with Oracle PLM. Simplify the product category classification. Removal of IQA from Material function.	28 February 2007	Hui Soh Yin
003	Amended product category lists and added Manufacturing/Outsourcing to the Responsibilities And Authority section. Also remove 6 sigma.	3 April 2008	Tie Yiu Chuong
004	Documented exclusions for Fort Collins site in scope.	24 June 2008	Lim Swee Hong
005	Update R&R for Materials in cl 5.5.1, general editing.	29 Jul 2011	Tajul Arosh
006	Correct ISO9001 revision in the Reference (page 6) and amend the product list (page 7)	15 Nov 2012	Tie Yiu Chuong
007	Add xLSI and PLX product portfolio	17 Apr 2015	Tie Yiu Chuong
008	Change Avago to Broadcom	22 February 2016`	Tie Yiu Chuong
009	Re-write to comply with ISO9001:2015	15 May 2017	Tie Yiu Chuong
010	Change to Broadcom Inc. Update the global map for site locations	30 July 2018	Tie Yiu Chuong
011	Update the Scope to match that in the ISO certificate	7 Aug 2018	Tie Yiu Chuong
012	Update 4.3 the Scope #3 to include “Semiconductor”	17 Aug 2018	Tie Yiu Chuong

BROADCOM INC
QUALITY MANUAL
ISO9001:2015

BROADCOM

Contents

Broadcom Quality Policy

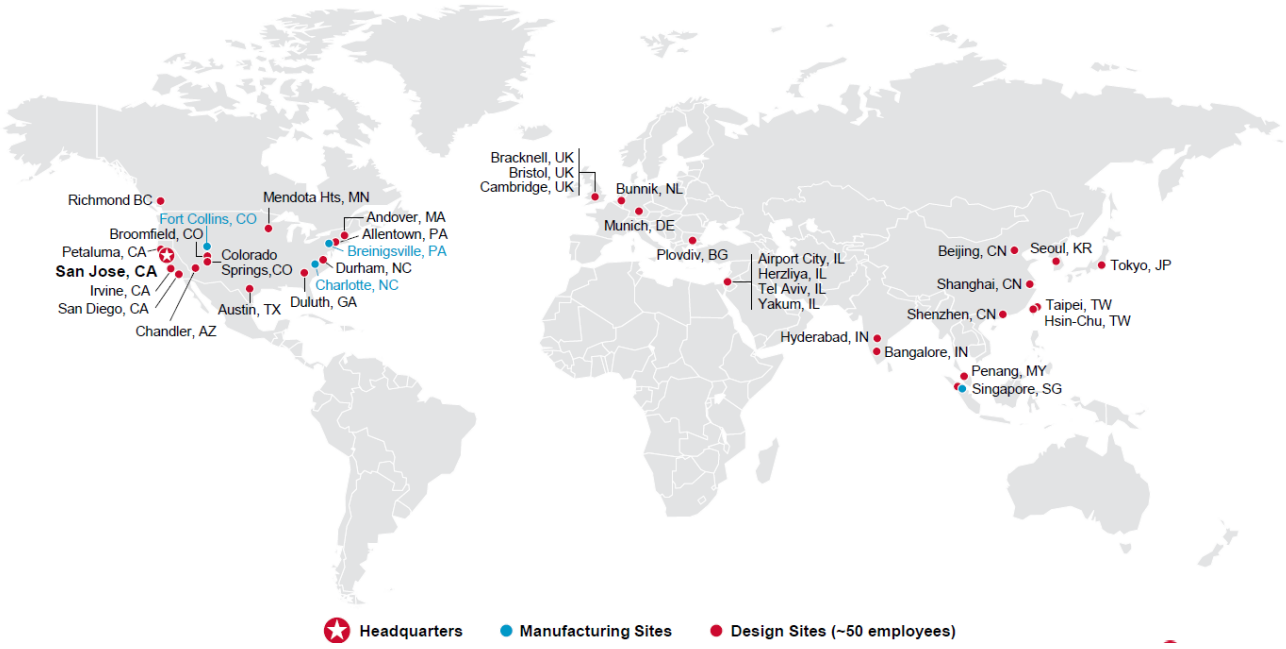
Broadcom's Quality Policy is to be the Best Customer Satisfier by providing products of the highest quality.

Broadcom commits and empowers its employees to implement this policy through the following course of action:

- Make our customers' total experience with Broadcom the best in the industry.
- Clearly understand customer needs and provide products that meet those needs.
- Integrate quality management principles into critical business processes and decision-making practices.
- Continuously improve the effectiveness of the Quality Management System, our processes, products, to enhance their value for our customers, shareholders, and employees.
- Establish quality requirements and ensure suppliers, partners and contractors comply with them.
- Maintain our Quality Management System to conform to the requirements of ISO9001. Comply with the relevant regulatory requirements.

1 Scope

Broadcom is an international organization and has multiple operations that spread around the world:



This Quality Management System Manual applies to all entities in Broadcom Inc. It is based upon the requirements of the ISO 9001:2015 international standard and its technical equivalents, the requirements of applicable military standards, and/or specific customer contract requirements.

Copies of this manual may be obtained by writing to:

Broadcom Pte Ltd
1 Yishun Ave 7, Singapore 768923
Attn: QA Department

Or can be found in Oracle PLM (Document # 5973-0688-80)

2 Overview of Broadcom Inc

Broadcom's products consist of the following categories:

Core Technologies

- Broadband Modems
- Wideband ADC/DACs
- Custom DSP & ARM CPUs
- Wi-Fi/Bluetooth/GPS
- Copper/Optical PHYs
- Switching Fabrics
- Analog & DSP SerDes
- FBAR & RF Front-Ends
- SAS/SATA/FC/PCIe/Read-Channel
- VCSEL/DFB Optics
- Optical Sensing

Franchise Products

- Cable/Sat/IP Set-Top Box SoCs
- Cable Modem/CMTS SoCs
- PON/DSL CPE/CO SoCs
- Wireless Connectivity Combos
- Ethernet NICs/Controllers/PHYs
- Ethernet Switching/Routing SoCs
- Network Processor SoCs
- RF Filter and Front-End Modules
- ASICs (Networking and Compute)
- HDD/SSD Controllers & HDD PreAmps
- Enterprise SAS/SATA/FC/PCIe
- Optical Isolation/Motion Encoders/LED
- Fiber Optic Products

End Markets

Wired Infrastructure

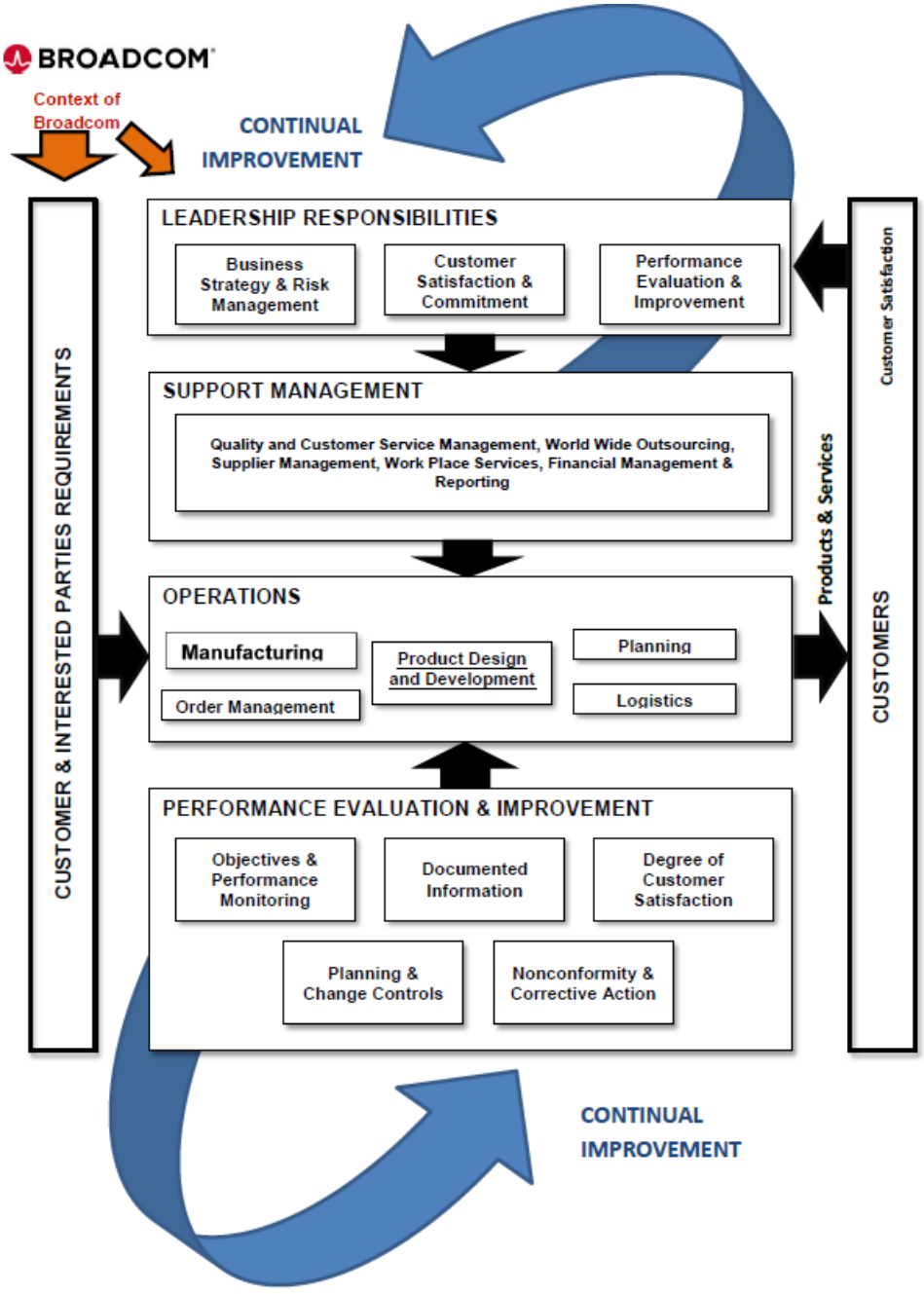
Wireless Communications

Enterprise Storage

Industrial & Other

3 Broadcom Business Processes

A high level key business process flow is as shown:



4 Context of Organization

4.1 Understanding the Organization and its context

Broadcom has reviewed and analyzed key aspects of itself and its stakeholders to determine the strategic direction of the company. This requires understanding internal and external issues that are of concern to Broadcom and its interested parties (per 4.2 below).

Such issues are monitored and updated as appropriate, and discussed as part of management reviews.

4.2 Understanding the Needs and Expectations of Interested Parties

The issues determined per 4.1 above are identified through an analysis of risks (and opportunities) facing Broadcom and its interested parties. “Interested parties” are those stakeholders who receive our Products (customers), or who may be impacted by them (consumers), or those regulatory and legislative bodies that dictate requirements that our products must comply to.
This information is then used by senior management to determine the company’s strategic direction. This is defined in records of management review, and periodically updated as conditions and situations change.

4.3 Determining the Scope of the Quality Management System

Based on an analysis of the above issues of concern, interests of stakeholders, and in consideration of its products and services, Broadcom has determined the scope of the management system as follows:

1) **Design, Development, Manufacturing and Sourcing of Semiconductor Devices, Printed Circuit Board Assemblies**
2) **Manufacture of III-V wafers**
3) **Design and Development of Automotive Semiconductor Components and Software**

The quality system applies to all processes, activities, and employees of the following locations within the company: as shown in the world map on page 5 of this manual.

4.4 Quality Management System and its Processes

4.4.1 Process Identification

Processes in the quality management system, their applications and interactions, resources needed and measurement requirements are identified. For any applicable out-sourced processes that affect product conformity, controls will be in place and defined in the respective procedures (where applicable). Refer to Attachment 1 for the Business Process Flow Chart.

4.4.2 Process Controls & Objectives

Planning of the quality management system is implemented through the processes of drafting this quality manual. This manual identifies processes comprising the quality system, and describes methods and means necessary for implementing the system. Integrity of the quality management system will always be

maintained when changes are planned and implemented by adhering to the document control procedure. Planning for quality objectives is done during the yearly management review based on data and information analysis.

4.4.3 Outsourced Processes

The quality of Broadcom' products is tied directly to the quality of the purchased parts and their suppliers as well as subcontractors. The selection and cultivation of all material suppliers and third party subcontractors is therefore of primary importance.

The activities related to suppliers, piece parts and materials used by the Operations are carried out by the WW Materials whereas Worldwide Outsourcing and Manufacturing Operation are responsible for the selection, qualification, management and control of subcontractors (CM/OEM/ODM) of purchased parts and services. The responsibility of these groups is to work within corporate and operation procedure guidelines and strategies to ensure the effective supply of material which conforms to Broadcom's requirements.

5 Leadership

5.1 Leadership & commitment

5.1.1 General

The top management provides leadership and commitment to the development and implementation of the management system and continually improving its effectiveness by:

a) taking accountability of the effectiveness of the management system;

b) ensuring that the ***Quality Policy*** and quality objectives are established for the management system and are compatible with the strategic direction and the context of the organization;

c) ensuring the integration of the management system requirements into the organization's other business processes, as deemed appropriate (see note);

d) promoting awareness of the process approach and risk-based thinking;

e) ensuring that the resources needed for the management system are available;

f) communicating the importance of effective quality management and of conforming to the management system requirements;

g) ensuring that the management system achieves its intended results;

h) engaging, directing and supporting persons to contribute to the effectiveness of the management system;

i) promoting continual improvement;

j) supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

Note: "business processes" such as accounting, employee benefits management, IT services and legal activities are out of scope of the QMS.

5.1.2 Customer Focus

Top Management ensures that customer needs and requirements ultimately drive the actions of all employees. Customer needs and requirements are actively solicited at the start of the development of new products and processes. Customer feedback is captured formally through customer surveys, customer visits, seminars, and informally through field feedbacks, exhibitions, and others.

5.2 Quality Policy

Each Broadcom Inc entity is committed to operate in concert with the Broadcom Inc's Objectives. We, therefore, share the same Quality Policy:

> **Broadcom Inc's Quality Policy is to be the Best Customer Satisfier by providing products of highest quality.**
>
> **— Broadcom Inc Quality Policy**

While all entities in the Broadcom share the same Quality Policy, different entities may develop their own Quality Policies to capture the specific focuses of their businesses. Entities with their own Quality Policies are:

Broadcom Malaysia:
"No Customer Problem"
Broadcom Singapore:
"No Customer Problem"

5.3 Organizational Roles, Responsibilities and Authorities

Top Management: The Vice Presidents/General Managers are the senior executive officers of their respective business division and are responsible for the business of their division. They delegate responsibility and authority for managing the various businesses and functions in each business division to members of their staffs. Broadcom's Vice Presidents and individual's Business division General Managers and their staffs are responsible for setting the strategies and objectives of their divisions.

A brief overview of typical responsibilities with respect to the quality system is as follows. The responsibilities of the infrastructure organizations are in accordance with the enterprise business model and not duplicated here.

Marketing and Sales: The Marketing and Sales department is responsible to ensure that product designs are based on an understanding of markets and customer needs, which also includes customers' regulatory, safety and product stewardship needs.

Research and Development (Product Development and Materials Technology): The Research and Development department is responsible for designing products and processes to meet customer needs and applicable Broadcom design, reliability, quality standards and appropriate regulatory requirements.

Manufacturing/Outsourcing: Respective production lines are responsible to establish, implement, maintain and monitor the manufacturing processes to ensure products of quality and reliability are delivered to customers. They are also responsible to manage their subcontractors for the outsourced activities. The respective Business Unit Operations are also responsible for managing all aspects of supplier management including qualifying new suppliers, supplier monitoring and development; purchasing, receiving, and material storage and delivery. All Corrective and Preventive Action is also the responsibility of the Division.

Order Fulfillment: The Order Fulfillment department is responsible for reviewing and processing incoming orders, verifying manufacturing capability & capacity, acknowledging customer's orders in timely manner.

Materials: The WW Materials Council is responsible for setting Material procurement policy and strategy to be executed on an Company-side basis. This function is also responsible for the identification and selection of potential suppliers using TQRDCBE analysis. Operational materials control, monitoring and corrective action is delegated to the respective Business Unit Operations.

Quality: The Quality department is responsible to establish, maintain and monitor the quality management system, promote customers focus in all the processes and products, ensure customer satisfaction by providing after sales customer support and product returns.

5.5.2 Management Representative

Each Broadcom entity shall appoint the Quality Manager or other designate as the Management Representative who has the following responsibilities:

a) Ensures that the quality system is established, implemented, and maintained in accordance with the requirements of this Quality System Manual and in accordance with applicable military, international, and Broadcom standards.

b) Reports regularly to the entity's management team the quality management performance.

c) Promotes awareness of customer requirements within the entity.

d) Liaises between customers and entity

6 Planning

6.1 Actions to Address Risks and Opportunities

Broadcom considers risks and opportunities when taking actions within the management system, as well as when implementing or improving the management system; likewise, these are considered relative to our products. Risks and opportunities are identified as part of clauses 4.1 and 4.2, as well as throughout all other activities of the QMS.

Risks and opportunities are managed in accordance with the document [Corrective and Preventive Action Flow 5957-0140-80]. The objective of preventive action is to prevent potential problems from occurring. Potential problem are identified from many sources of information including design review, quality record, internal audit, customer input and characterization studies. Potential problems are staffed based on priorities. Action taken to address potential problems are documented

The existence of this quality manual is itself a good preventive action mechanism as it describes the controls, measurements, analysis and improvements needed to implement and maintained an effective quality management system.

6.2 Quality Objectives and Planning to Achieve Them

Planning for quality objectives is done during the yearly management review based on data and information analysis. Quality objectives that are measurable and consistent with the quality policy are established at relevant functions and levels within the organization. The management review team shall base on relevant information available to set objectives with goals. Targets set for quality objectives are reviewed on periodic basis.

6.3 Planning of Changes

Integrity of the quality management system will always be maintained when changes are planned and implemented by adhering to the document control procedure.

7 Support

7.1 Resources

7.1.1 General

We ensure that resources required are available to implement the quality management system and continually improve its effectiveness; and to enhance customer satisfaction by meeting customer requirements. Resource allocation is done with consideration of the capability and constraints on existing internal resources, as well as needs related to supplier expectations.

7.1.2 People

Each business and function in the Broadcom is responsible for identifying resource requirements, providing adequate resources, and assigning trained personnel for the management, implementation, and verification activities as defined in this Quality System Manual.

7.1.3 Infrastructure

Each Broadcom entity shall identify, provide and maintain the infrastructure needed to achieve conformity to product requirements which include the buildings, workspace and associated utilities, process equipment (both hardware and software) and supporting services.

7.1.4 Environment for the Operation of Processes

Each entity shall determine the infrastructure and work environment needed to perform the processes within the entity. The Environmental, Health, and Safety system is established by the EHS department. The Workplace Services is responsible for establishing and maintaining the physical workplaces and its supporting infrastructure.

Note: Social, psychological and safety aspects of the work environment are managed through activities outside of the scope of the management system. Only work environment aspects which can directly affect process efficiency or product and service quality are managed through the management system.

7.1.5 Monitoring and Measuring Resources

The objective of performing regular maintenance and calibration on equipment and instruments is to detect and correct changes in the apparatus so as to ensure process control and measurement accuracy. Where necessary, equipment used for inspecting/measuring/testing of product to be shipped to customers or for determining data sheet product characteristics are calibrated on a regular schedule with standards of sufficient accuracy traceable to the National Institute of Standards and Technology (NIST) or equivalent National and International Standards. Such equipment may be either Broadcom , or personally owned. Where no such standards exist, the basis for calibration is documented.

The Engineering Section Manager or designate of affected functions is responsible for identifying the measurements required at their operations and for selecting the appropriate inspection, measuring, and test equipment, test software, and comparative references (such as test hardware, fixtures, and gauges) that are capable of providing the required measurement accuracy before they are released for production use. This person is also responsible for identifying the need for calibration of such equipment and for ensuring that equipment's requiring calibration is in fact properly calibrated on a regular schedule.

Where necessary, equipment used for inspection, testing, and measurement to demonstrate conformance of product to specified requirements is controlled, calibrated, and maintained. This equipment is periodically checked and records of the checks are maintained. Software used for production testing or calibration is under revision control.

7.1.6 Organizational Knowledge

Broadcom also determines the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This may include knowledge and information obtained from:

a) internal sources, such as work instructions. lessons learned, feedback from subject matter experts, and/or intellectual property;

b) external sources such as standards, academia, conferences, and/or information gathered from customers or suppliers.

This knowledge shall be maintained, and made available to the extent necessary.

When addressing changing needs and trends, Broadcom shall consider its current knowledge and determine how to acquire or access the necessary additional knowledge.

7.2 Competence

A comprehensive training program ensuring the competence for personnel performing work affecting product quality exists for all levels of staff, which includes personal development, technical, safety, on-the-job and quality related training.

The HR provides personal development training whereas on-the-job training is provided by the employee's department. All critical process and inspections are performed by personnel who have been trained and certified in accordance with the process specifications. It is also the employee's responsibility to know and understand the specifications related to their activities. Inspector and operator testing and certification are carried out for all new operators. Operators are re-certified after a period of extended absence or after a pre-determine period of time.

Where applicable, training will be provided to satisfy the competency needs and effectiveness of such actions taken will be evaluated.
Training programs, procedures and records are documented and retained either by the HR Department or the employee's department.

Note: the management system does not include other aspects of Human Resources management, such as payroll, benefits, insurance, labor relations or disciplinary actions.

7.3 Awareness

Employees are communicated and made aware of the importance and relevance of their activities and how they contribute to the achievement of the quality objectives through induction programs, meetings, notice boards or relevant training programs.

Training and subsequent communication ensures that staff is aware of:
a)the quality policy;

b)relevant quality objectives;

c)their contribution to the effectiveness of the management system, including the benefits of improved performance;

d)the implications of not conforming with the management system requirements.

7.4 Communication

Broadcom employs different modes of communication within the entity such as face-to-face meeting, conference calls, newsletter, email, voicemail, posters on walls/notice boards and reports. All employees of the entity are informed of the business status of the company the quality performance for products and processes, customer feedback and satisfaction indices.

7.5 Documented Information

Note: the ISO 9001:2015 standard uses the term "documented information"; Broadcom does not use this term, but instead relies on the terms "document" and "record" to avoid confusion. In this context the terms are defined by Broadcom as provided for in section 3.0 above. Documents and records undergo different controls as defined herein.

Broadcom establishes and maintains procedures to control documentation that relates to the Quality Management System and product quality. To the extent applicable, controlled documentation also encompasses documents originating external to the Broadcom such as industrial standards and customer drawings.

Each entity's Technical Information Services (TIS) function is responsible to establish, implement, and maintain the control of the documents (for example, drawings, and specifications) related to design, production, and testing of manufactured products.

Master copies of all controlled documents reside in the Oracle Product Lifecycle Management (PLM) System, a world-wide online document database system. Similarly, test software used for assuring conformance to products or process specification is controlled. Lower level procedures/ documents are controlled and maintained by respective functions and manufacturing lines as appropriate.

Controlled documents are reviewed and approved for adequacy by authorized personnel prior to issue. Obsolete controlled documents are removed from points of issue or use and replaced by the latest revisions, or clearly marked as such.

Modifications or changes to specifications are reviewed and approved by the authorized personnel of the responsible entity. Departments with locally controlled documents maintain records showing the latest revision level for such documents.

Quality records are retained to demonstrate the effective operation of the Quality Management System and the achievement of the required product quality. Quality records are legible, securely stored, easily retrievable, and readily identifiable to the product or Quality Management System involved. Quality records are kept in various forms, including paper, microfiche, or computer files, and in such a way as to minimize deterioration or damage and to prevent loss. When specified in contractual agreements with customers, quality records are made available for evaluation by the customer or representative for an agreed period.

The identification, collection, storage, maintenance, and disposition of quality records are specified in the record retention procedure of the respective entities.

8 Operation

8.1 Operation Planning and Control

Each Broadcom business group shall be responsible for product generation and order fulfillment. Each business group have the product life cycles processes that describe the elements of product realization and order fulfillment.

The product life cycles process for each business group includes a provision for product quality signoff prior to shipment release. This provision is intended to ensure that Broadcom only ships products that comply with applicable legal/regulatory requirements and customer expectations. Any waiver of the requirements must be approved in writing to the business division manager, and a copy of the waiver forwarded to the Vice President of Quality.

8.2 Requirements for Products and Services

8.2.1 Customer Communication

The Broadcom communicates with customers in a wide variety of forms:

- Direct discussions by the Field Sales Engineers
- Telephone, fax, and e–mail at all levels of the organization
- Website
- Press release and advertisements

Customer feedback on the performance of our products and services is also collected, both formally and informally. This feedback drives improvements, as necessary.

8.2.2 Determining the Requirements Related to Products and Services

Each Broadcom business division determines the customers' requirements through visits, market research, e-mail communication, seminars, exhibitions, and periodic business reviews.

8.2.3 Review of requirements related to the product

Customer orders are translated into two categories of contracts. First category relates to non–standard agreements for special products or services. A second category is a standardized contract for general products and services. (i.e Catalog products).

Each entity is responsible for contracts relating to non–standard agreements and special products or services. Differences in the contracts and those previously expressed shall be resolved with the customer before the contract is accepted. Each entity shall establish the contract review and approval process.

Orders for product are placed either by the customer directly or by the Broadcom sales offices through the Oracle system. The Order Management of each entity reviews the terms and conditions for orders to assure that the factories can meet the customer's requirements for products and delivery and to resolve any issues. In the event that changes to an order are necessary, for example, in delivery date, the customer is notified of the change.

It is the responsibility of each entity to maintain records of reviewed contracts and orders according to a Records Retention procedure.

8.2.4 Changes to Requirements for Products and Services

When contracts are amended, appropriate changes are made in the specifications affected by the contract. Concerned functions are notified through the specification change process.

Broadcom updates all relevant requirements and documents when the requirements are changed, and ensure that all appropriate staff is notified.

8.3 Design and Development of Products and Services

8.3.1 General

The first step in new product or process development or major product changes is a determination of performance, quality, reliability and regulatory requirements. In the overall development process, elements of design are balanced to meet these requirements. The development process is typically led by the Research and Development department (sometimes separated into Product Development and Materials Technology departments) with inputs and support from Marketing, Manufacturing, and Quality. The development process and associated responsibilities are documented.

8.3.2 Design and Development Planning

Materials technology and product development projects have plans which list the activities required along with the teams responsible for their completion. These plans are updated as the design process evolves.

The organizational and technical interfaces between the different groups involved in the development process are defined and the necessary information documented, transmitted, and reviewed as needed. This is generally done through checklists and phase reviews.

8.3.3 Design and Development Inputs

Design input requirements relating to the product or process, including applicable statutory and regulatory requirements, are identified and documented. Incomplete, ambiguous, or conflicting requirements are resolved with those responsible for imposing the requirements.

Other inputs are also considered including:

- Technologies that can be accessed.
- Capabilities of the organization's, subcontractors', and suppliers' manufacturing processes.

8.3.4 Design and Development Controls

Design and Development Review

At appropriate stages of design, formal documented reviews of the design results are planned and conducted. Participants at such reviews include representatives of the functions concerned with the design process as well as other specialist personnel, if required. Records of these reviews are maintained.

Design and Development Verification

Reliability stress testing, often using accelerated stress methods, is used at various stages of the development process to identify design capabilities. By the end of the development process, sufficient reliability stress data as well as other characterization data are obtained to evaluate the demonstrated performance versus target. Concurrent with demonstrating the quality of the newly designed product or process is the formal documentation of the related processes and materials and their associated controls. Records of these reviews are maintained.

Design and Development Validation

Periodic reviews are normally held throughout the development process with the key review being the Release to Manufacturing or Product Release Review. At such a review, the data indicating conformance of the product or process to defined user needs and requirements are evaluated and a decision is made whether or not to release the product. Records of these reviews are maintained.

8.3.5 Design and Development Outputs

The results of the design process, the design output, are documented and expressed in measurable characteristics. The documents identify those characteristics of the design that are crucial to the safe and proper functioning of the product (for example, where appropriate or necessary, operating, storage, and handling requirements).

8.3.6 Control of Design and Development Changes

After release, design changes and modifications are documented, reviewed, and approved by authorized personnel of the responsible entity before their implementation. Depending on the significance of the change and/or the customer requirements, customer interaction may be required before the change is implemented.

8.4 Control of Externally Provided Processes, Products and Services

It is the policy of the organization to select suppliers and make purchases based on, among other things, technology, quality, responsiveness/service, dependability/delivery, cost of ownership/price, environmental, and legal/regulatory considerations. The primary responsibility for identification of potential suppliers and for monitoring and continuously improving supplier performance (supplier resource management) rests with the Materials departments. These departments serve as the focal points and communication links between the Broadcom and its suppliers.

Wherever possible, material and services required for the manufacture of product are procured from suppliers who have been selected and qualified. The performance of these suppliers is monitored and recorded. Any change to these suppliers is approved.

All purchased materials and services required for the manufacture of products are the subject of purchase orders which contain the data necessary to clearly describe the product or service being

ordered. These purchasing documents are processed, reviewed, and approved according to defined procedures

Unless otherwise specified, sampling methods are used to inspect and test materials for conformance to specified requirements before release for production use. For “dock–to–stock” materials which require no incoming inspection, Materials Engineering verifies the supplier quality records and periodically assesses the suitability of the supplier in meeting quality standards through supplier evaluations. Inspections and tests are conducted following properly documented instructions. Rejected material is identified, tagged, and properly segregated with disposition determined according to a Control of Nonconforming Materials procedure. Accepted material is identified as such.

Where incoming material is released prior to incoming inspection for urgent production use, it is suitably identified to enable traceability in the event that subsequent disposition is necessary.

If Broadcom personnel (or its representatives) verify purchased product at a sub–contractor’s premises, such verification arrangements and the method of product release is specified in the purchasing documents.

8.5 Production And Service Provision

8.5.1 Control of Production and Service Provision

Departments, in which work takes place that may affect quality and conformance of product to specified requirements, have specifications and procedures which describe how such work is managed, performed, and verified.

For manufacturing processes, specifications describe how operations are carried out and what conditions need to be controlled. For items that need to be controlled, the system of control is described. These specifications also include workmanship standards, equipment and measurement methods to be used, and make reference to visual aids, samples, standards, and other specifications, where applicable. Suitable maintenance of plant and equipment is carried out to ensure continuing process control.

For non–manufacturing processes, specifications describe how activities are carried out and also, as appropriate, describe the measures used to relate performance to expectations. Wherever possible, these measures are quantitative and vary with the function or activity.

As part of the Manufacturing Capability Development process, processes are validated to ensure that they meet the needs of the organization and of customers.

Delivery and shipping is performed according to documented procedures that assure delivery of properly identified and undamaged product to the customer. Special labeling is used on shipping boxes containing product sensitive to electrostatic discharge or mechanical shock and moisture sensitivity level if applicable.

8.5.2 Identification and Traceability

On the production floor, parts are typically grouped into batches, called “lots,” which are assigned unique lot numbers. The identity of each lot is recorded on the lot traveler or in other tracking records which also capture such information as the process steps completed and, where applicable, other process–related data. Lot identification allows traceability on the production floor and also segregation when such need arises. Completed lot travelers and tracking records are filed.

Finished products are identified. This is usually done by their part number and date-code which are either marked on the body of the component or on the accompanying packaging label, or by some other means such as serial number. The date-code signifies the date of manufacture and cannot be changed. If appropriate, test date-codes may be appended. From the part number, the product is traceable to the relevant specifications such as the outline drawing and optical and/or electrical specifications.

The inspection and test status of incoming material and outgoing finished product are indicated. Inspection records also indicate the inspector responsible for accepting or rejecting a batch of material or product. The inspection and test status of work in progress is indicated on the lot traveler or tracking records.

Records providing evidence of the incoming, in–process, and final product inspections/tests are retained in accordance with a Records Retention procedure.

8.5.3 Property Belonging to Customers or External Providers

The Broadcom ensures that any customer supplied parts or materials are subjected to the same controls as other materials. Further, if any such parts/materials are lost, damaged, or otherwise unsuitable for use, this is recorded and reported to the customer.

8.5.4 Preservation

As applicable, each entity of the Broadcom maintains documented procedures for proper handling, storage, packaging, preservation, and delivery of product at the different stages of production.

Through the stages of manufacturing, inspecting, testing, and packaging, precautions are taken to ensure that the product is not damaged through inappropriate handling. For Electrostatic Discharge (ESD) Sensitive material or product, ESD–safe handling procedures are used as documented in an ESD Control procedure.

Designated storage areas and stock rooms are used to prevent damage or deterioration of material and products pending use or delivery. Processes for receiving material and products into and dispatching products out of storage areas are defined.

Products ready for shipment are packaged in Broadcom–approved containers and addressed per the instructions on the order list. Precautions are taken to ensure that products are not damaged through inappropriate handling.

When necessary, material and products in stock rooms or on the production floor are stored in a suitable environment to prevent damage or deterioration.

8.5.5 Post-Delivery Activities

Post-delivery activities are conducted in compliance with the management system defined herein. In determining the extent of post-delivery activities that are required, Broadcom considers:
a)statutory and regulatory requirements;

b)the potential undesired consequences associated with its Products;

c)the nature, use and intended lifetime of its Products;

d)customer requirements;

e)customer feedback.

8.5.6 Control of Changes

Broadcom reviews and controls both planned and unplanned changes to processes to the extent necessary to ensure continuing conformity with all requirements.

8.6 Release of Products and Services

Each entity shall monitor and measure the characteristics of the products to verify that product requirements have been met. This is carried out at appropriate stages of the product lifecycle process such as:

- Performs in–process inspection and testing of product as specified in the manufacturing specifications and identifies the test status on the lot traveler or tracking records.
- Performs process monitoring and control as specified for critical parameters.
- Holds back production lots until the required in–process inspections and tests have been completed. When a situation requires that a production lot be processed without completion of required inspections and tests, it is identified for traceability.

The requirements for final inspections and tests are specified in manufacturing and test specifications. Records of inspection and test results are filed according to a Records Retention procedure.

Unless prior agreement has been obtained from the customer or a finished product waiver is approved, product is not transferred to Finished Goods Inventory (FGI) until the activities specified in the manufacturing and test specifications have been satisfactorily completed.

Records providing evidence of the incoming, in–process, and final product inspections/tests are retained in accordance with a Records Retention procedure.

8.7 Control of Nonconforming Outputs

Review and disposition of nonconforming raw material and work–in–process are done according to documented procedures that define the people responsible.

In general, nonconforming material may be:

- Subjected to a 100% inspection
- Reworked to meet specifications
- Used “as is”
- Returned to Supplier
- Scrapped

Where required by contract, some of these actions may require customer notification to obtain the necessary agreement before the product can be shipped.

9 Performance Evaluation

9.1 Monitoring, Measurement, Analysis and Evaluation

9.1.1 General

Within Broadcom, measurements monitor many aspects of the performance of the processes of the Quality Management System and of the characteristics of the products we produce. The results of these measurements are used to demonstrate conformance of the process or product to requirements. When deviations occur or improvements are indicated, the measurements lead to corrective or preventive actions on the product, the process, or the Quality Management System.

Each of the business divisions shall apply suitable methods for monitoring and where applicable, measurement of their management system processes. These methods demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, correction and corrective action are taken, as appropriate, to ensure conformity of the process.

9.1.2 Customer Satisfaction

Broadcom employs different methods in monitoring the customer satisfaction. These include:

- Direct feedback at multiple levels in the organization
- Product returns
- Formal customer satisfaction surveys
- Customer visits

As appropriate, customer satisfaction measures drive improvements

9.1.3 Analysis and Evaluation

Each Broadcom entity and business division determines, collects and analyzes appropriate data to demonstrate the suitability and effectiveness of the management system and to evaluate where continual improvement of the effectiveness of the management system can be made.

9.2 Internal Audit

Periodic audits are performed in the respective entities to monitor and verify compliance with the procedures and methods that establish and define the Quality Management System. Among other things,

the auditor(s) verify compliance to department specifications, the quality procedures, and the records that support the implementation of the quality system. The audits cover the applicable elements of the ISO 9000 series of standards and, where applicable, military standards, contractual requirements of customers, and Broadcom internal requirements.

Internal auditors are trained in proper audit procedures and are independent of the activity they audit. Results of the internal audits are documented, and copies of the audit reports are provided to the managers of the departments audited. Department managers are responsible for deciding on appropriate corrective action in a timely manner or documenting/explaining why no action is required. Copies of audit reports and reports of corrective action taken to correct deficiencies are maintained by the auditing department. Follow–up audits record the implementation and effectiveness of the corrective action taken. The results of internal audits are one of the inputs to the periodic management reviews.

Audits are planned and scheduled on the basis of the status and importance of the activity.

9.3 Management Review

The Quality Management System of each Broadcom's entity is reviewed regularly by the Quality Manager and his/her senior management team to ensure that the quality management system continues to be suitable and effective. The reviews include the assessment of opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives. Records of the review meetings and the actions taken are kept by the Quality Managers or designates in accordance with the requirements specified in a Records Retention procedure.

10 Improvement

10.1 General

Each Broadcom entity maintains Corrective and Preventive Action procedures to ensure that major quality concerns are investigated and actions taken to prevent occurrence or recurrence. Examples of situations where corrective or preventive action may arise are:

- Opportunities or deviations discovered in measures of business processes
- Management review of quality system audits
- Analyses of customer returns or feedback
- In–process inspection and testing
- Incoming inspection of raw material
- Outgoing inspection of finished product
- Reliability monitors
- Design reviews
- Internal quality audits
- Customer audits

The initiation and determination of the urgency of a corrective or preventive action is the responsibility of each department or function. Any changes in procedures or specifications resulting from corrective or preventive actions are documented per the Document Control procedure.

Records of the review meetings and the actions taken are kept by the Quality Managers or designates in accordance with the requirements specified in a Records Retention procedure.

10.2 Nonconformity and Corrective Action

Corrective and preventive action can result from deficiencies detected from reliability monitors, customer return product, Outgoing Quality Assurance test, incoming inspection, in-process inspection, final product test, major change qualification, new product qualification, new material qualification, quality audits, and most importantly, inputs directly from our customers.

When a significant problem is detected, teams with appropriate representatives from Research & Development, Materials, Production, Test and Quality Departments are assigned to determine immediate counter measures, short-term action to prevent occurrence or reoccurrence, the root cause(s) of the problem, and actions required to eliminate the root cause(s). This team also has the responsibility to verify the adequacy and effectiveness of corrective and preventive action. The Quality Department is responsible for follow-up, and any required customer notification in the case of corrective action for products returned by customers (PRT).

Corrective Action

The objective of corrective action is to prevent the cause of a problem from recurring. The responsibility for corrective action lies in the department where the work is being performed.

Records are maintained to show adequacy of corrective action after implementation.

10.3 Continual Improvement

We will continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and the management review.