ChipTest

an IC Test & Automation Company

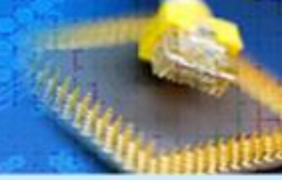**Corporate Presentation**

Agenda

1. Introduction

2. Business Units

3. Customers

4. Quality

5. Team

6. Logistics

7. USP

Introduction

About Valingro Group

➢ Valingro Group facilitates, develops & build Enterprises girded by Values

➢ Creating Companies concentrating on Global Competitiveness, Leveraging global Opportunities, Acquiring global capabilities
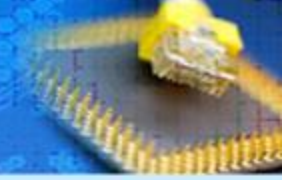
➢ Philosophy: Business Beyond Profit

About ChipTest Engineering

➢ An associate of Valingro, ChipTest is an IC Test & Automation Company

➢ Established in 2005, ChipTest has 2 Core BUs : Test Engineering and Wisteria

➢ Over 30+ Years of Test Engineering Business Experience

➢ ISO 9001:2015 Certified

➢ Operations in India, Singapore & Malaysia

➢ Long-Term Value-Added Partnership Business Model

About Wisteria

➢ Wisteria is the Hardware Products & Automation Business Unit of ChipTest

➢ Solutions in Semiconductor, Automotive, Electronics & Process Applications

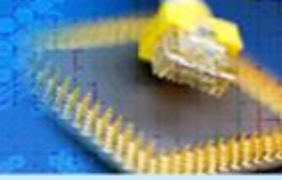➢ Integrated team of wide expertise under one roof

Vision & Mission

Vision

Consistently excel in Semiconductor IC Test Engineering & Hardware Products with associated Embedded Solutions for global Customers

Mission

Exceed the fast-emerging needs of our Customers by :

➢ *Accelerating time-to-market thru continuous Innovation & high Quality*

➢ *Providing unparalleled Service that is Versatile & Cost–effective*
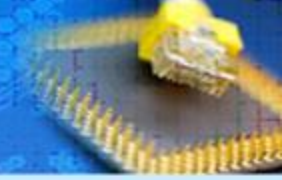
Values & Corporate Objectives

1. Business Ethics - defines us as a Company
2. Professionalism - defines us as Individuals
3. Citizenship   - defines our Contribution to Society

Corporate Objectives

1. Profit - earnings that enable achieving our other 4 Objectives
2. Client Satisfaction
3. Competence
4. Employee Satisfaction
5. Growth

Business Units

1. Test Services

   a. Products

   b. Tester Platforms
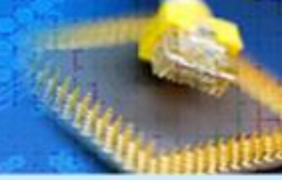
   c. Capabilities

   d. Key Highlights

2. Hardware Products & Automation Solutions - Wisteria

3. Allied Services

   a. Wafer Sort & Final Package Level Production Testing

   b. Reliability & ESD/Latch-up Qualification

   c. Proto-Type Samples Packaging & Small Volume production

   d. ATE Equipment Installation & Maintenance Support

ChipTest

Services:

- Test Plan Derivation

- Test program generation

- Test program debugging & correlation

- Product characterization

- Test time optimization

- Wafer Sort Verification & Testing

- Final Device Testing
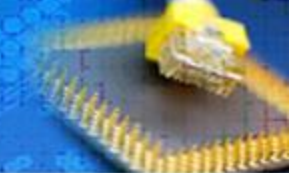
- Hardware load board design & fabrication

Products:

- ✓ SoC devices

- ✓ Mixed Signal ASIC Products

- ✓ High Speed Digital devices

- ✓ Automotive products

- ✓ Power Management PMIC devices

- ✓ Clock Drivers, Buffers, PLL & VCO

- ✓ Industrial Analog Devices & Audio, Video & Telecom Ics

- ✓ Integrated Passive Devices (R, RC & RCD Networks)

1. Test Services

Road Map:

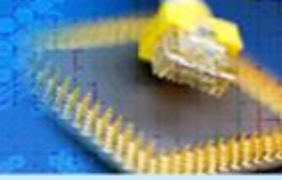| Product / Year	Existing	2025
High-End RF		✳
High-End Mixed Signal		✳
High-End Digital	✳	
Power	✳	
Low-End Mixed Signal	✳	

Existing Platforms:

- ✓ Advantest 93K Test System

- ✓ Teradyne ETS 800 / 364 / 88 Mixed Signal System

- ✓ Teradyne J750, iFlex & uFlex Test System

- ✓ Advantest T2000 - IPSE & IPS Test System
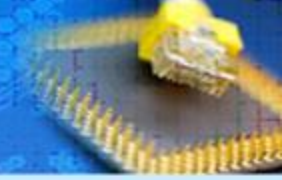
- ✓ ASL 1K Mixed Signal Test System

➢ 93K SW version from 5.X to 8.X

➢ Extent knowledge in handling resources PS5000, PS1600, DPS128-HV/HC and AVI64

➢ Test method development for Digital and Analog Resources

➢ Vector conversion from evcd, wgl, stil to V93k binaries

➢ DC Profiling to capturing Voltage or Current during pattern run.

➢ DC Event to force/measure V/I during pattern run.

➢ Experience in Handling the X mode vector & TP development in A93K UTM & RDI structure.

➢ Knowledge in tester channels calibration technique for accurate measurements path.

➢ Measurement of mOhms low resistance for various automotive products.

➢ Handled low current and low reference voltage trimming blocks.

➢ Handled 14V DC without AVI64 using Onboard Circuitry

➢ Expertise in testing of DAC & ADC's for various resolution (8,10,12,16 bits)
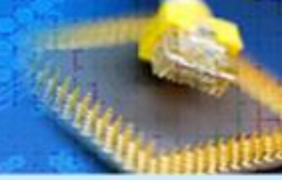
- Worked on various ETS platforms ETS88,ETS200,ETS364, ETS500 and ETS800

- Extent knowledge in handling HPU, MPU, SPU500, SPU100, APU12, QMS, DPU16, APU32, UPU,SPU112, HSD32 and SPMB.

- Expertise execution of AWG, DGT and time measurement using pattern sequencer

- Expertise communicating external equipment's like VI meter, Network analyzer,

- Hands on in Handling pico-amp module to measure the nano and pico amps.

- Worked on various trimming tests (Voltage, current and oscillator), ADC and DAC

- Trimming and OTP done using registers (SPI & I2C protocols) and Physical fuses.
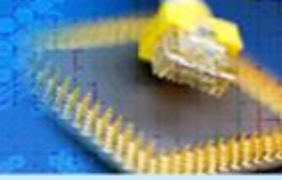
- Used APU12 as APU10, DPU16 as DPU8 in emulation mode

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- ❖ Expertise in converting automotive products from legacy Systems to T2K - IPSE / T2K

- ❖ Worked on Digital inputs, MSS interface, Safety switch, Clamp & Temperature check modules of

  Automatic parking and braking IC

- ❖ High Voltage, High Current & Matrix resources (MMXHE/MFHPE/500MDM,GPWGD,MPCM/1GDM)

- ❖ Worked on SPI parameters, DCS, SyncPulse, JVT modules of Air Bag IC

- ❖ Performed VI spike check, plausibility check, GRR stability, 1000X loop, Bin flip analysis

- ❖ Extent use of Block Diagram, System viewer, Wave & Shmoo, Statistical analysis tools

- ❖ Low Rdson measurement of 50mohms with accuracy < 5mohms at WLCSP

- ❖ Measuring AC delay between 2 resource (MDMA/MMXH) using Module trigger

ChipTest

➢ In depth knowhow of semiconductor operations (Sort & Final test) with rounded skill sets on data mining technologies.

➢ Actionable insights from the massive amount of Data generated in semiconductor manufacturing operations and drive time-sensitive decisions that significantly optimize Yield, Quality and Productivity.

➢ Data derived from major foundry and OSATs can be intelligently worked upon to measurably improve Yield, Throughput, Tester Efficiency, Quality and RMA prevention.

➢ Provide customized reports required to Top Management on a daily basis.

➢ Experience in handling various industrial standard software like **Optimal Tool, Data Power, Sedana, Galaxy etc.**

Wisteria
a ChipTest Engineering BU
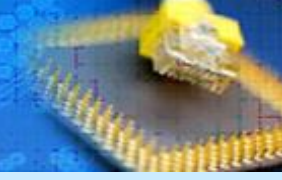
- ✓ Experienced Inhouse design Team

- ✓ Tools – Allegro, Altium and Mentor PADS, Cadence CAPTURE

- ✓ ATE's viz Adv 93K / T2K, Ter Flex / J750, ETS 364 / 800 / 88, ASL1K

- ✓ Tester Load board, HIB, PIB, Probe card, Handler Adaptor, Eval boards

- ✓ Design for High-Speed, High power, Precision and RF requirements

- ✓ Design, Fab & Assembly of HTOL / HAST / BI boards

- ✓ Direct BOM procurement by ChipTest

- ✓ Partners for Board Fabrication and Assembly

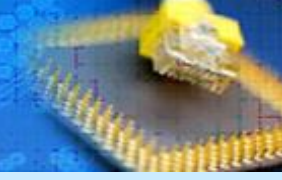- ✓ Compliance to IPC-A Standards

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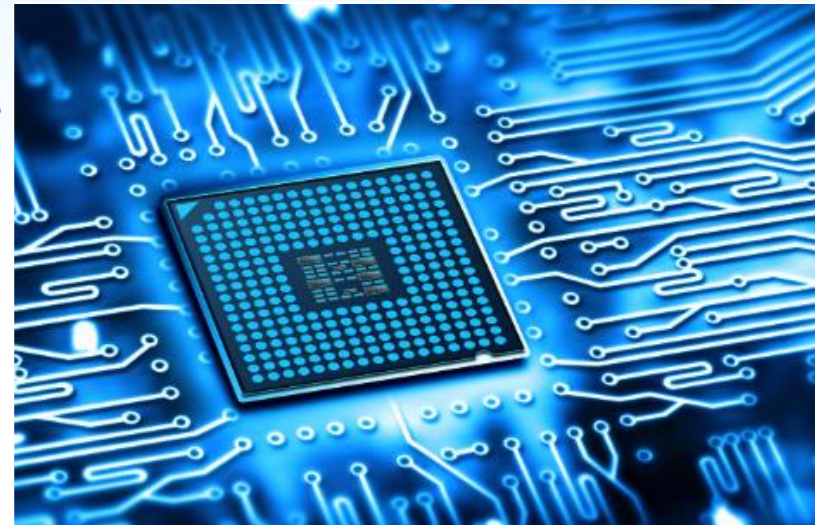
➤ Layer count: 2 to 56 layers

➤ Minimum trace width / spacing: 2.5 mils

➤ Minimum Platted hole and PAD size:4/12mils.

➤ Board size: 24" x 24" max

➤ Board thickness: 0.016"- 0.280"
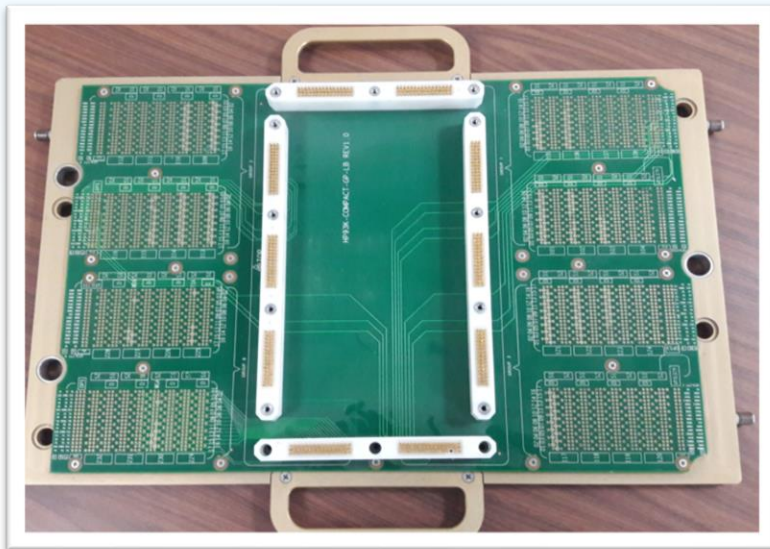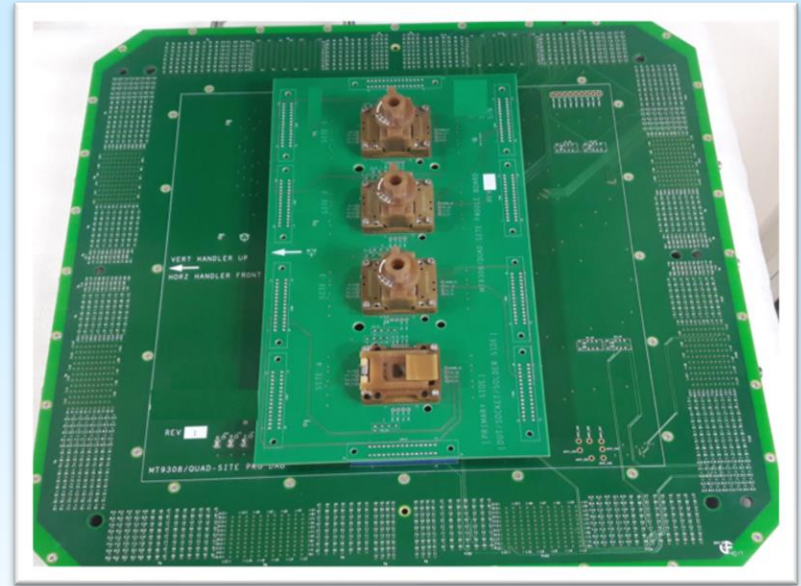
➤ Aspect ratio: 34:1

➤ Outline tolerance: + 5 mils min

➤ Copper thickness: Upto 4 oz

➤ Impedance control tolerance limit: + 3 %

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- ➢ Hot & Ambient Testing with Option for Cold

- ➢ User Friendly Touch Screen Interface

- ➢ Real Time Product & Error Monitoring Display

- ➢ Bench top & Production Test Applications

- ➢ Hard Dock & Soft Dock Mechanisms

- ➢ Proven Poke Yoke Features

- ➢ Economical & Lower Foot print

- ➢ Accelerated Return of Investment

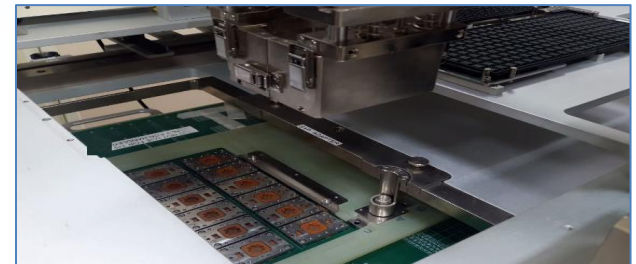- ➢ Various Packages with Conversion kit in each Family
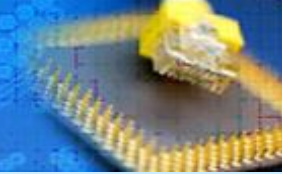
➢ Automatic Pick & Place System with TCU Plunge

➢ Improved Efficiency with Precise Device Insertion

➢ Variety of Device sizes with same Base

➢ Easy Conversion Capability for different packages

➢ Fast and User-Friendly Touch Screen operations

➢ Real time Error Monitoring / Device Status display

➢ Remote System Operation & Monitoring

➢ Simple, Reliable and Easy to maintain

➢ Economical Low Foot print Areas Space

➢ Cost Effective Production Test possible

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Wisteria
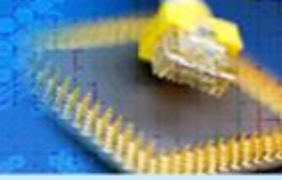a ChipTest Engineering BU
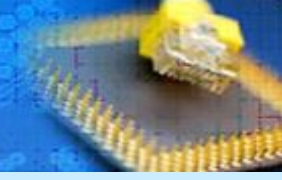
- ➢ Pick & Place Solutions for Industrial Applications

- ➢ Poke yoke systems to avoid manual errors

- ➢ Auto Liquid dispensing Systems

- ➢ OEE report dashboard of Inline equipment's data

- ➢ PLCC, PIC/PC Based Solutions

- ➢ Line Follower Trolleys for Product Movement

- ➢ Automated Gang Flash programming systems

- ➢ Inline Automated Screw Feeding, Mounting & Inspection Systems

- ➢ Auto Loading / Unloading Feature for Manual Equipment's

- ➢ Automation Hardware System Design, Development & Validation

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➢ Onsite Test Engineering Support

➢ Associated partners for the following :

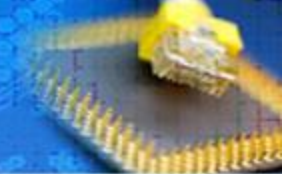- Prototype Samples Packaging

- Surface Mount Package – Production Assembly

- Lead Scan / Tape & Reel Finish Process

- New Product / Package Qualification

- Long Term Reliability tests - HTOL, HAST,TMCL, Autoclave, etc.

- External & Internal Failure Analysis – X-ray & Decap

- Other Failure Analysis like ESD, Latch-up & CSAM
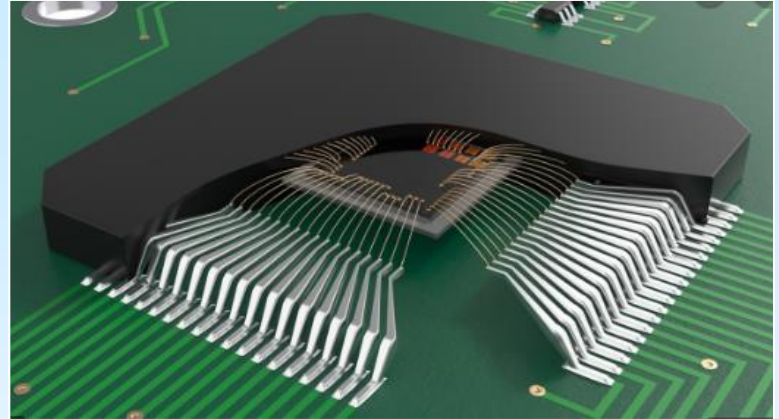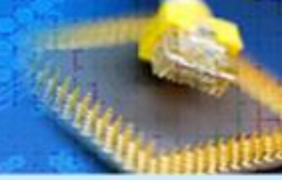
3. Allied Services
Reliability

#	Reliability Test Name		Jedec Ref#	Test Conditions	Test duration
1	Initial CSAM inspection		J-STD-020C	-	-
	Pre-conditioning test	Temperature Cycling	JESD 22 A113-E	-40°C to +60°C	5 Cycles
		Stabilization Bake		125°C	24 Hrs
		Moisture Soak		85°C / 85% Rh	168 Hrs
		Solder Reflow		260° C	3 Cycles
	Final CSAM inspection		J-STD-020C	-	-
2	High Temperature Storage test		JESD 22 A103-C	150°C	1000 Hours
3	High Temperature Operating Life Test		JESD 22 A108-C	125°C, Max Vdd	1000 Hours
4	HAST Test		JESD 22 A110-C	130°C, 85% RH	96 Hours
5	Pressure Pot Test		JESD 22 A102-C	121°C,100%Rh	168 Hours
6	Temperature Cycling test		JESD 22 A104-C	-60°C to +150°C	1000 Cycles
7	ESD Test		JESD 22 A114-D	-	-
8	Latch Up Test		JESD 22 78A	-	-
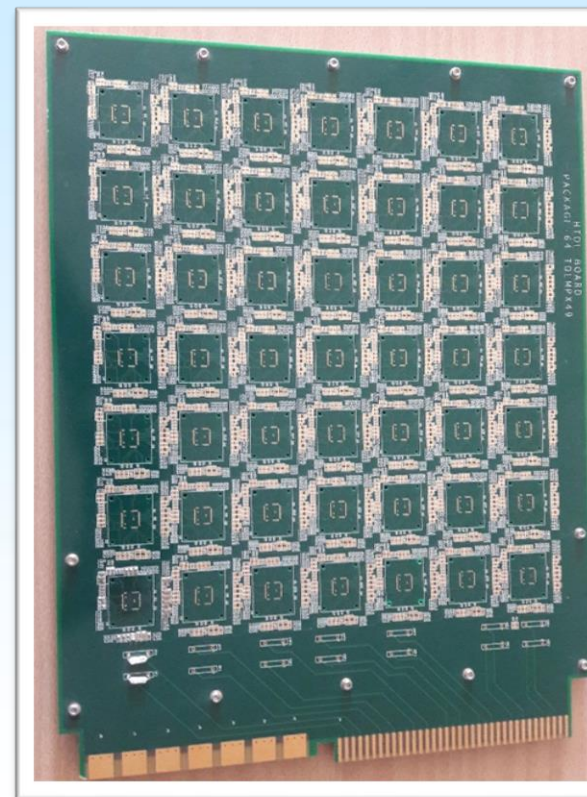
SI #	Test Description
1	Optical Inspection at 1000X
2	X-ray Inspection for internal assembly abnormalities
3	Scanning Acoustic Microscopic Inspection (Through Scan, C-scan, B-scan & A-scan)
4	Chemical Decapping
5	Cross Sectional analysis
6	Die Shear Test
7	Ball Shear Test
8	Wire Pull Test

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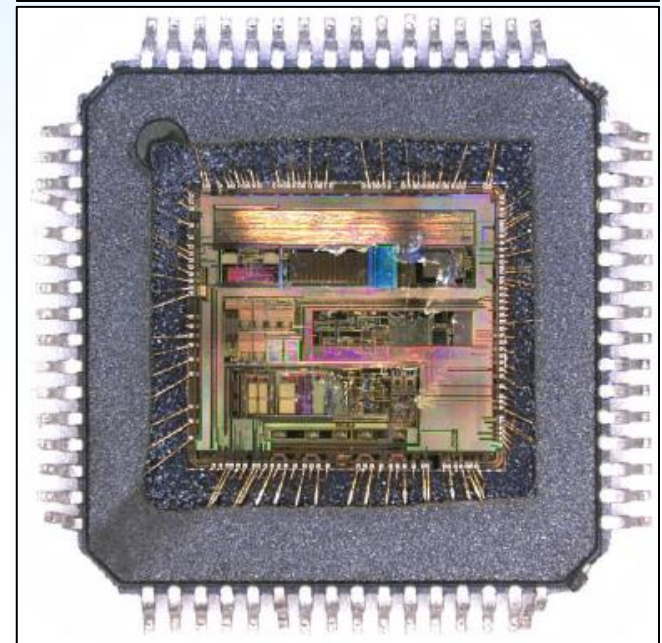
Customers

When the customer comes first,
the customer will last

- ➤ Integrated Device Manufacturers
- ➤ Fabless Product Design Companies
- ➤ Start-up, ATE & Subcontracting Companies
- ➤ Equipment Manufacturing Companies
- ➤ Global Semiconductor Customer Base
- ➤ Inbuilt Long-Term Partnership Model
- ➤ Customer Specific Teams – Offshore & Onsite

Markets:

- Served – India, Asia Pacific, Europe, America
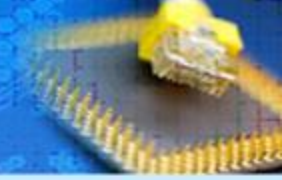- Explored – Japan

Applications:

- Consumer, Industrial, Automotive
- Defence, Medical

"To consistently excel in Semiconductor Test Software and Hardware Solutions and exceed the fast-emerging needs of our Customers through continuous innovation, high quality, accelerated, versatile & cost–effective services, along with increasing value addition to all stakeholders"

Quality
Methodology & Certification

- Quality Controlled Process flow approach

- Archival of Process records and Quality data

- Closely monitored Corrective Action Systems

- Well defined Process Flow documents & Check-lists

- Setting & Monitoring of Key Performance Indices

- Project Scheduling & Milestone Tracking

- Systems for Continuous Process Improvement

- Customer specific Qualification Process

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited

certifies that

ChipTest

CHIPTEST ENGINEERING PRIVATE LIMITED
1/44 Mount Poonamallee High Road,
St. Thomas Mount, Chennai – 600016, India

has implemented Quality Management System
in accordance with **ISO 9001:2015**

for the scope of

**Provision of Semiconductor Test Services and
Associated Hardware Products**

The certificate is valid from **2024-05-30** until **2027-05-29**
Subject to successful completion of annual periodic audits
The present status of this certificate can be obtained through TÜV SÜD website by scanning below QR code and by entering the certificate number (without spaces) on web page. Further clarifications regarding the status & scope of this certificate may be obtained by consulting the certification body at info.in@tuvsud.com
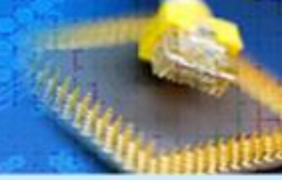
Certificate Registration No. 99 100 14680

Date of Initial certification: 2013-08-12

Issue Date: 2024-05-10 Rev. 00

Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited,
Mumbai,
Member of TÜV SÜD Group

TÜV SÜD South Asia Pvt. Ltd. • TÜV SÜD House • Saki Naka • Andheri (East) • Mumbai – 400072 • Maharashtra • India
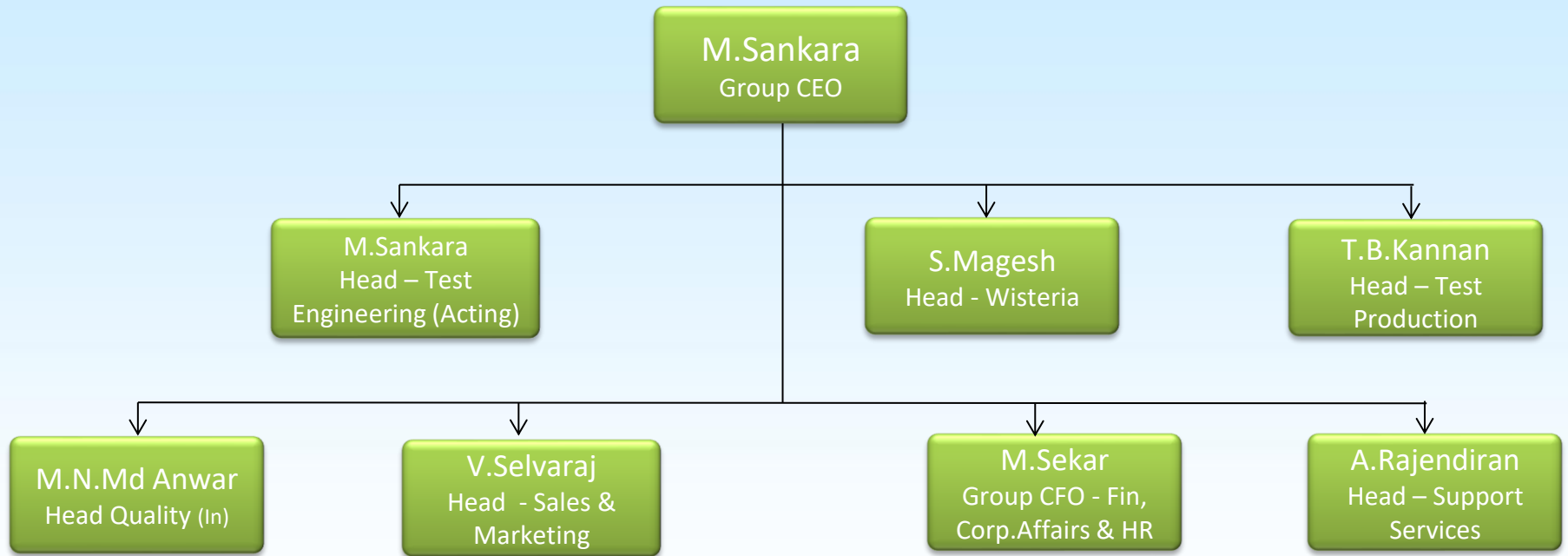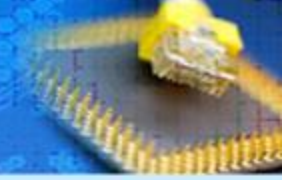
ISO 9001:2015 Certification

www.chiptest.net

Professional Team & Development

Team:

- ➢ Talented Test Engineers
- ➢ Well Experienced Leadership
- ➢ Qualified & Skilled Technicians
- ➢ Proficiency in Communicating in English
- ➢ Low Direct Labor Cost
- ➢ Ready availability of Engineering Resources for expansion

Development:

- ➢ Continuous & Standardized Training Methodologies
- ➢ Periodical Performance and Training needs review
- ➢ Employee Appreciation & Rewarding Schemes
- ➢ Performance based Long Term Career Growth Plans

ChipTest

M.Sankara
Group CEO

M.Sankara
Head – Test
Engineering (Acting)

S.Magesh
Head - Wisteria

T.B.Kannan
Head – Test
Production

M.N.Md Anwar
Head Quality (In)

V.Selvaraj
Head - Sales &
Marketing

M.Sekar
Group CFO - Fin,
Corp.Affairs & HR

**A.Rajendiran**
Head – Support
Services

For most people, the idea of Social Service is donating money to a social organization - perhaps an old-age home or an orphanage or similar. This however is the easy part. The difficult part is volunteering one's time to improve society.
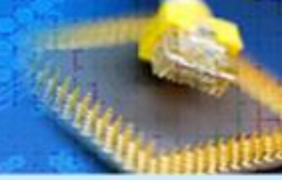

When can we make a contribution to society

➢ **During Phase 1** of our lifetime, perhaps up to the age of 35, we are so focused on building our careers, starting our families & establishing a name for ourselves

➢ **During Phase 2,** perhaps from age of 35 thru 65, we are the most active in our work, working as a team, being able to significantly contribute to Economic Development

➢ **During Phase 3** perhaps from age 65 onwards, we are most able to contribute our time on an increased basis to social causes

AlphaOmega Institute for Semiconductors
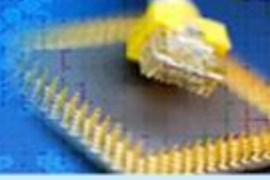
➢ Unique one for Semiconductor Training

➢ 6 months PG Diploma Course in IC Assembly & Test

➢ Incumbents are the Engineering graduates

➢ Practical Online Training with State-of-the-Art Equipment's

➢ Dissertation in Tester Software & Hardware in ATE

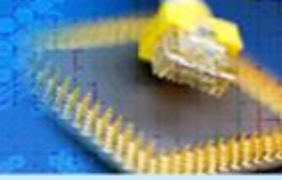➢ Trained Professionals readily available for expansion

Logistics

- ✓ 100 % Export Oriented Unit (EOU)

- ✓ Green Channel Status for Imports & Exports

- ✓ Zero Duty with Expedited Customs Clearance

- ✓ Convenient Logistics for Equipment Consignment

- ✓ Daily Connecting Flights to all Countries

- ✓ Direct drop shipment to End Customers

- ✓ Located in heart of Chennai, proximity to Airport, Seaport, Rail & Road

Unique Differentiation Factors
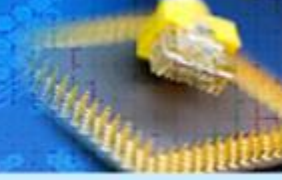
- ❖ 30+ Years of Experience in Test Engineering & Operations Management

- ❖ Resources provided will be of a value addition rather than for Head Count

- ❖ Mixed expertise level in order to maintain cost

- ❖ Highly Efficient resources allocation at lower cost

- ❖ Continuity of support by means of process capturing

- ❖ Focus on Continuous Efficiency improvements & Test Cost Optimization

- ❖ Transparent, Ethical, Adaptive and Value-added Service Support

- ❖ Cost effective Trustworthy Partnership on a Long-term sustainable basis with no compromise in Quality

ChipTest Engineering Private Limited

No.1/44, Mount Poonamalle High Road

St.Thomas Mount, Chennai, Tamilnadu,

India, 600 016

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Suite 1705A Level 17 Menara Landmark,

12 Jalan Ngee Heng, 80000,

Johor Bahru, Johor, Malaysia

Ph : +60 7224 1117

eMail : info@chiptest.net   **Web : chiptest.net**

www.chiptest.net