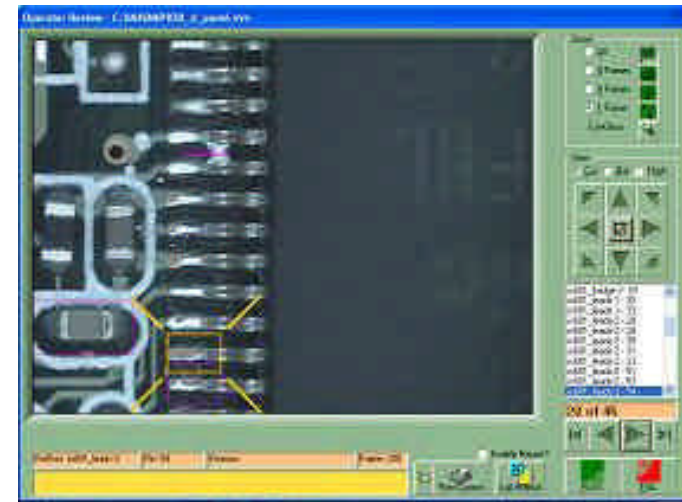
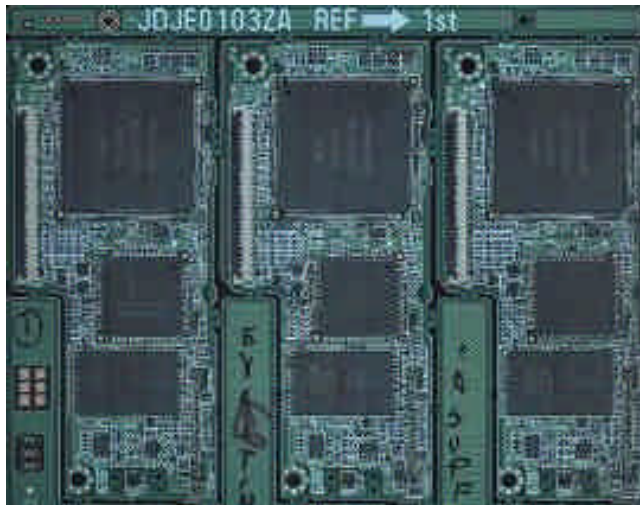




No Lead Application

---

# No Lead Inspection Capability Analysis of the Testronics Model 505A [Advanced] AOI System





No Lead Application

## Inspection Results

Serial Number		Faults	
Panel 1	Image 1	ic602	bridging & insufficient solder
	Image 2	ic601	bridging & insufficient solder
	Image 3	ic601	bridging & insufficient solder
Panel 2	Image 1	rw401 ic701	bridging insufficient solder
	Image 2	rw403	insufficient solder
	Image 3	ic601	bridging & insufficient solder





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## Inspection Results

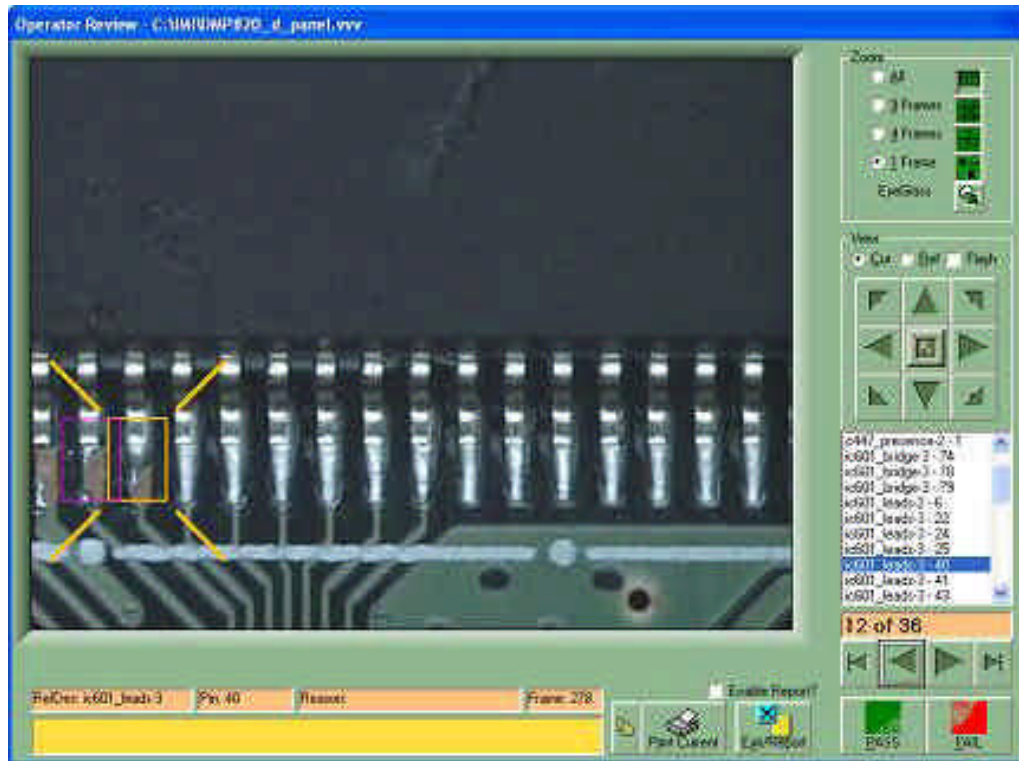
Serial Number		Faults	
Panel 3	Image 1	r509	skewed & insufficient solder
		r513	skewed & insufficient solder
		r515	skewed & insufficient solder
		r713	missing
		r714	skewed
		r718	missing
	Image 2	r719	missing
		rw402	insufficient solder
		rw403	insufficient solder
		rw404	insufficient solder
	Image 3	rw501	bridging
		r615	skewed & insufficient solder
		r107	missing





No Lead Application

## Inspection Results - Images



Panel #2

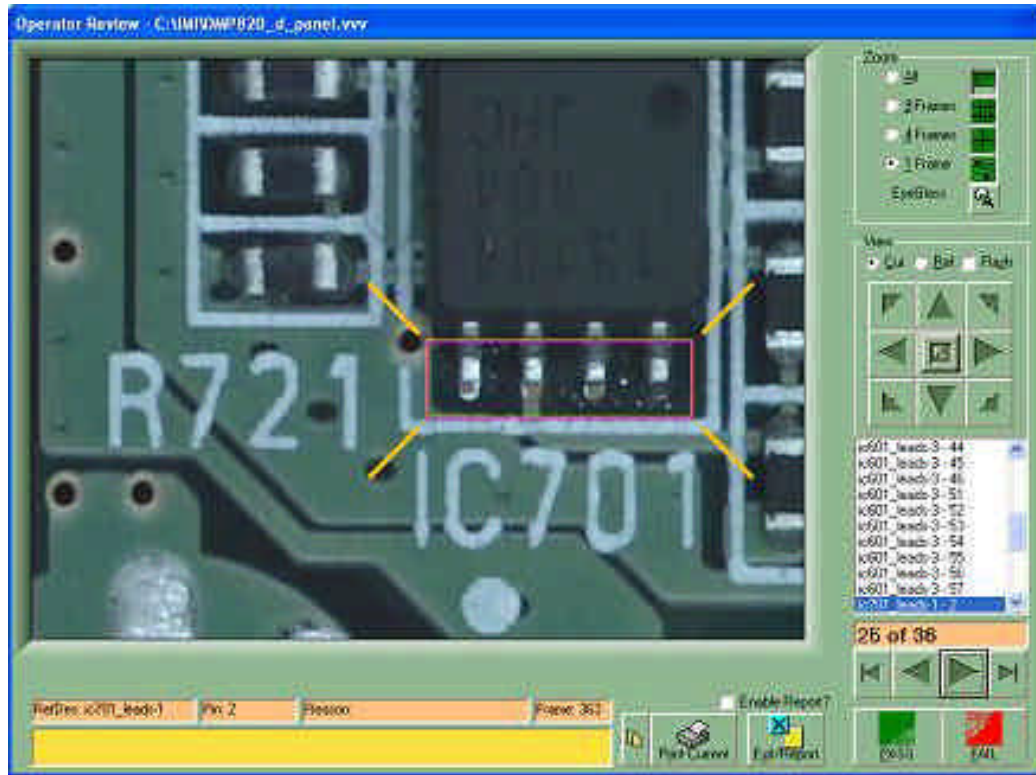
Image 3

ic 601 insufficient solder



No Lead Application

## Inspection Results - Images



Panel 3

Image 1

ic701 insufficient solder



No Lead Application

## Inspection Results - Images



Panel 3

Image 1

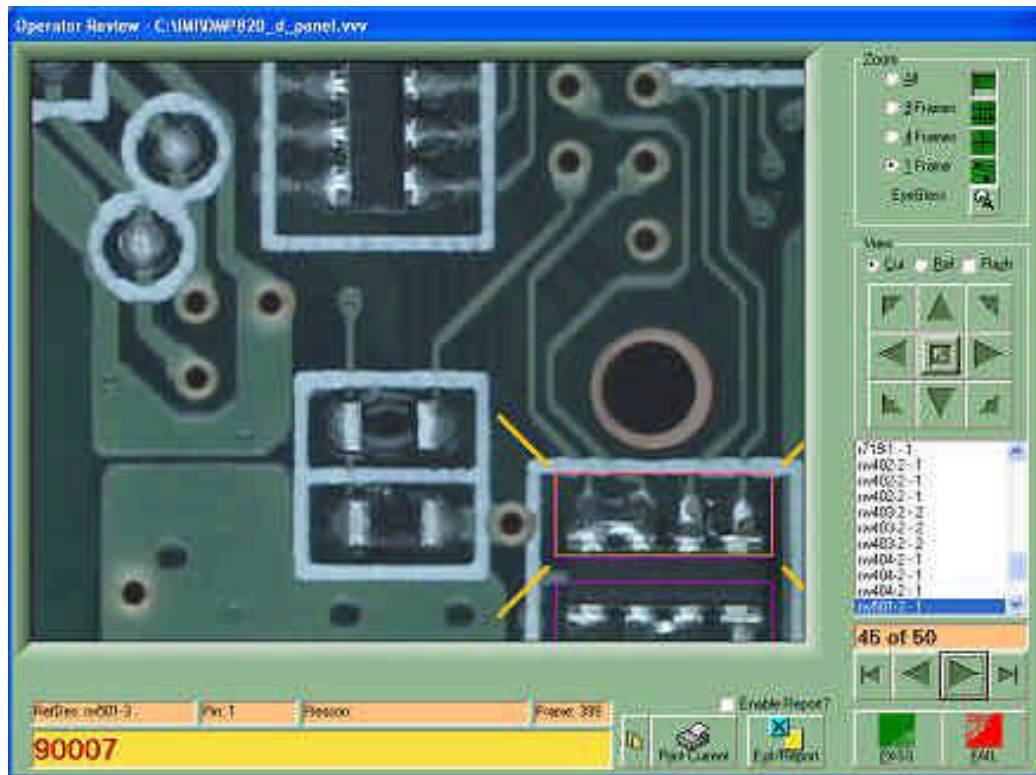
r513 skewed

r509 skewed



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## Inspection Results - Images



Panel 3

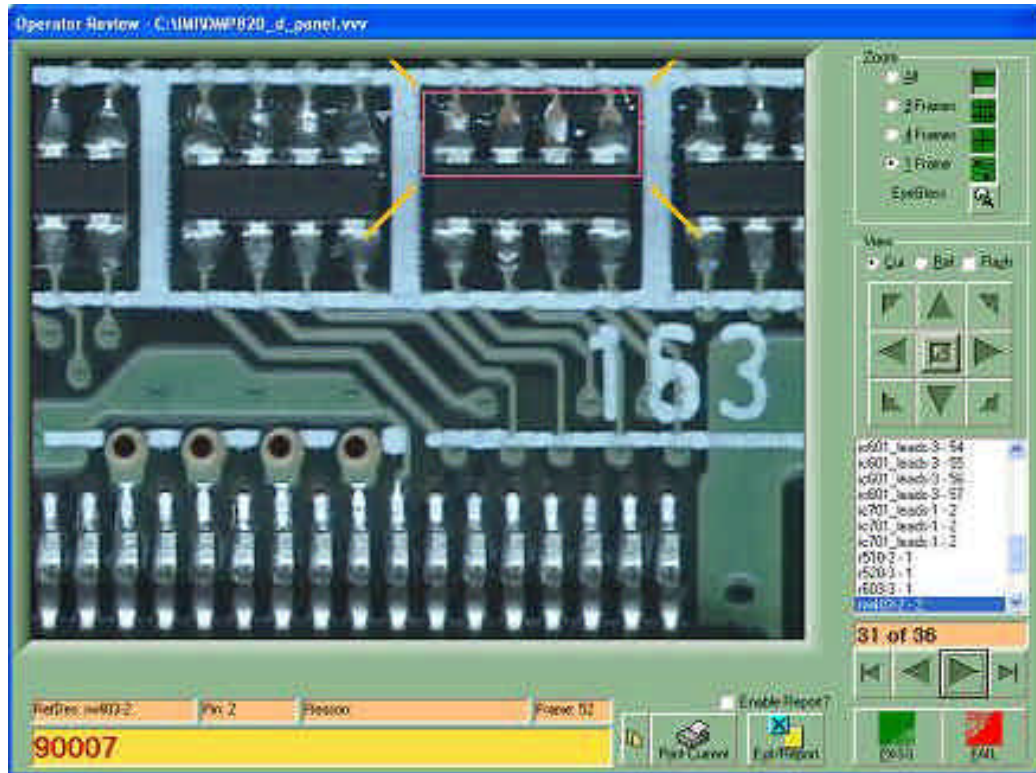
Image 3

rw501 bridged &  
insufficient solder



No Lead Application

## Inspection Results - Images



Panel 3

Image 2

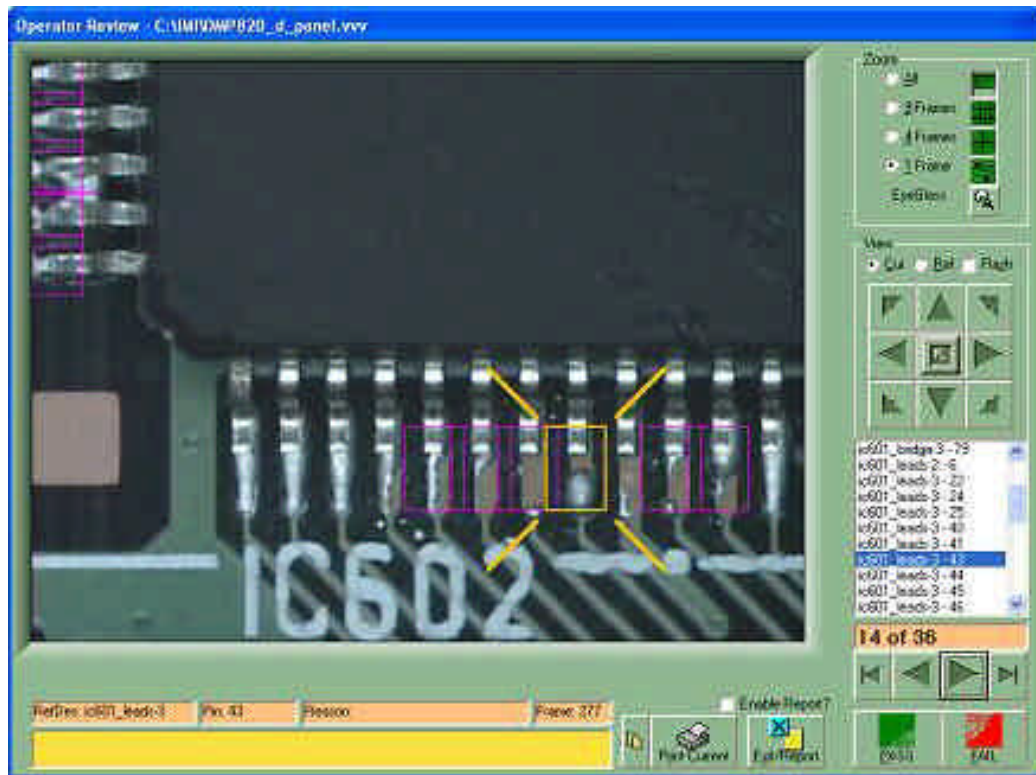
Rw403 insufficient solder





No Lead Application

## Inspection Results - Images



Panel 2

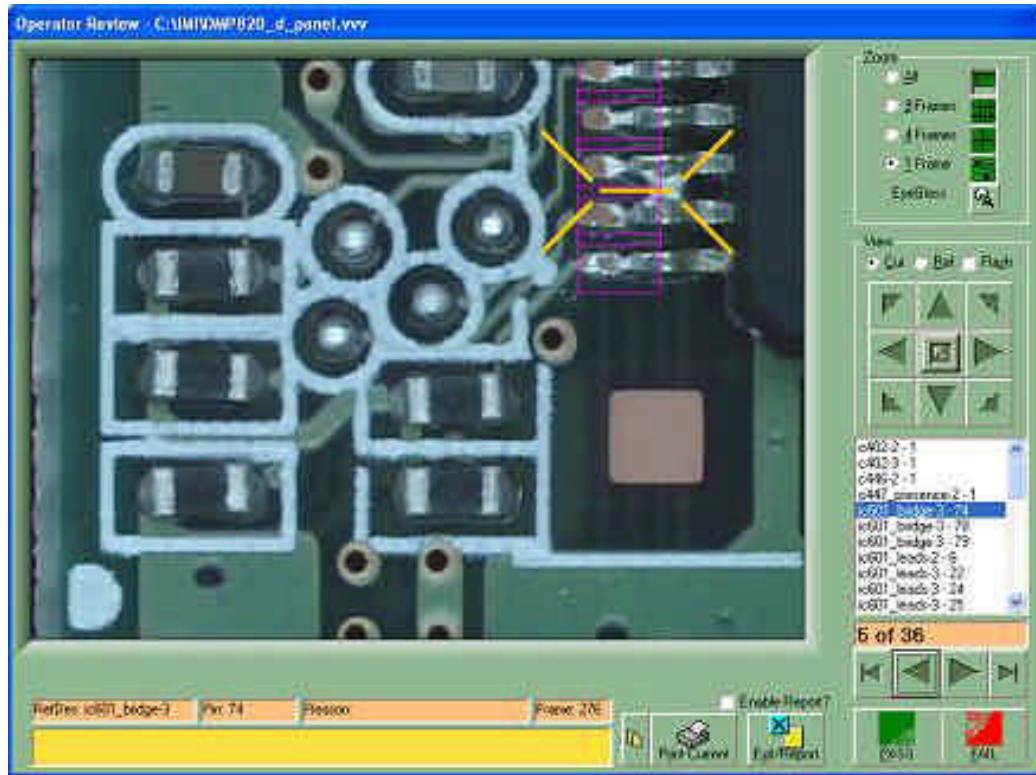
Image 3

ic601 insufficient solder



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## Inspection Results - Images



Panel 2

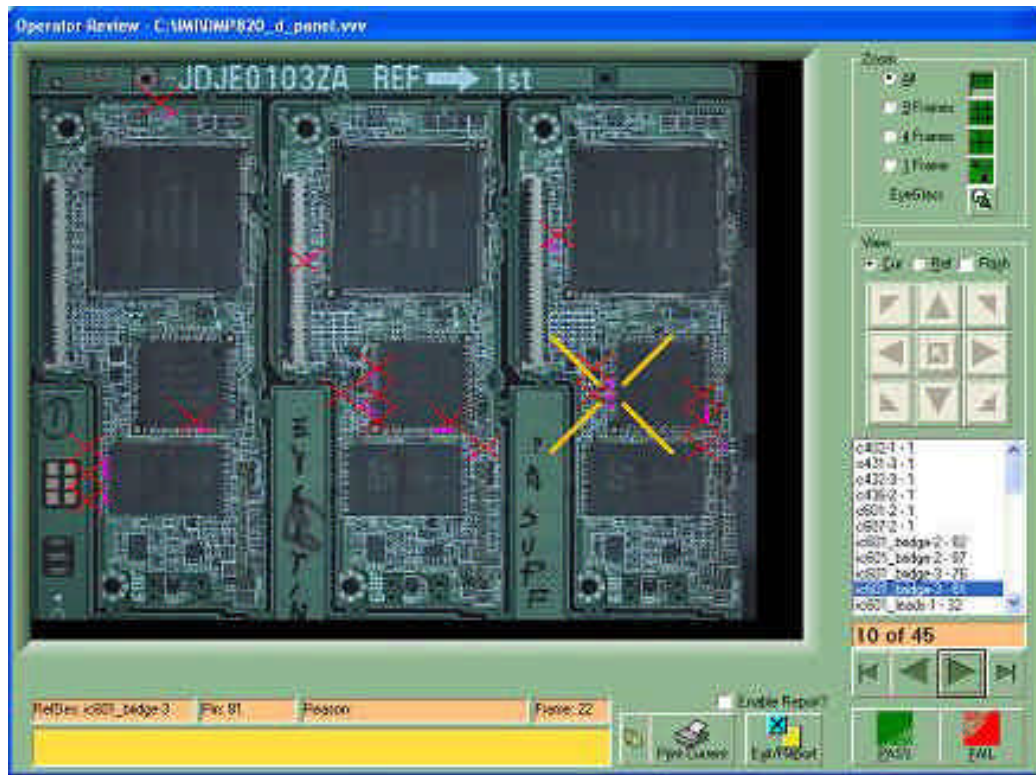
Image 3

ic601 bridged &  
insufficient solder



No Lead Application

## Inspection Results - Images



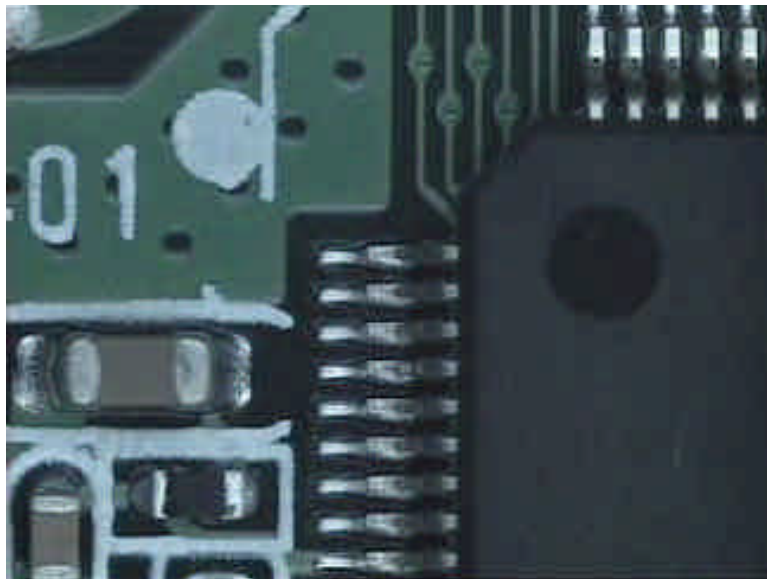
Full View



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## Camera Options

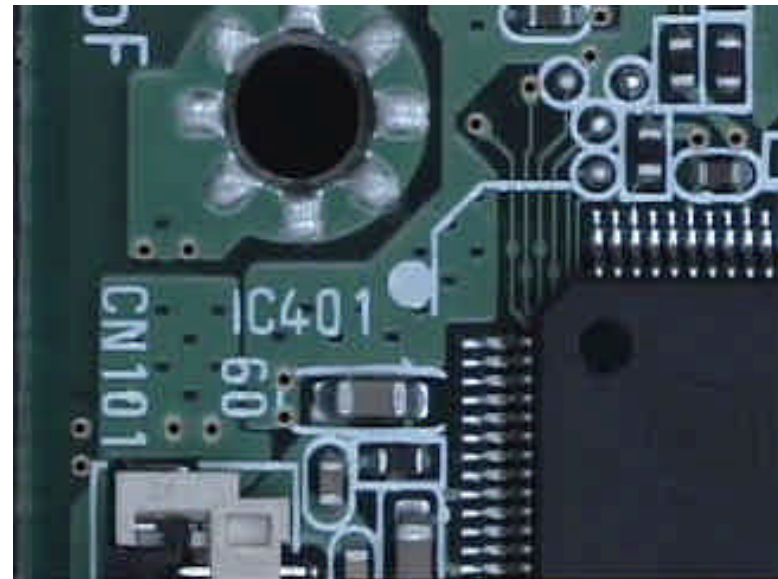
### High Magnification



Field of View: .640" x .480"

1 pixel = .0005" x .0005" resolution

### Standard Magnification



Field of View: 1.240" x 1.068"

1 pixel = .001" x .001" resolution



No Lead Application

## Inspection Details

**Number of Inspections: 2352** (regions of interest)

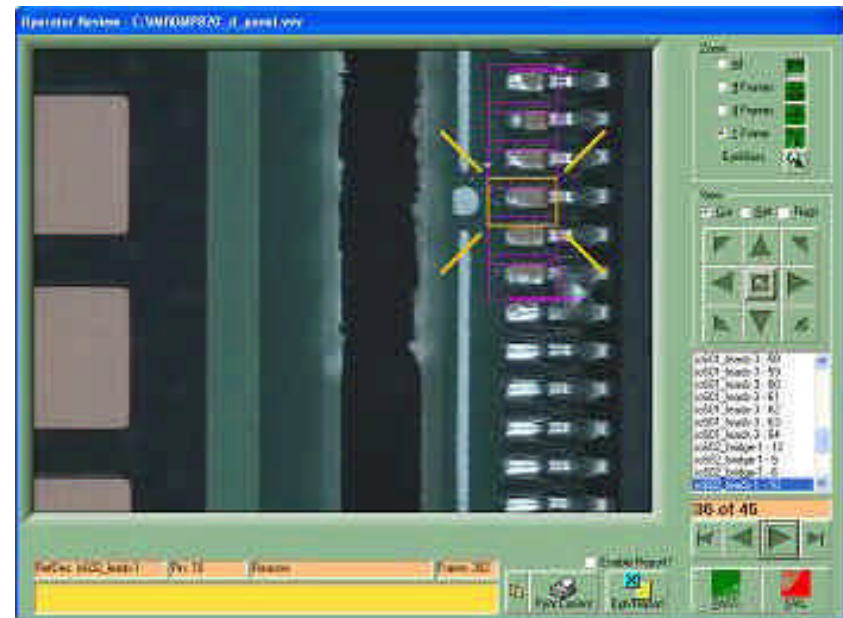
Serial Number	Operator Reviews (false calls)
Panel 1	16
Panel 2	11
Panel 3	23
Panel 4 (good panel)	6

False call rate:  $56 \text{ false calls} / (2352 * 4 \text{ boards}) = 0.59\%$

Note: Panels 1, 2 & 3 had numerous marginal joints

Panel 4 (good) represents true false failure rate:

$6 \text{ false calls} / 2352 \text{ inspection regions} = 0.026\%$





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a tester company with vision

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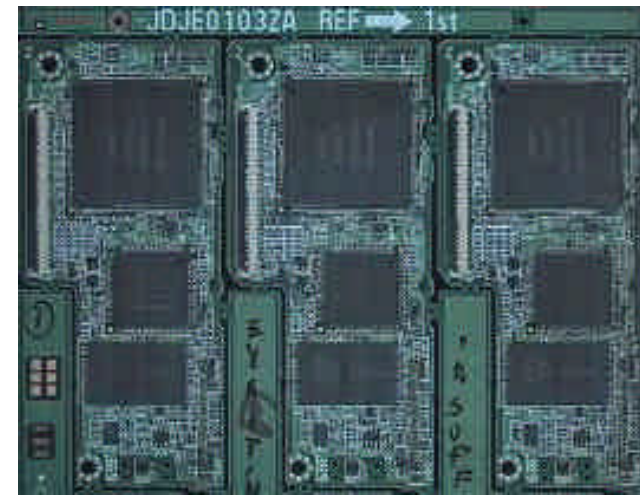
## Inspection Speed

### **2352 inspections per panel**

Inspection Time using High Magnification Camera: 59 seconds

Inspection time using Standard Magnification Camera: 23 seconds

- Standard magnification camera is comparable to current competitive systems and is suitable for presence / absence / polarity & bridge detection
- High magnification camera allows for detailed solder joint inspection





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# Global Implementation

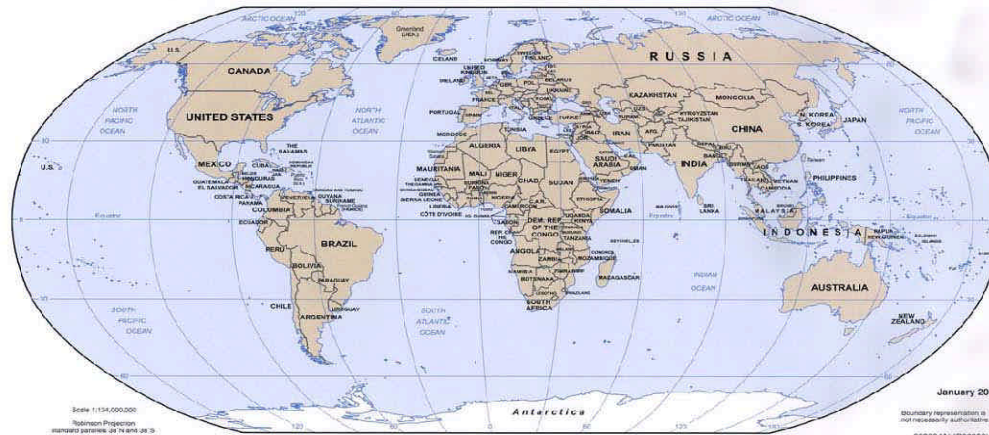
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Since 1982

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- Thailand
- China
- South Africa
- South Korea
- India
- Germany
- UK
- Spain
- Italy
- Israel

## Installations

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- Mexico
- Brazil
- Spain
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- Germany
- England(UK)
- Ireland
- Russia
- India
- Thailand
- Malaysia
- South Korea
- Japan
- Taiwan
- China
- South Africa



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