

**ENGINEERED TO REVEAL  
THE INVISIBLE**

# MQX·tracE

*India's first indigenous 2.5D PCB X-ray  
inspection system with  
micron-level accuracy &  
AI-powered imaging suite*



# Why Choose Us ?

The MQX.tracE is India's first indigenous 2.5D PCB X-Ray Inspection System, engineered to deliver micron-level accuracy for high-density electronic assemblies. It empowers manufacturers to look beneath the surface and identify hidden defects such as solder voids, cracks, bridging, missing BGAs, and PTH fill issues that traditional inspection methods cannot detect.

With its AI-enabled imaging suite, multiple inspection modes, and magnification beyond 7,000X, MQX.tracE ensures both speed and precision for production and failure analysis environments. Certified for AERB safety compliance and designed with customizable configurations, it is the ideal solution for industries where zero-defect quality and reliability are non-negotiable—from EMS to automotive & aerospace to medical devices.

## Why MQX.tracE ?

### **Micron-Level Resolution**

Detects the tiniest defects before they cause failures

### **Ai-Powered Software**

From PCB identification to defect reporting

### **Flexible Inspection Modes**

Manual and auto modes for any workflow

### **Large Inspection Area (Up To 17" × 21")**

Covers everything from miniature components to large multilayer PCB assemblies

### **High Magnification (>7,000x)**

Ensures reliable analysis of BGAs, QFNs, QFPs, and PTH

### **Aerb-Certified Safety**

Compliant and operator-safe with leakage <1 µSv/hr

### **Customizable Platform**

Tailored detectors, software, and upgrade options for future needs

### **Industry 4.0 Ready**

Seamless integration with MES/ERP systems, smart factory connectivity & automation workflows

# Smart Software & Inspection Capabilities

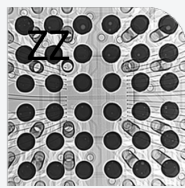
## Ai Powered Imaging Suite

Proprietary software with manual and fully automated modes

## Comprehensive BGA, QFP, QFN & PTH Analysis

### BGA Analysis

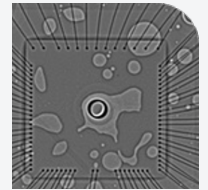
- › Void percentage of each ball
- › Circularity & diameter
- › Ball Count & bridging
- › Head-in-Pillow



Filtered X-ray view of BGA package

### QFP Analysis

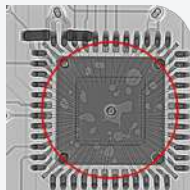
- › Void identification of pin
- › Bridging



Void detected in QFP inspection

### QFN Analysis

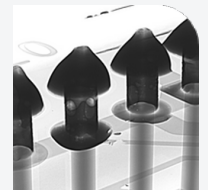
- › Void identification of pin & pad area
- › Bridging



Void detected in QFN inspection

### Through Hole (PTH) Analysis

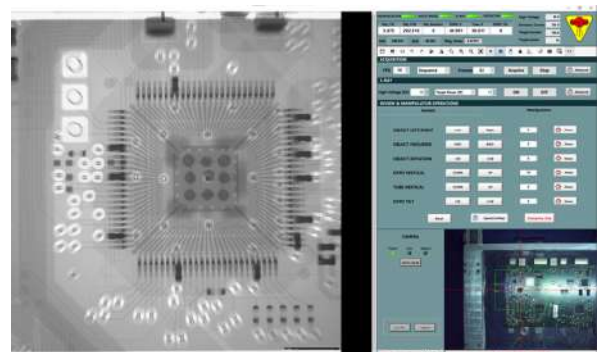
- › Void identification
- › Fill percentage
- › Crack



Through-hole solder joints

## Advanced Image Processing

- › **Filters & Enhancements** – Apply contrast adjustment, pseudo-3D imaging, and noise reduction filters to enhance defect visibility.
- › **Video Capture & Reporting** – Capture inspection sessions as videos or auto-generate inspection reports with annotated defect images.



Real-time X-ray imaging with smart software controls


## High-Throughput Ready

- › **Macros & Batch Inspection** – Configure automated routines to inspect dozens of boards in sequence without manual intervention.
- › **Consistent Results** – Reduces operator subjectivity, ensuring every board is inspected to the same high standard.
- › **Customizable** – Software can be customized to suit production or R&D environments.

# Technical Specifications

CATEGORY	SPECIFICATION
X-ray Technology	
Energy range	20 – 160 kV
Max. target power	25 W
Tube type	Microfocus, open type with transmission target
JIMA resolution	0.9 µm
Digital Flat Panel Detector	
Active area	161 × 161 mm
Pixel pitch   Frame rate	105 µm   40 fps
Software	
Acquisition & Processing software	Proprietary AI - powered imaging suite
Software Packages available	BGA, QFP, QFN analysis: voids, ball diameter & circularity, head - in - pillow, missing BGAs, ball count, bridging
System Details	
Manipulator	6-axis precision movement (servo motors with encoder)
Geometric   System magnification	>1,900X   > 7,000X
Safety Features	AERB type-approved Leakage radiation < 1 µSv/ hr
System Footprint & Weight	
Dimensions   Weight	2,200 mm (H) × 1,800 mm (W) × 1,900 mm (D)   ~ 4,500 kg

 K K House, Plot No. B-35/1, Industrial Estate, Sanathnagar, Hyderabad - 500018, Telangana, India.

 +91 98480 10399

 [pragathi@mqstechnologies.in](mailto:pragathi@mqstechnologies.in)

 [www.mqstechnologies.in](http://www.mqstechnologies.in)

Copyright 2025, MQS Technologies. All rights reserved.

