TABLE OF CONTENTS

COMPANY BRIEF

Zilog Inc. was founded in 1974 by Federico Faggin, the inventor of the world's first microprocessor. Zilog builds semiconductor products that enable design engineers to break through the barriers to creativity and innovation in embedded design. Zilog is the inventor of the award-winning Z80 and Z8 microchip architectures that have been embedded in over a billion end-use devices worldwide such as consumer appliances, vending machines, telecommunications controllers, home automation systems, spacecraft instrumentation, industrial automation systems, and thousands of other products.

Zilog is a global supplier of innovative embedded control solutions. Zilog's products are focused primarily in the micro-logic device segment. Micro-logic devices are processor-based semiconductors that include microprocessors, microcontrollers and digital signal processors that process information, output data or control signals according to programmed instructions and various external inputs. Zilog designs, subcontracts manufacturing and markets both general-purpose and application specific standard products (ASSPs). ASSPs are tailored for a specific application but are not proprietary to a single customer, while general-purpose products are neither application nor customer specific.

Zilog is an IXYS subsidiary with headquarters in Milpitas, California. It has a satellite facility in Meridian, Idaho (referred to as MER). It has a subcontractor management, warehouse, and global support facility in Manila, Philippines referred to as Zilog Electronics Philippines, Inc. (ZEPI). It has more than10 active distributor locations worldwide.

The company employs a fabless model, with world-wide foundry partners selected and qualified to complement its current and future designs. Assembly test and shipment operations are performed at subcontractors located within the Asia Pacific Region. A small percentage are shipped from ZEPI warehouse.

Zilog Electronics Philippines, Inc. (ZEPI) is Zilog's subcontractor management and global shared services facility. Subcontractor management includes assembly, test and warehousing at qualified subcontractors. The semiconductor wafers come from Zilog foundry partners, assembled, tested and shipped to customers and authorized distribution centers throughout the world by the subcontractors. A small percentage is shipped from ZEPI warehouse. ZEPI directly controls the planning of subcontractor manufacturing, test and shipment. Global shared services in support of subcontractor management include customer service, human resources, quality control, information technology and technical support. Customer service assistance are being handled by highly capable and efficient sales offices found in various locations in US, Europe, and Asia

Among the product portfolio of Zilog include Plastic Dual-In-Line Package (PDIP), Plastic Leaded Chip Carrier (PLCC), Plastic Quad Flat Pack (QFP), Low Profile Quad Flat Pack (LQFP), Low Profile Ball

Grid Array (LBGA), Small Outline Integrated Circuit (SOIC), Shrink Small Outline Package (SSOP), Quad Flat No Lead (QFN), iRDA, and development tools.

Zilog Electronics Philippines, Inc. (ZEPI) is subcontractor for IXYS: stacking assembly, electrical testing of SMPD (Surface Mount Power Device), E2/E3, and laser scribing of DCB (Direct Copper Bonding) and shipment of these products. It also warehouses and ships IXYS Finished Goods products from local subcontractors. Zilog Electronics Philippines, Inc. (ZEPI) manages IXYS local subcontractors and suppliers.

Zilog has been in operation since 1978. It is located in Taguig, Metro Manila and has a present workforce of more than 70 employees.

TITLE: QUALITY MANUAL

1 PURPOSE

The Quality Manual shall establish a quality management system for Zilog Electronics Philippines, Inc. that would ensure that products conform to customer and applicable statutory and regulatory requirements and international standards, including continual improvement that would enhance customer satisfaction. The quality management system shall be compliant to ISO9001:2008. The application of the quality system is also aimed at making important contribution to managing costs and risks, meeting quality objectives, driving organizational growth, and enhancing stakeholders' satisfaction. It shall provide a comprehensive overview of the business processes at Zilog Electronics Philippines and interactions at various remote locations and departmental levels.

This Quality Manual is the top level document of ZEPI's Quality Management System in the hierarchy of Zilog specifications consisting of:

- Policy Statement (POLs) – documents that outline direction to be taken by the corporation and its various divisions and departments.
- Procedural Specifications (SOPs) – Documents that support corporate policy by defining the methods to be used at the divisional or departmental levels.
- Detail Specifications – Specifications (PSIs, assembly diagrams, 82C/MKT drawings) that provide the specific directions and criteria needed to accomplish particular tasks.

which together define the Zilog Quality Management System. The Quality Manual is reviewed, revised and approved at least annually or as needed. The Quality Control department is responsible for establishing, maintaining and implementing the Quality Manual. Personnel authorized to initiate changes to the Quality Manual are the QC Manager, the Internal Auditor, and the Document Control Officer with approval of the General Manager.

The responsibility of implementing and continuously improving the quality management system into the ZEPI organizational structure lies with the General Manager and the management staff.

2 SCOPE

The Quality Manual applies to Zilog Electronics Philippines, Inc.

It applies to all its activities related to subcontractor management, warehousing and shipment of semiconductor products. It also applies to the stacking assembly, DCB laser scribing, SMPD/E2/E3 electrical testing, warehousing of IXYS products; shipments, and management of IXYS local subcontractors and suppliers.

The quality management system requirements of the ISO 9001:2008 apply to Zilog Electronics Philippines, Inc. except the following:

- Design and development - Zilog Electronics Philippines, Inc. does not perform any design function nor does it have design engineering in its organization to design Zilog products. The function of design and development is assigned at Zilog's Headquarters at Milpitas, California.

- Validation of processes for production - Zilog Electronics Philippines, Inc. does not validate any of its processes for production where the resulting output cannot be verified by subsequent monitoring or measurement.

The exclusions do not affect the ability of the company, or its responsibility to provide products that meet customer and applicable regulatory requirements.

3 APPLICABLE DOCUMENTS

(The issues of the following documents in effect on the date of use form part of this manual to the extent specified herein.)

Requirements for the application of ISO9001:2008
MIL-Std-883
JEDEC Std.
EIA Std.
All applicable POL, SOP, PSI, diagrams, and drawings
All applicable customer specifications

4 TERMS AND DEFINITIONS

Customer Oriented Processes (COP): Internal/external interface between an organization and a customer

ZiDOC: The electronic documentation system in use at Zilog, Inc., at all of its locations.

Competence: Demonstrated ability to apply knowledge and skills.

Quality Plan: A document specifying the processes of the QMS (including the product realization processes), and the resources to be applied to a specific product, project or contract.

Warehousing*:* Die Bank, Work-in-Process Materials (WIP), Finished goods, pack and dropship.

Outsourced Process: a process that the organization needs for its quality management system and which it chooses to be performed by a qualified subcontractor.

5 QUALITY MANAGEMENT SYSTEM

5.1 General Requirements

Zilog Electronic Philippines, Inc. has established, documented, implemented and maintained a quality management system that is compliant to the requirements of ISO 9001:2008. It continuously strives to improve its effectiveness by complying with the standard, utilizing quality tools (benchmarking, Awards and Awareness, and Supplier Management), stakeholders' commitment, and customer feedback. Continual improvement increases the effectiveness and efficiency of the organization to support its quality policy and quality objectives that would enhance customer and stakeholders' satisfaction.

The quality management system of ZEPI is based on customer focus, leadership, involvement of people, process-based approach, system approach to management, continual improvement, factual approach to decision-making and mutually beneficial supplier relationships. The application of the quality system is not only aimed to provide direct benefits but also make an important contribution to managing costs and risks.

Outsourced processes are managed and controlled to ensure conformance to customer, statutory and regulatory requirements. The type and extent of control is in consideration of the following:

a. potential impact of the outsourced process on the organization's capability to provide products that conform to requirements,

   The subcontractor should have a business continuity plan to recover and minimize impact to the customer in the event of business interruption resulting from emergencies. ZEPI should avoid, as much as possible, sole sourced subcontractor.

b. the degree to which the control for the process is shared,

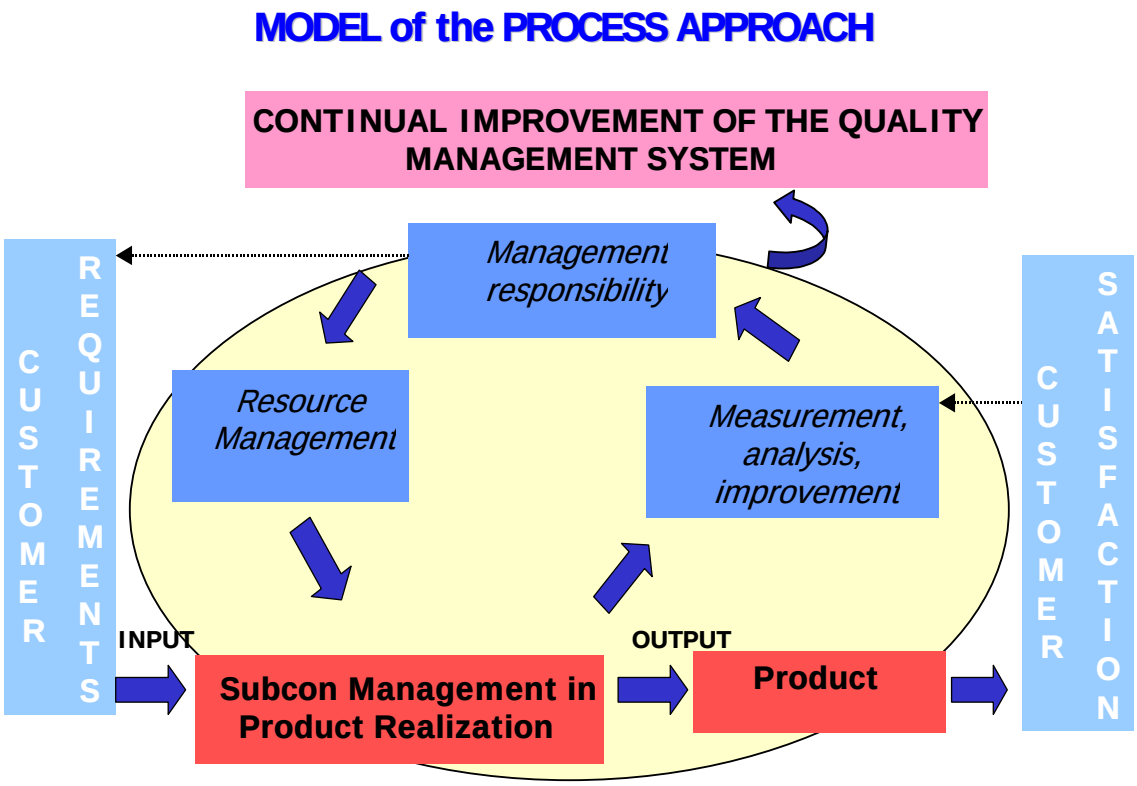
   The processes needed for product realization defines the responsibilities for each process.

c. the capability of achieving the necessary controls through the application of Purchasing requirements,

   Among the qualification requirement is certification of the subcontractor to ISO9001.

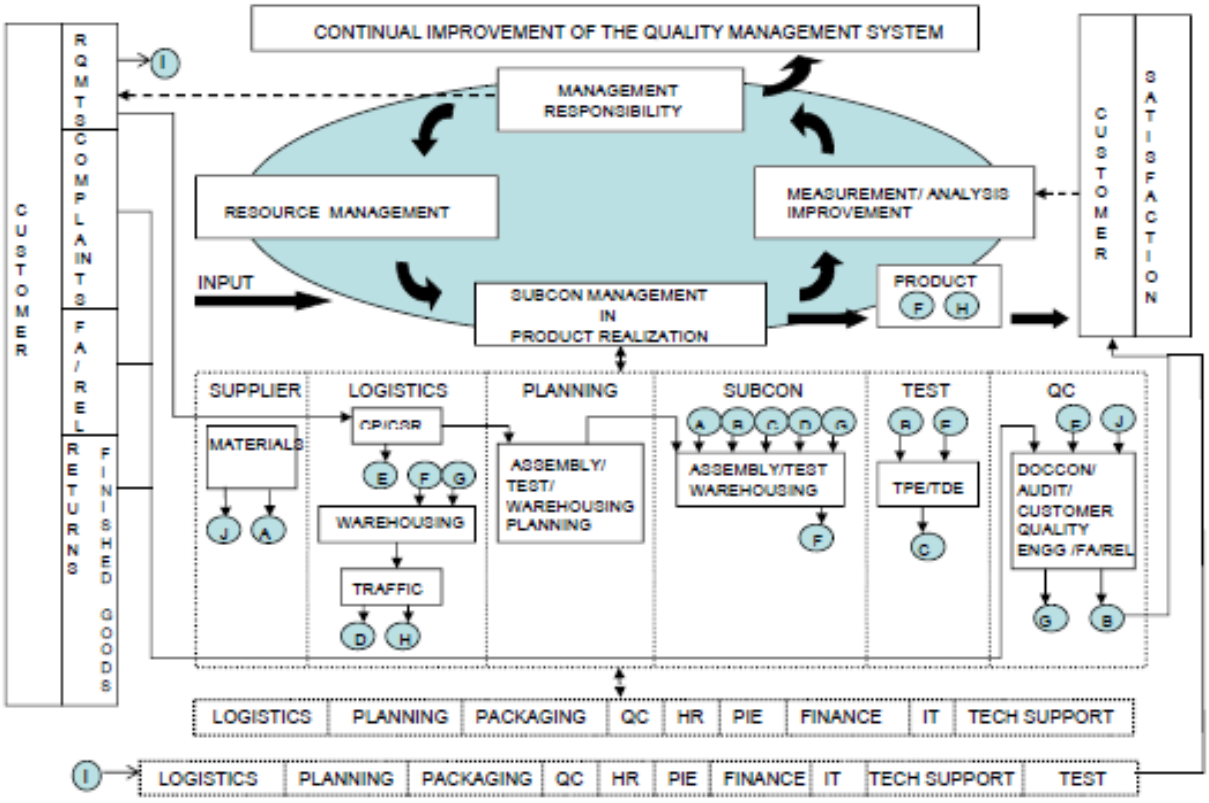
A regular management review of the quality management system is being done to ensure continuing suitability, adequacy and effectiveness including planning and review of changes to the system.

The process-based quality management system including defined COPs (SOP2108, ZEPI-Customer Oriented Processes) are based on this model:

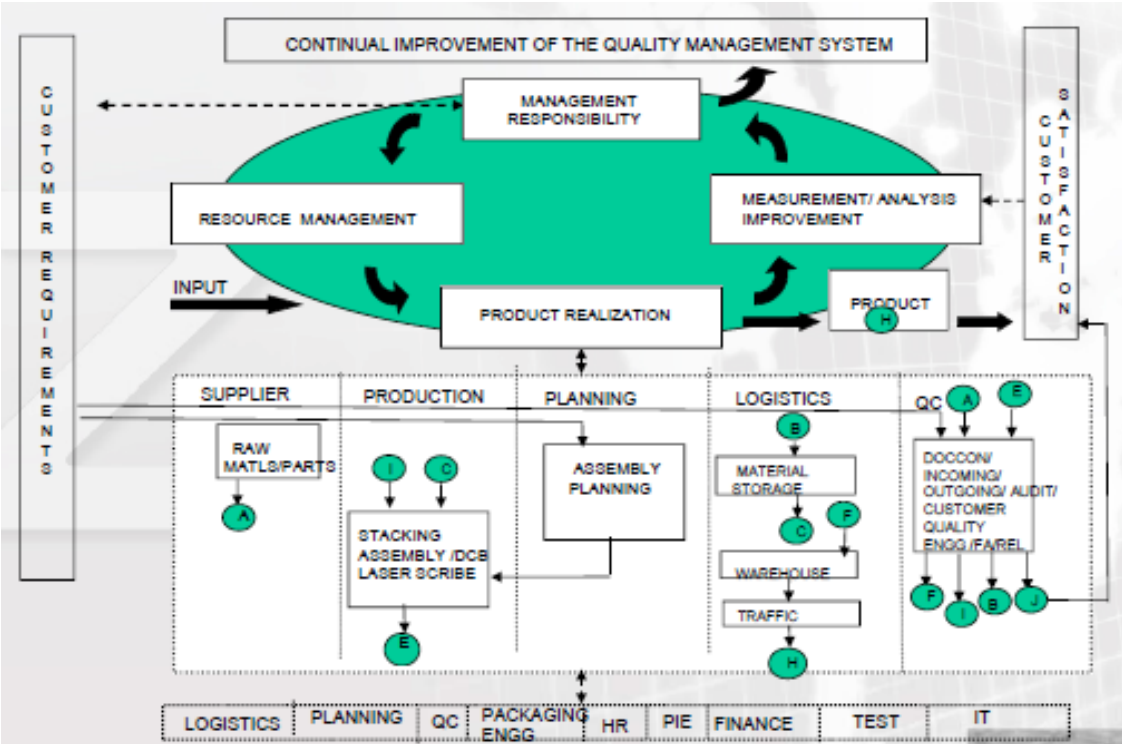


The processed-based quality management system.

MODEL of the PROCESS APPROACH
SUBCONTRACTOR MANAGEMENT



MODEL of the PROCESS APPROACH
ZEPI MANUFACTURING



5.2 Documentation Requirements

5.2.1 General

The quality management system documents include but are not limited to: the documented quality policy, quality objectives, quality manual (QCC1479), Policy Statement (POL), Procedural specifications (SOP, Standard Operating Procedure), detailed specifications (82C/Marketing drawing, assembly diagram, PSI) and quality records defined in SOP0914, Controlled Documents Information Retention Schedule. The document control system is designed to insure the information required to manage the subcontractors, warehouse and global support functions are controlled and easily accessible to the user in a clear and concise manner.

The document control system uses an Electronic Document Management System (EDMS) known as ZiDOC for identifying any approved document, current revision number, description, and other information field collected on each controlled document.

Subcontractors are provided access to applicable documents through the Zilog EXTRASITE or through document control distribution, if no access has been granted.

5.2.2 Quality Manual

The Quality Manual (QCC1479) defines the scope of the quality management system and provides a comprehensive overview of the business processes at Zilog Electronics Philippines, Inc. and interactions at various departmental levels and remote locations. It describes in short or gives reference to system related to product and process development, manufacturing, testing, delivery and subcontracting. It provides references to documented procedures established for the quality management system.

5.2.3 Control of Documents

SOP2113, CORP - Document Management defines the guidelines and procedures for the initiation, approval, receipt, distribution, and changes of documents and specifications. This procedure is aimed at ensuring that the relevant information and requirements to probe, manufacture, and ship products are available at point of use, are current in revision and are legible and readily identifiable. Obsolete documents are identified to prevent its unintended use.

Documents of external origin such as standards and customer specifications are subject to control according to established Document Control procedure.

A timely review of customer specifications and changes related to assembly, test, and shipment shall be done and shall not exceed two working weeks (automotive customers) or three working weeks (non-automotive customers). The procedure is outlined in SOP2118, ZEPI – Customer Specification Review, Approval and Implementation Procedure. Changes shall be documented to specifications by the concerned department, distributed, and implemented as applicable. Implementation of applicable change takes effect on the change notification release date. Documents like control plan and FMEA shall also be updated where applicable.

5.2.4 Control of Records

Records shall remain legible, readily identifiable and retrievable. Concerned departments shall store, file and maintain their respective quality records in locations where they are protected against deterioration, damages, or losses. It shall keep an index of records on file and initiate appropriate disposition as necessary according to archival and deadfile procedure.

Deadfile procedure reference is SOP1689, ZEPI - Deadfile Procedure. Records retention is referenced in SOP0914, CORP - Controlled Documents Information Retention Schedule. Regulatory requirements are complied with in personnel and finance records. Specific customer retention schedule that exceeds Zilog's standards shall be documented in SOP0914. Records shall also include customer specified records.

6 MANAGEMENT RESPONSIBILITY

6.1 Management Commitment

The management of Zilog Electronics Philippines, Inc. is committed to implementing the quality management system and continually improving its effectiveness to the satisfaction of customers, stakeholders, and other interested parties.

Management commitment is evidenced in the Quality Policy, communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements, establishing the quality objectives in support of the quality policy, ensuring that the objectives are met, conducting regular management review and providing resources in meeting these objectives.

Communication should be in the form of meetings, emails, and/or bulletin board postings, and intranet.

6.2 Customer Focus

Customer support and satisfaction is a major focus at ZEPI and the whole Zilog organization as evidenced in the Zilog quality policy. Customer requirements are determined during the contract review such that customer satisfaction is enhanced.

6.3 Quality Policy

QUALITY POLICY STATEMENT

zilog
An IXYS Company

QUALITY POLICY

Delight our Customers by…

- Doing the job right the first time
- Making and meeting commitments
- Excelling through planning and teamwork
- Driving continual improvement with Best Known Methods
- Respecting team members and making Zilog a great place to work

6.3.1 Zilog's philosophy towards quality has been consistently aimed at continuous product improvement and effectiveness of processes associated with subcontractor management and warehousing that conform to all statutory and regulatory requirements for total customer satisfaction.

It has been a Zilog tradition that customer is the main driving force in a company-wide endeavor to achieve the highest quality possible through excellent management of its resources - personnel, equipment, materials, and environment.

ZEPI is committed to this policy and ensure that this is communicated and understood at all levels of the organization.

6.4 Planning

6.4.1 Quality Objectives

The management of Zilog Electronics Phils., Inc. defines the quality objectives and measurements that are in support of the Zilog mission and vision and used to deploy the quality policy. The objectives are aimed to improve the organization's operational effectiveness and customers' satisfaction.

These objectives reside in ZAZ05-0002 and are part of the PM (Performance Management) of the responsible department manager/s. The objectives are measurable, achievable within a time period, and are regularly reviewed during the Quarterly Management Review and the monthly Assembly/Test Operations (ATO) review.

The quality objectives are communicated by the responsible department manager and/or the Quality Management Representative to the organization for their support in achieving them. Various objectives consistent with and in support of the quality objectives at different levels of the organization are also set and reviewed during the performance review.

6.4.2 Quality Management System Planning

The quality management system planning is carried out to meet the general requirements of the quality management system and the quality objectives. Quality planning in Zilog encompasses the whole facet of operations with focus on the following:

- Identifying of processes needed for the quality management system and their application;

- Determining the sequence and interaction of these processes;
- Determining criteria and methods needed to ensure that the operation and control of these processes are effective;
- Ensuring the availability of resources and information necessary to support the operation;
- Monitoring, measurement and analysis of these processes; and
- Implementing actions necessary to achieve planned results and continual improvement.

Changes that could affect the quality management system are reviewed and quality planning is carried out to maintain the integrity of the system.

In Zilog, quality planning becomes an integral part of process and product qualification. The activity includes identification and acquisition of any controls, resources and skills that may be needed to achieve the required quality.

6.5 Responsibility, Authority and Communication

6.5.1 Responsibility and Authority

The responsibility of each function is defined on individual job description, **SOP2065-Form2**, Job Description

.

6.5.2 Management Representative

The Quality Manager is designated by the General Manager as Management Representative and has defined authority and responsibility for ensuring compliance to the ISO9001:2008 standard. She shall be responsible in establishing, implementing, maintaining, and ensuring that the quality system is functioning in accordance with customer requirements and the standards. She shall be responsible in the reporting of the performance of the quality management system to top management for review and as a basis for continual improvement. She shall be responsible also for promoting awareness of customer requirements throughout the organization.

6.5.3 Internal Communication

Internal communication shall be carried out through meetings with employees or with responsible section/department, through electronic mail (e-mail), through bulletin board postings, or the intranet with regards to the quality policy, objectives and effectiveness of the quality management system.

Where desired, external communication with interested parties shall be done through facsimile, memo, electronic media, industry association publication, media, paid advertisement, meetings, or through Zilog website.

6.6 Management Review

6.6.1 General

Top Management of ZEPI which consists of the General Manager, directors and managers regularly review the quality management system for suitability, adequacy and effectiveness.

6.6.1.1 Quality Management System Performance

Manufacturing Module Review

Management review is carried out through the issuance of a quarterly Quality Management System Report. Results are discussed during the quarterly review with top management and/or senior staff in attendance. The discussion focuses on:

Quality objectives
Status of preventive and corrective actions
Quality audit reports
Customer feedback
Review of quality policy
Changes that would affect the quality management system
Update on action items from previous management review.
Improvements

The review output includes actions related to improvement of the effectiveness of the quality management system, improvement of the product quality, and resources necessary to support programs.

Monthly Assembly/Test Operations (ATO) Review

The other avenue of management review is the Monthly Assembly/Test Operations (ATO) review attended by the General Manager and all first line managers. In this meeting, quality performance in all areas of concern and other pertinent indices related to quality, subcontractor performance and issues, customer complaints and feedback, corrective and/or preventive actions, and recommendations for improvement are presented and discussed.

7 RESOURCE MANAGEMENT

7.1 Provision of Resources

Requirements are identified to ensure adequate resources are provided in carrying out and improving the Quality Management System for total customer satisfaction.

7.1.1 Management and Operation Organization

ZEPI plant is headed by the General Manager, Philippine Operations whose scope of operations covers the Philippines. He is responsible to the Vice-President for Operations for the administration and operation of this facility.

The General Manager has the main responsibility to uphold and support the objectives and commitment to quality in accordance with company and customer requirements. He has under his control and supervision the various departments from which to carry out and translate the overall quality objective into implementation, as follows:

7.1.1.1 Quality Control:

The quality organization of Zilog Electronics Philippines, Inc. operates under certain responsibilities from which it derives its functions and commitments. One responsibility is to protect against the shipping of products that will cause customer problems. This is accomplished by evaluating product design and manufacturing results for conformance to requirements at measurable points in the life of the product.

The other responsibility is to aid the improvement of performance in all functional areas and subcontractors. This is accomplished by analyzing product evaluation results, Quality Control indices, results of audit, customer and subcontractors' feedback to identify opportunities for corrective and preventive actions, continuous improvement, defect prevention and reduction of variation and waste.

ZEPI Quality Control Department is independently headed by the QC Manager who is responsible to the General Manager, Philippine Operations, for administering the company quality functions and programs in accordance with customer and company requirements. Likewise, the QC Manager holds the function of a management representative with defined authority and responsibility for ensuring that the requirements of ISO-9001:2008 Standard for Quality are implemented and maintained. The QC Manager has a dotted

line responsibility to the Director for Quality & Reliability who is based in Zilog, Meridian Idaho, USA.

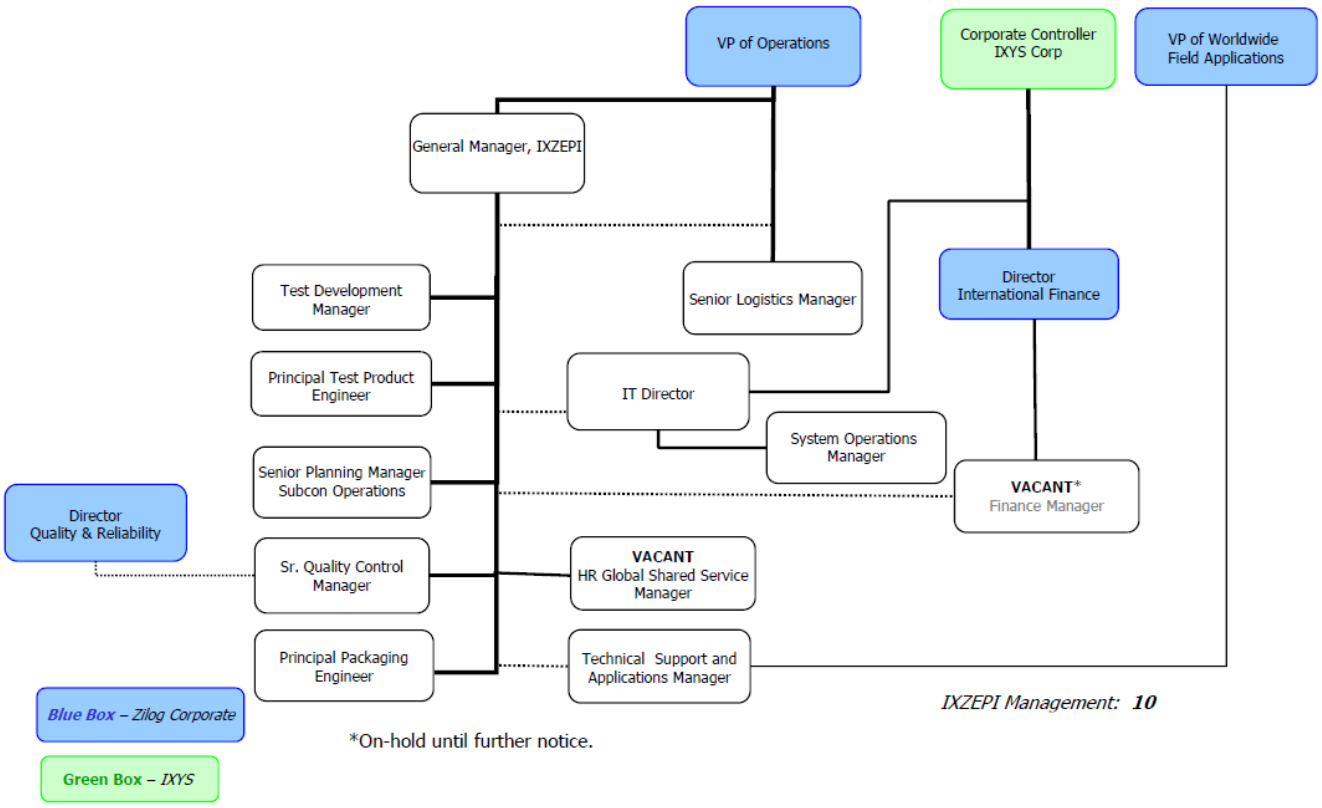
The QC Manager is responsible for administration of four (4) main sections in the organization: Document Control, Quality Control Engineering, Quality Assurance, and Customer Quality and Reliability.

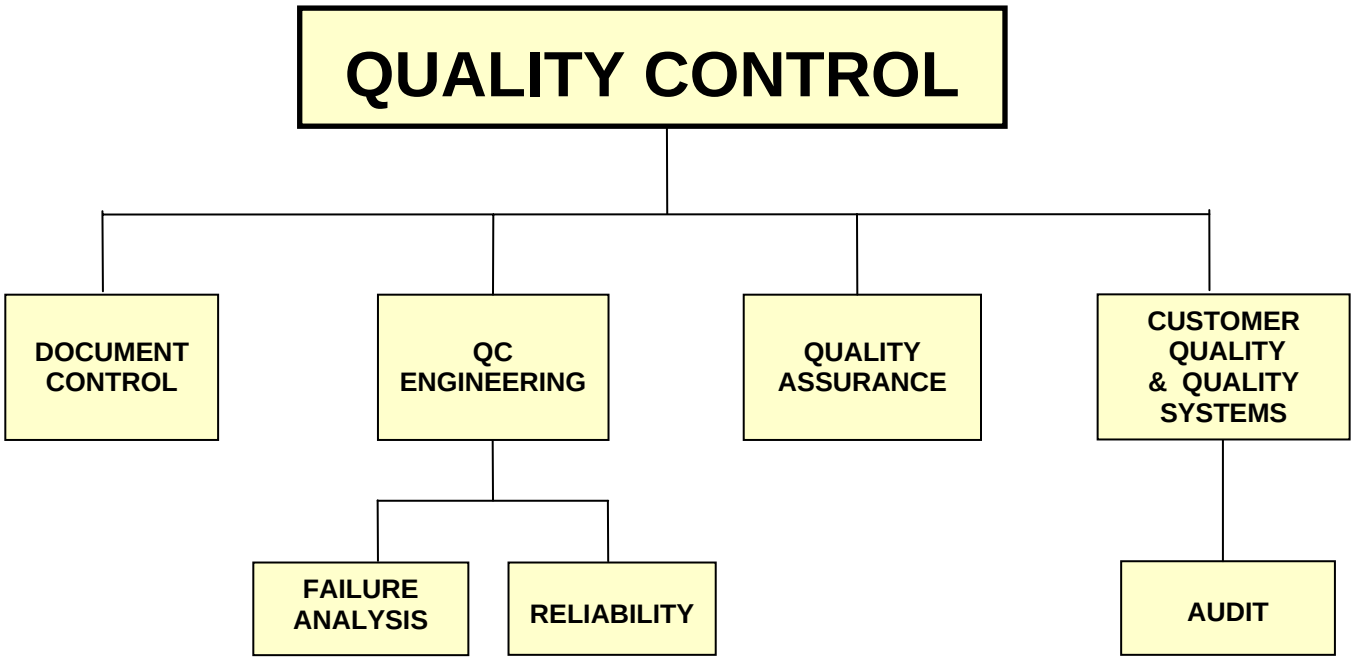
7.1.1.2 Other Departments

Test Product Engineering
Test Development Engineering
Logistics
Planning
Plant and Industrial Engineering
Human Resources
Finance
Information Technology
Subcon Management
Packaging Engineering
Tech Support

The functions of each department are detailed in the functional charts that follow.

ORGANIZATIONAL CHART





DC

- ZiDOC (EDMS) Admin and maintenance
- ZiDOC Extrasite Admin and maintenance
- Receipt and control of change notices, test tapes, DC reports, waivers, quality reports
- Deadfile maintenance
- ROM admin
- Oracle item master maintenance
- Plate 2 creation
- IXYS Support

FA

- Low yield lots at subcontractor electrical test; QA rejects
- Customer failure analysis
- Subcontractor wafer yield analysis
- IXYS Support

REL

- Product, process, subcon qualification (STWR/STR)
- Reliability monitors
- Subcon re-qualification
- FIT monitor
- IXYS Support

QA

- Incoming and Outgoing quality controls, packaged units and indirect raw materials
- FG and Die Bank monitoring
- Monitoring of subcontractor quality indices
- Die banking
- IXYS Support

AUDIT

- Maintenance of Quality System (ISO9001:2008)
- Subcon audit
- IXYS Support

CUST QA/REL

- Automotive customer requirements and issues
- Customer surveys/inquiries
- Quality reports
- RoHS/ /REACH compliance
- IXYS Support

TEST PRODUCT ENGINEERING

- Dev't of multisite testing
- Test time improvement
- Process optimization
- Yield enhancement
- Electrical failure analysis
- Program revision and evaluation
- Subcon qual/support
- Reduction in LRR/PPM
- Tester and product qual
- Competitive analysis
- CFA, STWR and eng'g eval
- UTB set-up/correlation and documentation
- Meridian Product Engineering Support
- Test Program conversion
- Xtools Test Support
- Test Equipment Maintenance
- Rom Web Administration
- SMPD/E2/E3 testing
- IXYS Support
- DCB Laser Scribe Operation

TEST DEVELOPMENT ENGINEERING

- Test program development
- Test program conversion
- Software Utilities development
- Test Hardware prototype development
- Device characterization
- Systems administration of Eng'g computers
- Competitive Analysis
- IXYS Support

LOGISTICS

FG/ SHIPPING

- Handles warehousing, packing, labeling and dispatching of cargo
- Provides headcount support for tools activity
- Ensures availability of packaging supplies for shipment
- Handles physical receiving of DSR/RMA and CFA and data entry in Oracle
- Provide documents for data entry of lots received from subcon, customers and test
- Disposal of scraps and physical inventory
- Physical count
- IXYS and S3 Product Support

PURCHASING

- Handles generation or PR/PO
- Handles negotiation on terms & conditions of purchase
- Works with vendor on delivery & other issues
- Handles vendor set-up in Oracle
- IXYS and S3 Support

TRAFFIC

- Handles ship confirmation in Oracle to generate Commercial invoice and packing list both for ZEPI and subcon
- Handles documentation requirements for imports and exports as well as government compliance
- Handles billing audits for logistics related cost
- Conducts market survey for logistic provider service
- Monitors arrival of cargo and confirms delivery from receiving party
- Coordinates on time delivery of required parts and materials to meet schedule
- IXYS and S3 Support

CUSTOMER PLANNING

- Schedules order based on WIP availability
- Monitors accuracy of shipment dates reflected in the system
- Ensures die availability, assembly and test delivery, and shipment to meet commit dates
- Coordinates with CSR's, logistics, planning and subcon to meet commit
- Answers delivery, leadtime and product availability inquiries from CSR's and supply chain organization
- Propose required starts for foundry, submits rom pull to foundry
- S3 Product Support

CUSTOMER SERVICE

- On time order entry for non-EDI orders, CFA, DSR and RMA, cancellations and mask orders in Oracle
- Order maintenance (change in CRD in compliance to T's and C's) and order cancel responsibility(e.g. booked against business rules)
- Maintain order management for sample ordered through web and Oracle
- Keeps hardcopy confirming in ZiDOC and initiates Customer Master Transmittal form
- Handles customer inquiries e.g. leadtime and product availability via email
- Acts as conduit between customers, operations, finance, logistics and planning e.g. customer notifications, compliance request
- IXYS and S3 Support

PLANNING

PRODUCT, PROBE AND TEST PLANNING

- Plans, schedules, and monitors loading and completion of all products.
- Meets all shipment requirements based on backlog.
- Supports delivery performance to OSD, CRD, and CSD.
- Generates Build Plan and separate plans for Wafer Receipt, Probe, Mounts, and Final Test.
- Conducts Probe and Final test capacity review and coordinates requirement for additional capacity to ensure all demand will be supported.
- Conducts wafer flash analysis.
- Monitors and coordinates units for reprocessing.
- Conducts review and publishes updates on revenue status.
- Conducts validation/review on all Fab, Probe, Final test, and backend billings.
- Proposes standard wafer per hour for Probe and units per hour for Final Test.
- Reviews subcontractors cost related to Probe and Final Test.
- Reviews/submits AR financial justification.
- Allocates space for additional equipment and personnel and recommends office layout.
- IXYS Support

INVENTORY AND DATA CONTROL

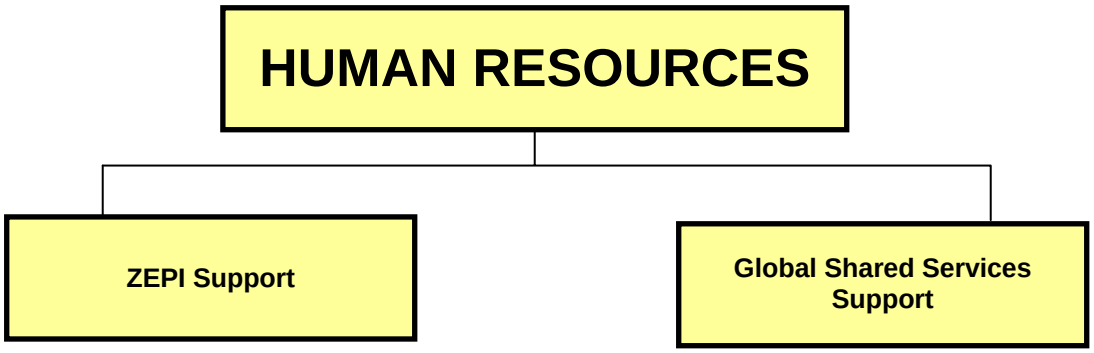
- Directs all activities of OSFM.
- Coordinates and reconciles results of quarterly and year-end inventory count.
- Ensures accuracy and integrity of OSFM/Oracle WIP and inventory.
- Monitors ISR, DMF, MRB for timely OSFM/Oracle data entry.
- Updates obsolete and inactive parts for ZUS review and approval to scrap.
- Assists in preparing Finance inventory forecast, review and analysis.
- Reviews non-moving materials and recommends quarterly scrap list.
- Assists in identifying usable and non-usable inventory.
- Provides test scenarios and testing of OSFM new features and upgrade.
- Generates BOM and Routing files for OSFM upload.
- Interface between end user and IT for each respective OSFM modules.
- IXYS Support

SUBCON OPERATIONS

- Manage the business relationships with our Assembly and Test partners.
- Establish and maintain programs for monitoring and improving Subcon performance on key indices supporting Zilog's business to include:
  - Capacity
  - Pricing
  - Delivery, cycle time, yield, customer service, quality
- Load the subcons to support dynamic business demands and advise ZEPI Planning organization regarding delivery dates of specific lot numbers of specific products.
- Evaluate subcon capacity vs demand and identify alternative suppliers to support upcoming volume demand and cost targets.
- SAG reports and analysis: Actual vs Plan and Forecast (assembly and die sales).
- IXYS Support

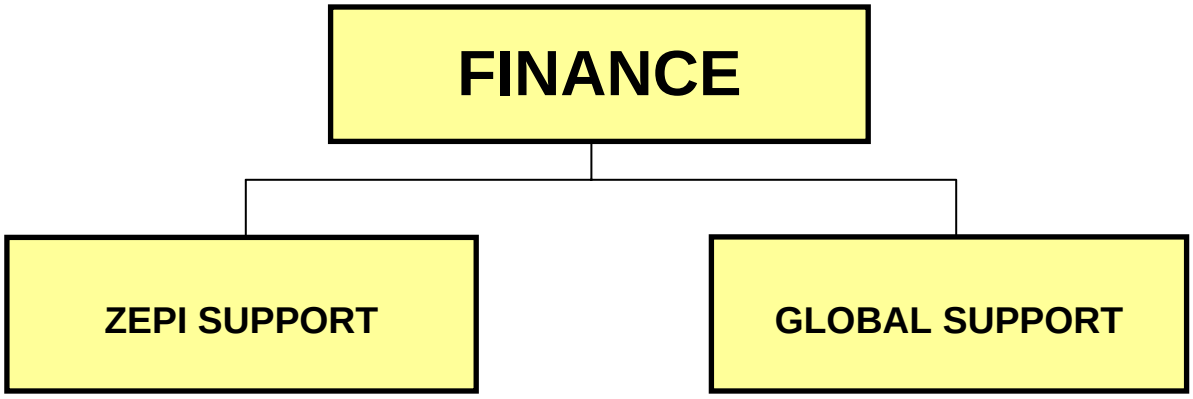
PLANT AND INDUSTRIAL ENGINEERING

- Operation and tending of facilities equipment
  - Compressed dry air system
  - Air conditioning system
  - Vacuum system
  - Fire alarm system
  - Air Ventilation/Exhaust System
- Monitoring of environment temperature and relative humidity
- Monitoring and recording of daily electricity consumption
- Repair, maintenance and calibration of facilities equipment, some QC, and Warehouse tools and equipment
- Support on ISO activities
- Work Order Request processing
- Coordination of overall Safety Programs/Activities
- Pollution Control
- Implementation of approved office and equipment layout
- Perform preventive maintenance of facilities equipment and checking/encoding on PMS
- Conduct monthly checking of water potability test (Drinking Water)
- Coordination and monitoring of construction activities and other outside services
- Coordination and renewal of Government permits (Electrical, Mechanical, Safety, etc.)
- Operation of Stack Assembly Line



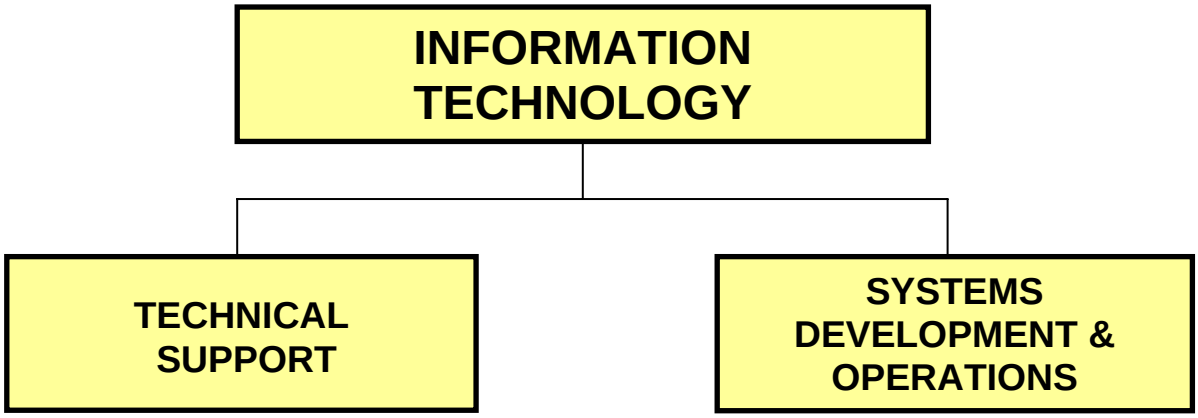
- Headcount Planning and Monitoring
- Recruitment & Selection
- Onboarding and New Hire Integration
- Employee Training & Organizational Development
- Compensation & Benefits Administration
- Performance Administration
- Employee Relations & Services
- Audit Compliance
- Policy Implementation
- Corporate External Relations

- Compensation & Benefits Administration
- HR Surveys
- Policy Review & Strategy Formulation
- Contract Administration
- HR Process Improvement



- Budget, forecast and controls
- Fixed Asset management
- Financial accounting, reporting & analysis
- Treasury & payroll
- Accounts payable
- Interco accounting
- Government reporting
- SOX maintenance
- Sub-con reports
- Taxation
- Retirement plan
- Financial audit

- Bookkeeping for Zilog & IXYS Int'l locations
- FOSS and FIBU AP support to IXYS I'ntl locations
- MSRP reports generation and analysis for Zilog & IXYS Int'l locations
- Worldwide FA management
- Property Taxes and Insurance
- Financial accounting, reporting & analysis - Zilog WW
- Worldwide Invty. management
- Accounts payable – Zilog US, Cayman and IXYS BV
- Interco accounting
- SAG reporting
- SOX maintenance
- Distribution support
- Oracle Reports generation
- Revenue Accounting
- Accounts Receivables Accounting for Zilog and IXYS BV
- Cash forecast and controls
- Financial audit and taxation assistance
- Administration/assistance on local requirements



- Data communication
- Technical support
- Data back-up maintenance
- Software installation & upgrade
- Systems administration
- Network administration
- User planning and support
- SOX Compliance for Gen Computer Control
- Outsourcing Management

- Electronic data processing
- Applications support
- Systems analysis and design
- Database modeling
- Program development
- Package software customization
- Package software deployment
- Compliance with SOX Change Request
- SOX Compliance for Application Control
- Outsourcing Management
- IXYS Support

PACKAGING ENGINEERING

- Responsible for Worldwide Packaging Engineering
  - Alternative packaging solutions
  - New technology updates
- Engineering support to subcontractors.
- Coordinate with subcons for assembly yield and improvement projects.
- Coordinate with subcons on package, technology and material qualifications.
- Provide Documentations: Engineering drawings (assembly diagrams, 82C and 71C drawings), and assembly specification
- Identify and qualify subcontractors to support additional package and technology requirements
- Support Tools overall coordination
- IXYS Support

TECHNICAL SUPPORT

- Communication and resolution of customer technical issues
- Competitive Benchmarking
- Reference designs, system level characterization and debug
- Develops application notes
- Attends trade show and “works” the booth
- Conduct technical training

7.2 Human Resources

7.2.1 General

Resources are selected on the basis of appropriate education, skills, and experience as indicated in SOP1963, ZEPI – Hiring Standards, and competence enhanced through continuous training.

7.2.2 Competence, Training and Awareness

Personnel competence, is measured and reviewed through Management By Objectives, MBO.

The MBO is used to measure performance against a set of objectives and define continuous improvement and developmental plans for employees.

Training are provided to improve competence and are evaluated for effectiveness on the next competency review.

Part of training is personnel awareness of the product requirements, relevance of their job, and how they contribute to the attainment of the quality objectives. Awareness of the quality management system and the quality objectives for new hires is discussed by the training section during the employee's assimilation. Plant wide awareness of the quality management system and quality objectives is done through meetings, bulletin board postings, emails, and quality audit.

Training records are kept filed per prescribed retention period.

7.3 Infrastructure

The infrastructure needed includes the building, workspace and utilities; equipment, both hardware and software; and support services like information and communication technology and transport facilities.

Zilog is compliant to ISO 14001, Environmental Management System, which continuously improves the environment towards a healthy and safe workplace. The work layout and locations do not only promote health and safety of employees but also work efficiency.

Measuring and test equipment are covered with a preventive maintenance and calibration program to ensure accuracy and maintain efficiency.

Support service like information and communication technology supports information flow across functions and automates data gathering and processing which results to ease in operation and in data analysis.

7.4 Work Environment

ZEPI's concern for the environment is embodied in its compliance to the ISO 14001 standard.

Guidelines and procedures to ensure and maintain a controlled work environment (temperature, humidity, electrostatic discharge) and facilities necessary to product requirements are contained in SOP1566, ZEPI - Environmental Requirements and SOP1604, ZEPI - Electrostatic Discharge Control.

8 PRODUCT REALIZATION

8.1 Planning of Product Realization

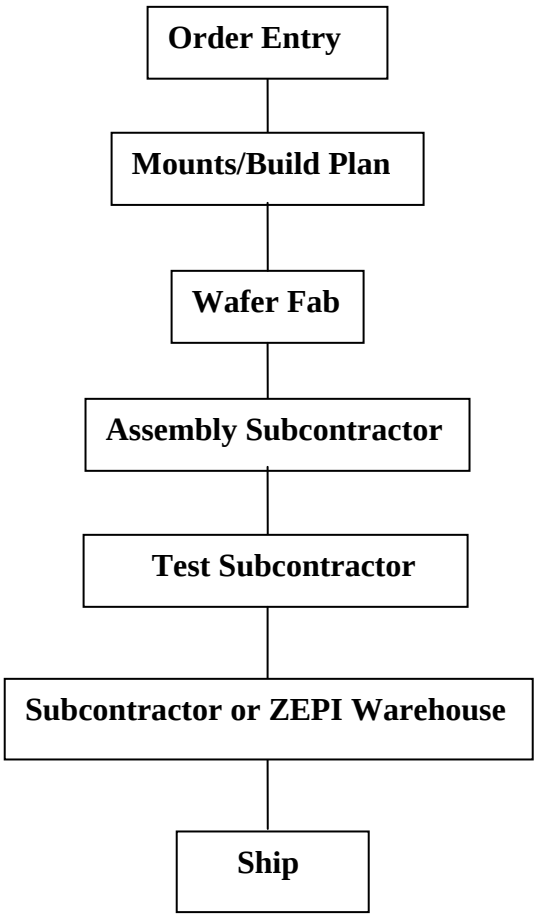
8.1.1 For Zilog Products

	Responsibility	Reference specs
Contract Review including review of customer requirements and contract negotiation. Other requirements that may arise from time to time are communicated to customer service through email and/or telecon.	Customer Service and Customer Planning	SOP1004, CORP - Order Management and Customer Service Functions
Generate and review of build plan to determine requirements in terms of subcontractor capacity, and in some cases, program availability for engineering and/or customer samples.	Planning and Subcon Operations	SOP1822, ZEPI – Build/Wafer Plan Report Generation
Execute the build plan.	Assembly & Test Subcontractor	All applicable ZEPI & subcontractor specs & test programs, PSI, ADs, drawings and Subcon Rating guide
Monitor subcon WIP assembly and Test schedule .	Planning and Subcon Operations	SOP1822, ZEPI – Build/Wafer Plan Report Generation

Measure assembly and test performance	Subcontractor	QBR
Monitor subcon assembly and Test Performance	Packaging, QC, Test, Customer Service, Subcontractor	ZAZ05-0002/MBO/ QBR
Monitor shipment schedule.	Customer Planning, and Logistics	SOP1822, ZEPI – Build/Wafer Plan Report Generation

Note: ZEPI's role in product realization starts with order entry.

8.1.1 .1 General Process Flow of Product Realization



Note: Refer to SOP1594, ZEPI - Subcon Assembly, Test and Warehousing Guidelines.

8.1.2 For Stacking Assembly

	Responsibility	Reference specs
Review 6 months rolling forecast from IXYS UK or work order list from JDE	Planning	SOP2242
ZEPI to compute for materials, capacity, and headcount	Planning	SOP2242
ZEPI to review PO and Work Order from IXYS UK	Operations/ Planning/Stores	SOP2242, SOP2228
Stores issues raw materials needed for the work order	Stores	SOP1598
Execute the Work Order	Operations	BOM, SOP2240, SOP2228, SOP2232 SOP2233
Monitor WIP	Operations	SOP2240, SOP2228 SOP2232, SOP2233
Monitor Stacking Assembly Performance	Operations ,QC	SOP2025, SOP2243 SOP2231,SOP2242
Monitor shipment	Operations	SOP2234

8.1.3 For SMPD/E2/E3

Review IXYS' 3 months of rolling forecast for capacity allocation at ZEPI Test	Planning	SOP1594
Subcon assembles FKTs released by IXYS	Subcon	Subcon specs
ZEPI tests	Operations	SOP2222
Monitor WIP assembly and test	Planning/ Operations	SOP1594
Measures assembly and test performance	Planning, QC Packaging, Test	ATO

Monitor shipment	Planning	IXYS' shipping invoice
8.1.4 For DCB Laser		
Review IXYS' 3 months of rolling forecast or PO for capacity allocation at subcon DCB etch, plating and ZEPI laser scribe.	QC/Planning	SOP1594
Subcon DCB etch or subcon DCB etch and nickel plate	Subcon	Subcon specs
ZEPI DCB laser scribe or laser scribe and singulate	Operations	SOP2244, SOP2238
ZEPI ships	Operations	SOP2245
Monitor WIP and shipment	Operations/ Planning	SOP1594
Measures subcon and laser scribe performance	TPE	ATO

8.2 Customer-related Processes

8.2.1 Determination of Requirements Related to the Product

Customer requirements, including requirements for delivery and post-delivery activities, requirements not stated by the customer but necessary for specified or intended use, statutory and regulatory requirements and additional requirements are determined during the contract review. Agreements and contracts with the customer including specifications and agreements that differ from standard are recorded in the customer service customer order file and customer master file. These activities are coordinated and reviewed by Customer Service and Customer Planning.

Post-delivery activities include any after-sales product service provided as part of the customer contract or purchase order.

In the case of IXYS, requirements are determined from IXYS specs and/or drawings.

8.2.2 Review of Requirements Related to the Product

Product requirements that differ from the standard are defined and documented in the Customer Service order file and the customer master file and into the Product Specification Index or the PSI. In cases of contract or order requirements differing from those previously expressed, Sales or the appropriate Zilog departments are notified and the differences resolved before the order could be processed.

The ability to meet requirements are reviewed and ensured during the Product Specification Index review/approval.

Records of the results of the review and actions arising from the review related to the customer order are documented in the customer order file and the customer master file. Results of the review and actions arising from the review of the Product Specification Index is traceable in the workflow.

If the customer does not provide a documented statement of requirements, Zilog standard requirements shall apply and a Sales Acknowledgement is sent by Customer Service to the customer upon order approval.

In the event of changes to product requirement and awareness of relevant personnel to the changes, SOP2113, CORP - Document Management and SOP1630, ZEPI - Specification Implementation and Audit Procedure apply.

8.2.3 Customer Communication

Customer requirement related to product information is available at the world-wide web at www.zilog.com.

Inquiries, contracts or order handling including amendments are communicated through email, telephone, Oracle, or EDI systems.

Customer feedback and complaints are communicated through email, telephone, letter, or fax.

8.3 Purchasing

8.3.1 Purchasing Process

ZEPI has established procedures and guidelines for material procurement, calibration service, and supplier control that ensure all materials used conform to specification and supplied by qualified and approved supplier. These are contained in the following specifications:

SOP1601: ZEPI - Incoming Quality Control Procedure
AVL0004: ZEPI - Subcontractors Qualified Services AVL
SOP1600: ZEPI - Purchasing Procedure
SOP1549: ZEPI - Control Procedure for Non-Conforming Materials
SOP1554: ZEPI - Subcontract Test Facility Qualification and Disqualification
SOP1575: ZEPI - Vendor Control Procedure
SOP1551: ZEPI - Subcontract Assembly Qualification and Disqualification

As part of supplier management, ZEPI requires our wafer fab, assembly, test and dropshipment subcontractors to be certified to ISO9001:2008 and encourages other suppliers to implement the same.

8.3.2 Purchasing Information

The purchasing procedure in SOP1600 describes all relevant information and documents to complete a purchase requisition from its initiation to review and approval. Information shall include description of the product to be purchased, specifications, drawings, relevant technical data including quality requirements, where applicable.

8.3.3 Verification of Purchased Product

Purchased products from suppliers or subcontractors are verified to ensure compliance to specified purchase requirements.

SOP1601, ZEPI - Incoming Quality Control Procedure outlines the inspection requirements for direct and indirect materials.

For non-IQCed materials and services, the requisitioning department inspects and evaluates based on the requirements of the purchase requisition.

Inspection of subcontracted products are outlined in SOP1650, ZEPI - Incoming/Outgoing Inspection of Zilog Products.

Inspection and/or testing is done on a sampling basis. A skip lot incoming inspection program is existing based on the supplier's incoming performance.

When verification at the supplier's premises is required, the same inspection and testing procedures apply. This may not be indicated in the PR as the requirement sometimes happen after the PR is approved but communication of the requirement is coursed through email by Subcon or Planning group.

Only accepted products are dispatched and non-conforming materials are handled through SOP1549, ZEPI - Control Procedure for Non-conforming Materials.

Performance of supplier is regularly monitored through the use of indicators among them are quality, cycle time, cost, delivery, and customer service. Subcontractors are rated based on delivery, customer service, quality which includes customer complaints, yield, cycle time, volume/price performance and loading performance.

8.4 Production and Service Provision

8.4.1 Control of Production and Service Provision

The chain of processes that produce tested good units starts with pure silicon wafers, probe, assembly, and test. Wafer fabrication, assembly, and test are subcontracted**.** Control of production at the wafer foundries and subcontractors are validated during the initial qualification audit, the regular audit, and the subcontractors certification to quality systems.

Each product shall conform to the marketing outline and the CPS. Each subcontractor process has corresponding procedural specifications that include work instructions, criteria for workmanship, manner of monitoring, inspection or test and safety precautions, where applicable. Inspection and test equipment (including test software) used to demonstrate the conformance of product to the specified requirements, are controlled, maintained and calibrated.

In the event of a change in process, introduction of a new process, new equipment and new materials, the subcontractor notifies Zilog for approval prior to implementation.

Product shipment ensures quality products are served and delivered to the customer on time. Post delivery activities like the engineering support to customer application is the responsibility of Zilog worldwide sales group. Reliability and re-qualification is the responsibility of Quality Control.

Above controls and service provision shall apply to in-house production at the stack assembly, DCB laser and SMPD/E2/E3.

8.4.1.1 Control Plan

SOP2114, ZEPI – Control Plan and the subcontractor's control plan lists the controls used for the manufacturing, test and shipping methods for monitoring special characteristics defined by the customer and the organization, customer

required information, if any, and reaction plan when the process becomes unstable or not statistically capable.

The control plan is reviewed and updated regularly or when changes occur affecting product, measurement, logistics, or supply sources.

8.4.2 Identification and Traceability

Throughout the product realization at the subcontractor and in-house production, the bill of materials and the product status are traceable through lot card or traveler. The lot card or traveler contains lot information such as product description, lot number, quantity, material lot number, operator, equipment, and information needed for each processing station.

Carriers at assembly and test like trays and boxes respectively are traceable to the lot based on the tray code and labels.

8.4.3 Customer Property

Zilog shall exercise care to protect and safeguard IXYS' consigned equipment and shall maintain them per standard equipment preventive maintainance. Consigned equipment shall be identified in the PMS system and on the individual equipment PM/calibration records. In case of lost, damage or unsuitablility for use, Zilog shall notify IXYS and maintain records.

8.4.4 Preservation of Product

Preservation of the product during subcontractor or in-house processing, warehousing and delivery to the customer includes identification, handling, packaging, storage and protection in order to maintain conformity to requirements.

Lot identification prior topmark is through the lot card or traveler. Once topmarked, the date/BB code will trace the lot.

Handling includes ESD control. This is observed at any station like grounding of work areas and storage racks/cabinets, wearing of ground strap or heel strap, and finger cots.

All work-in-process and finished products are handled properly and appropriately such as the use of wafer cassettes/conductive trays, production trays, antistatic tubes, tape and reel, and the use of pick-up tool on QFP and LQFP devices.

Raw materials are kept in their original packing conditions when received. Finished products are sealed/packed appropriately in static shielding bag, moisture barrier bag or PE plastic and placed into appropriate shipping box with silica gel and humidity indicator card or as required by the customer. Packaging boxes have corresponding bar code label which contains package minimum information such as: delivery number, Product Specification Index (PSI), and quantity.

The condition of product in stock is monitored and assessed as part of preservation. The monitors include wafers at Die Bank and Finished Goods.

Wafer monitor is based on SOP1959, ZEPI - Wafer Incoming and Outgoing Inspection Procedure and FG monitor in SOP1670, ZEPI - Finished Goods and Warehousing Procedure. Visual wafer and FG monitor at the subcontractor will be done during the facility audit.

Additional specifications that cover preservation of product includes the following:

SOP1618, ZEPI - Pack
SOP1670, ZEPI - Finished Goods and Warehousing Procedure
SOP1566, ZEPI - Environmental Requirements

FIFO (First-In-First-Out) system is utilized to optimize inventory turns over time and assure stock rotation. Obsolete products are handled per SOP2105, CORP - Document Control Plate 1/2 Processing Procedure; and SOP1549, ZEPI-Control Procedure for Non-conforming Materials.

8.5 Control of Monitoring and Measuring Equipment

All inspection, measuring and test equipment (including test software) used to demonstrate the conformance of product to the specified requirements, is controlled, maintained, and calibrated or verified, or both.

All aspects of calibration (authorities and responsibilities, traceability to standards, calibration documents, procedures, calibration environment, calibration reports, labeling, calibration intervals, procedures for equipment out of calibration, handling and storage, etc) are performed per SOP1561, ZEPI-Equipment PM/Calibration Program, SOP1611, ZEPI – Test Equipment Calibration/Verification Listing, and SOP1612, ZEPI – Calibration Procedure.

Calibration seal sticker is affixed to measuring/test equipment and standards where appropriate to safeguard calibration from tampering.

For measuring and test equipment and standards that are calibrated outside through other institutions traceable to National Bureau of Standards or equivalent, a certificate of calibration is required.

9 MEASUREMENT, ANALYSIS, AND IMPROVEMENT

9.1 General

ZEPI values the management of information and data for performance measurement in support of its quality management system. It monitors subcontractor indices related to cost, delivery, quality and reliability; results of audits, and customer rating.

The results of these measurements are analyzed and converted to information and knowledge that guides management toward attaining product requirements and quality objectives. These information are also used as tools in decision making.

Another tool that helps drive performance improvement in ZEPI is benchmarking. Benchmarking information provides impetus for significant improvement or change and alerts the organization of new practices and helps the organization performance measurement system current with changing business needs.

9.2 Monitoring and Measurement

9.2.1 Customer Satisfaction

Customer satisfaction is monitored and measured through rating provided by the customer.

Internal customer feedback process includes the following:

Performance - MBO (Management By Objectives)
Employee communications – townhall meetings

9.2.2 Internal Audit

A Quality Control Auditor ensures compliance to the International Standards of ISO 9001:2008 and effective implementation of the requirements of the established quality management system, including maintenance of the system. Complementing the routine internal audit conducted by Quality Control are the random audits of self-auditor from each department. This provides effective support in the maintenance of the quality management system.

An annual audit plan guides the conduct of the audit. The plan takes into consideration the status and importance of the areas to be audited, as well as result of previous audit.

The audit plan covers the quality management system, subcontractors, and product audits. Product audit is visual inspection of wafers at die bank and products at Finished Goods.

Special audit, other than scheduled, shall be conducted during customer audit preparation, quality issues, customer complaint, or external audit non-conformities.

The Department Head of the area being audited is responsible for prompt corrective and preventive actions to address the audit finding.

The internal audit procedure is covered by SOP1548, ZEPI - QC Audit Procedure.

The Quality Control auditor shall be knowledgeable of the standard and shall have training on internal auditing.

9.2.3 Monitoring and Measurement of Processes

ZEPI has established procedure for monitoring of subcontractors to ensure customer requirements are met.

Stack assembly, DCB laser, SMPD/E2/E3:

A regular monitoring and measurement of the performance of each process is done by responsible department and reported during the monthly Assembly and Test Operations Review (ATO). Performance measures include yield and cycle time.

Foundry subcontractors:

SOP0830, CORP- Management of Wafer Foundry defines the qualification, monitoring and management of foundry subcontractors. This function is the responsibility of Meridian.

Assembly subcontractors:

A regular monitoring and measurement of ZEPI's subcontractors' performance is done by Planning and results are reported during the monthly Assembly and Test Operations Review (ATO). A quarterly business review with the major subcontractors are held to discuss the subcontractors' performance in terms of quality, yield, cycle time, cost,

volume/price performance, loading performance, highlights and issues. When issues occur, they are communicated and corrective actions are requested through telecon and/or emails.

Probe and Test Subcontractors:

Probe or class test yield is one of the factors that determine the quality and reliability of the product. Variability in materials and testers affect the final test yield and subsequently outgoing and PPM measurements. Probe and test yields are monitored daily by Test Product Engineering through the test subcontractor WIP report. Lots below device target yield and lots which require failure analysis are communicated and discussed with subcontractor by telecon or by email. A monthly measurement of subcontractor's performance is done and reported during the Assembly and Test Operations Review (ATO). A quarterly business review with the major subcontractors is held to discuss the subcontractor's performance in terms of quality, yield and tester utilization. When issues occur, they are communicated and corrective actions are requested.

Other Measurements:

ZAZ05-0002 defines the other measurements of the Quality Management System monitored by ZEPI and results of subcontractor facility audit.

9.2.4 Monitoring and Measurement of Product

Wafer Quality

Subcontractor monitors incoming visual lot rejection and PPM for the purpose of providing information on quality of foundry wafers.

Subcon Quality

Subcon product quality is monitored and measured per SOP1650, ZEPI – Incoming/Outgoing Inspection of Zilog Products and SOP1554, ZEPI - Subcontract Test Facility Qualification and Disqualification.

Product quality at the subcontractors' Finished Goods is visually monitored during the facility audit.

Stack Assembly, DCB laser, SMPD/E2/E3:

Product quality is monitored and measured in terms of incoming and outgoing PPM.

9.3 Control of Non-conforming Product

Non-conforming materials include discrepant incoming materials, low yield lots at test subcontractors, lots for scrap and lots failing reliability monitors. Procedures and guidelines for non-conforming materials are defined in SOP1549, ZEPI - Control Procedure for Non-conforming Materials.

Non-conforming products are dispositioned through the issuance of an MRB (Material Review Board). Products are identified through QC stamp or MRB number. Lots that need to be held are quarantined. A Materials Review Board (MRB) has the responsibility to review and the authority to disposition non-conforming materials. Quality Control audit has the responsibility to audit that dispositions in the MRB are implemented.

When a non-conforming product is detected after delivery, the Materials Review Board disposition action to take and the customer is informed immediately.

9.4 Analysis of Data

Data resulting from the monitoring and measurements of processes and products, internal audit, feedback from subcontractors, vendor rating and customer rating are converted into information to make them meaningful, useful and relevant to ZEPI. The information is used to assess the suitability and effectiveness of the quality management system, the performance against goals and objectives and customer satisfaction. The information is also used to detect characteristics and trends of processes and products and improve opportunity for preventive action as well as identify areas for improvement.

9.5 Continual Improvement

ZEPI is committed to creating a culture where people actively seek to 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 management review.

Comparative information through benchmarking is also used as a tool to evaluate results against competitor performance, best practices or external measures of performance for continuous improvement.

Corrective Action

SOP1700, ZEPI – Corrective and Preventive Action Process summarizes the guidelines in instituting corrective and preventive action process from various sources or trigger points of discrepancies or non-conformities in order to eliminate the causes and prevent recurrence.

Corrective actions include review of the non-conformance (including customer complaint), analysis of the cause of non-conformance, corrective action to ensure the problem does not recur, record of the results of actions taken and review and examination of results. Corrective actions are applied on quarantined lot, QC rejected lot, lot submitted to MRB or product failure analysis. Corrective action implementation is the responsibility of the owning department of the non-conformance.

Quality Control audits implementation of corrective action. Effectiveness of the corrective actions done is verified through the QC audit, re-buy-off, or the result of succeeding operation.

Preventive Action

Preventive action in ZEPI is performed through the 8-D corrective and preventive or through the Quality Control audit approaches per SOP1692 and SOP1548, respectively. Preventive action includes determining potential non-conformities and their causes through analysis of trends and review of major changes. It makes use of sources of information such as processes and work operations which affect product quality, audit results, quality records and feedback from internal and external customers. Consideration is given to eliminate the causes of actual or potential non-conformities to a degree appropriate to the magnitude of problems and associated risks. Changes to procedures as a result of the preventive action process are documented. Results of the actions taken are likewise recorded and the effectiveness of the preventive actions are monitored by Quality Control.

CHANGE HISTORY				
REV	**CN NUMBER**	**DATE**	**DESCRIPTION**	**ORIGINATOR**
		2013		
61	-	02-05	Change all instances of Co-General Manager to General Manager. Modified various department functions to add IXYS support, transferred ROMWeb responsibility to Test Product Engineering. Updated some reference document title.	M. Fonte
62	-	06-17	Added provisions for Stacking Assembly under Company Brief, section 2, Model of Process Approach, PIE functions and Product Realizations.	A. Sioson
		2014		
63	-	01-24	Various updates re: company brief, 2.0, 3.0, model of process approach for subcontractor management/ZEPI manufacturing, 7.1.1, 7.1.1.2, organizational chart, functional charts, 8.1.2, 8.2.1, 8.4.1, 8.4.2, 8.4.3 8.4.4, 9.2.3, 9.2.4. Add 8.1.3, 8.1.4 & 8.4.3. Renumber succeeding para.	M. Fonte
64	-	11-25	Various updates re: company brief, Model of Process Approach for Subcontractor Management & ZEPI Manufacturing, 5.2.3, 7.1.1.1,8.1.2 and 8.1.4. Transferred DCB/Laser process from QC Organization Chart to TPE.	M. Fonte