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Welcome to the EPTAC Webinar Series: **Inspection: Part II -- PCB Assembly Inspection -- Getting It Right**

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Attendee Quick Reference

- You can ask questions by typing text directly to the presenter using the “Question and Answer” box

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The screenshot shows the GoToWebinar Control Panel interface. On the left, there are three expandable panes: 'My Details', 'Webinar Info', and 'Grab Tab'. On the right, there is a 'Question and Answer' pane. Red lines connect text descriptions to these panes.

- My Details:** Shows the attendee name and Satisfaction Rating. Attendees can change their Satisfaction Rating by clicking on the drop-down arrow.
- Webinar Info:** Provided for quick reference.
- Grab Tab:** Enables attendees to minimize the Control Panel to the side of their desktops and still access Viewer tools.
- Question and Answer:** If turned on by an organizer, attendees can submit questions and review answers. Broadcast messages from an organizer will also show here.

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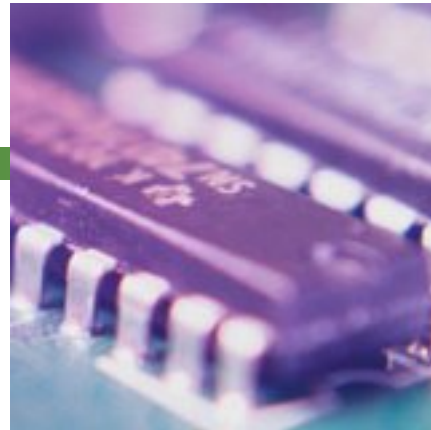


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Inspection Part II – PCB Assembly Inspection – Getting it Right

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What is Visual Inspection?

- Comparison against a master or another object

“The act of examining carefully”



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About Inspection

- Visual inspection accuracy is about 80% effective
- So, we have to ask:
 - Are we seeing everything we should be?

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How to Inspect

- The ability to detect differences is the first item to review:
- Because:
 - Inspecting electronic products vary in size, complexity, density and total amount of opportunities

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How Do We Train Inspectors?

- We learn IPC-A-610
 - It tells us what a good solder joint look like
- But how do we put this into practice?

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What About J-STD-001

- We learn J-STD-001 on how to make good solder joints, but how do we inspect those joints?
 - We compare them to pictures from all of those specifications or
 - We can use auto-inspection comparative systems
 - We can use x-ray systems



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Prerequisites

- Keep in mind we are not only inspecting solder joints but component anomalies, positional differences, etc.
- We try to guess what the inside of the solder joint is all about by looking at outside characteristics.
- But can all of this information tell us if there is a good intermetallic compound layer?



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Prerequisites

- Address our ability to distinguish what we are looking at:
 - How accurate is our ability to look at things?
 - Is there a process we can use to improve our ability to see what we are looking at?

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We Need to Know What We Are Looking For

- The next few slides are to try to find out whether or not we can find the anomaly in the pictures.
- We need to be able to see differences as we inspect boards and this is a good example of trying to find differences.

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A Thought on How To Improve Our Observations Skills

- Let's take a look at some of these pictures

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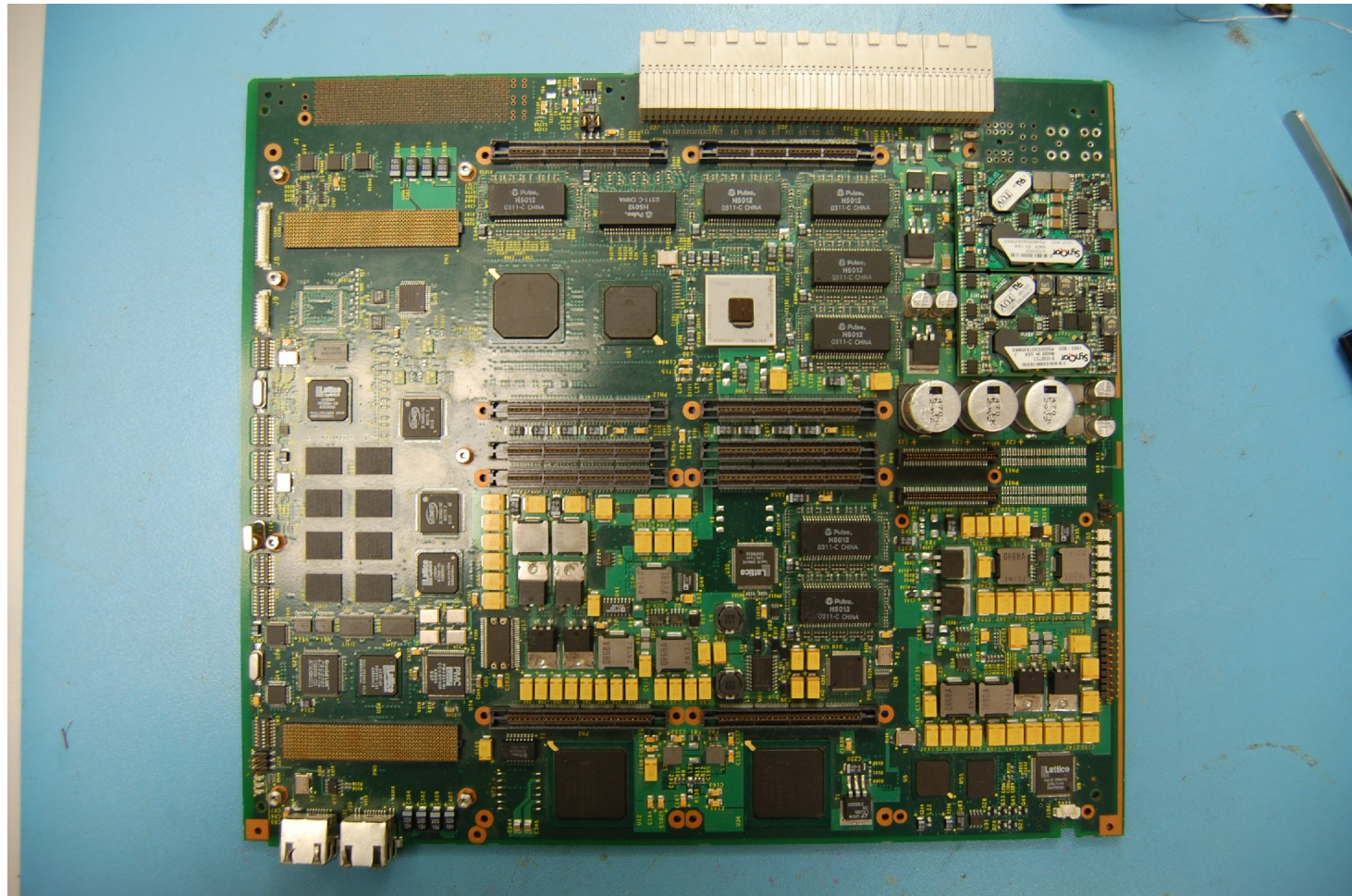


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Start With Global View





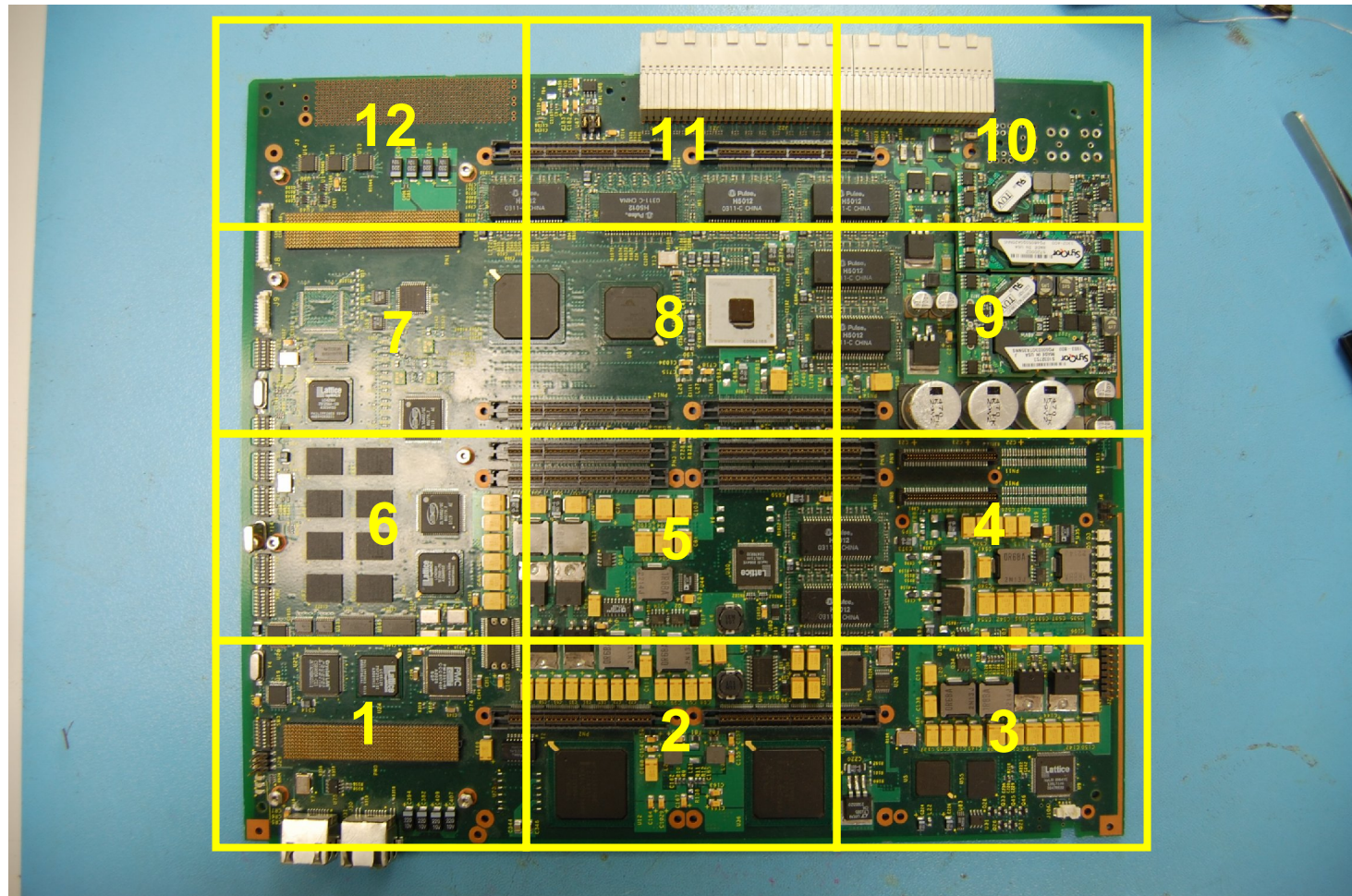
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Pick a Starting Point



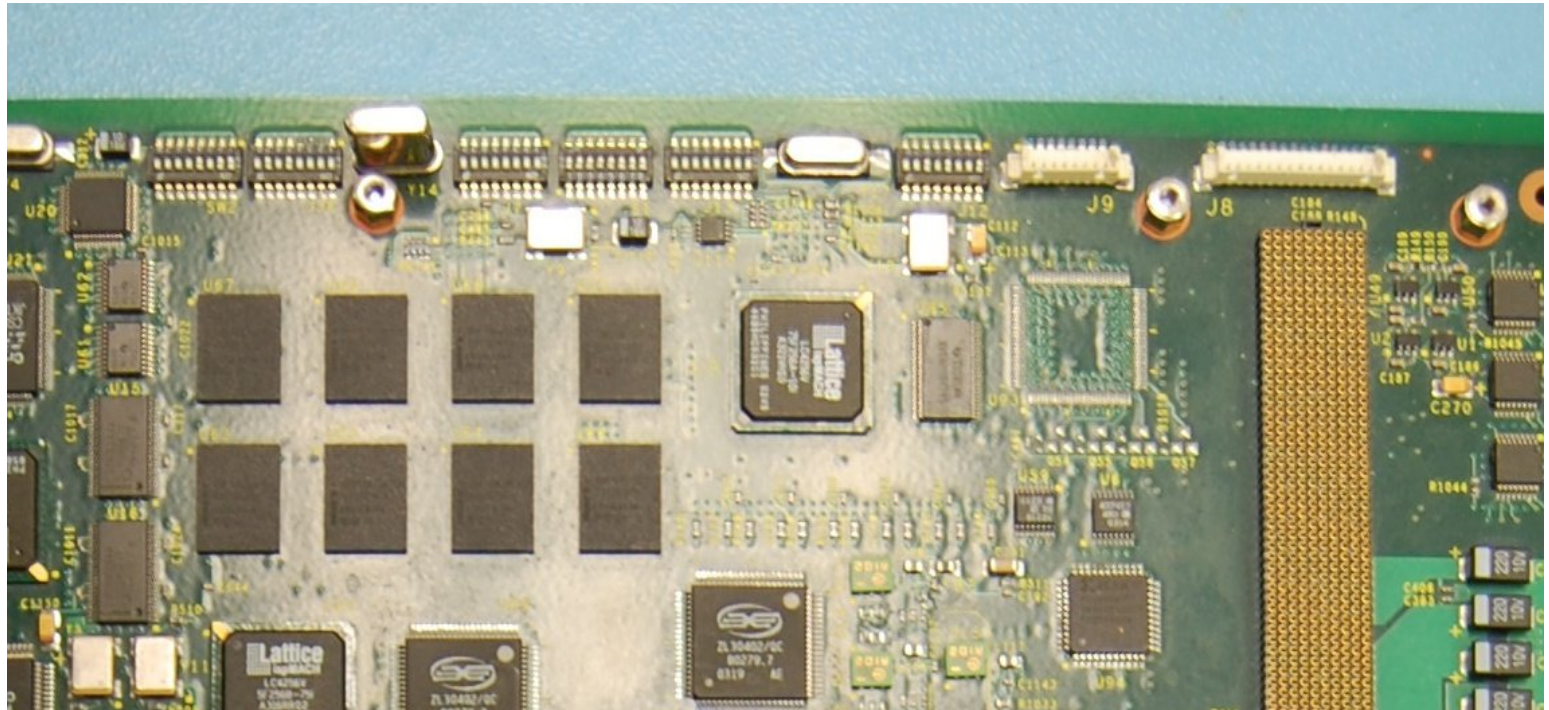


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Look At the SOIC Along the Edge



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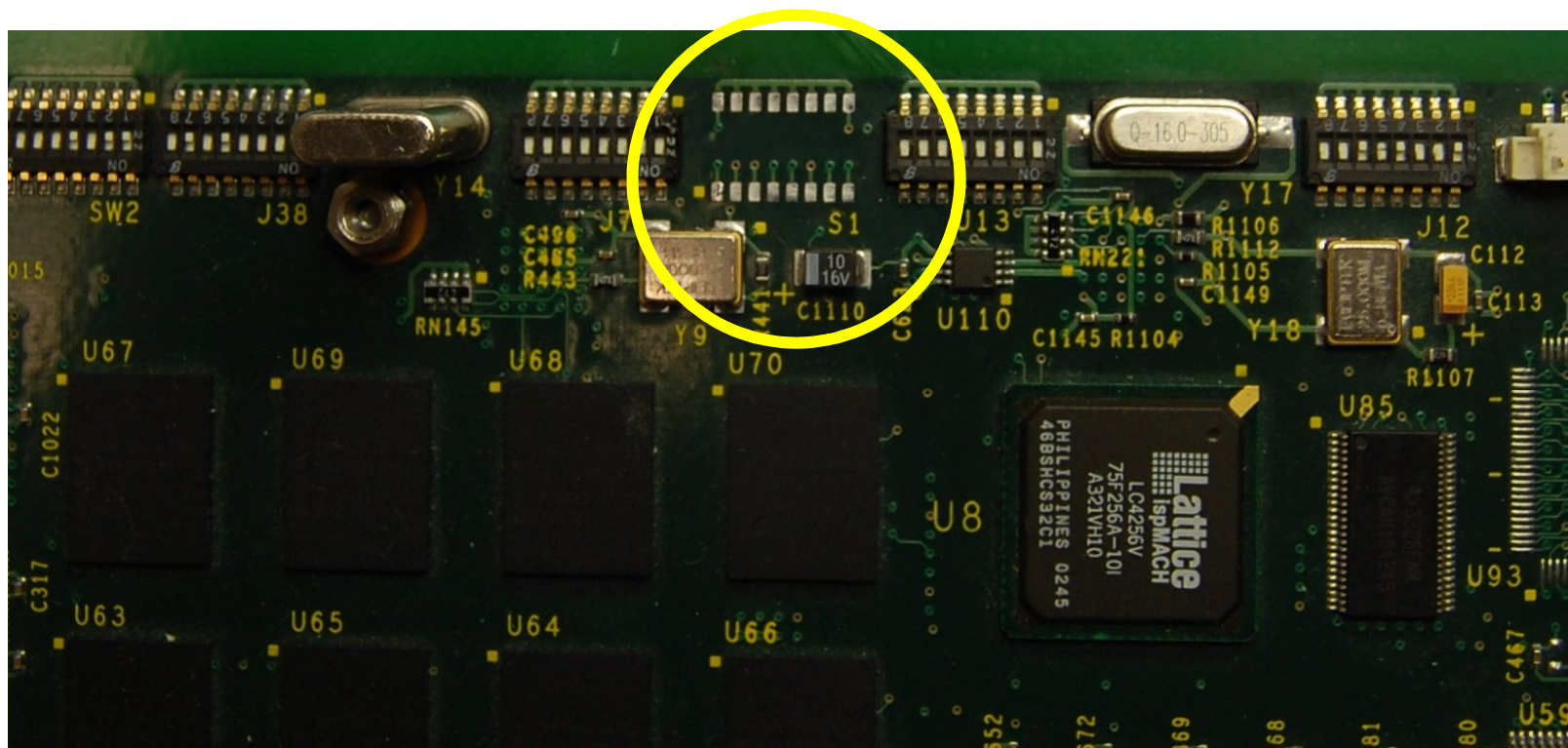


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See the Missing One



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Observe Similar Looking Joints

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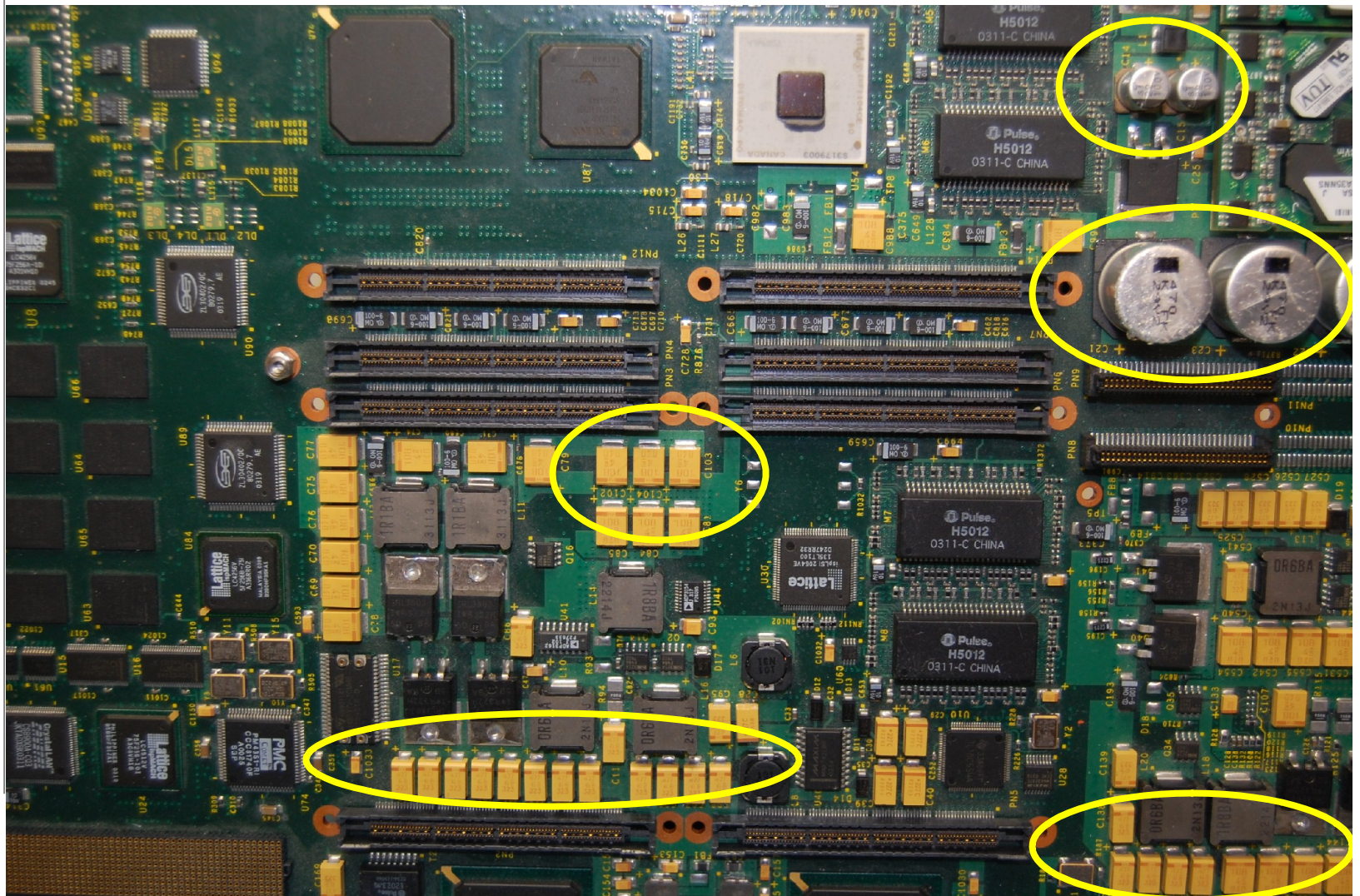
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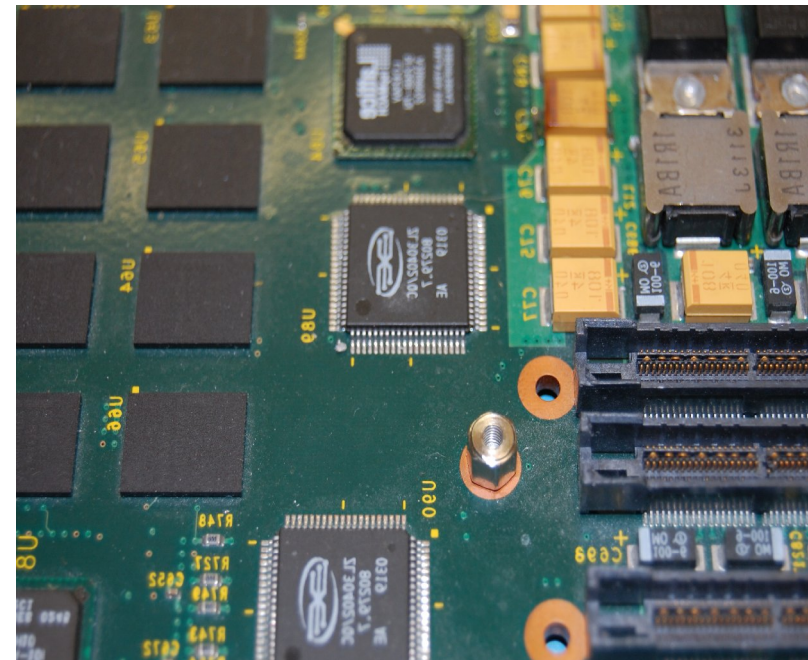
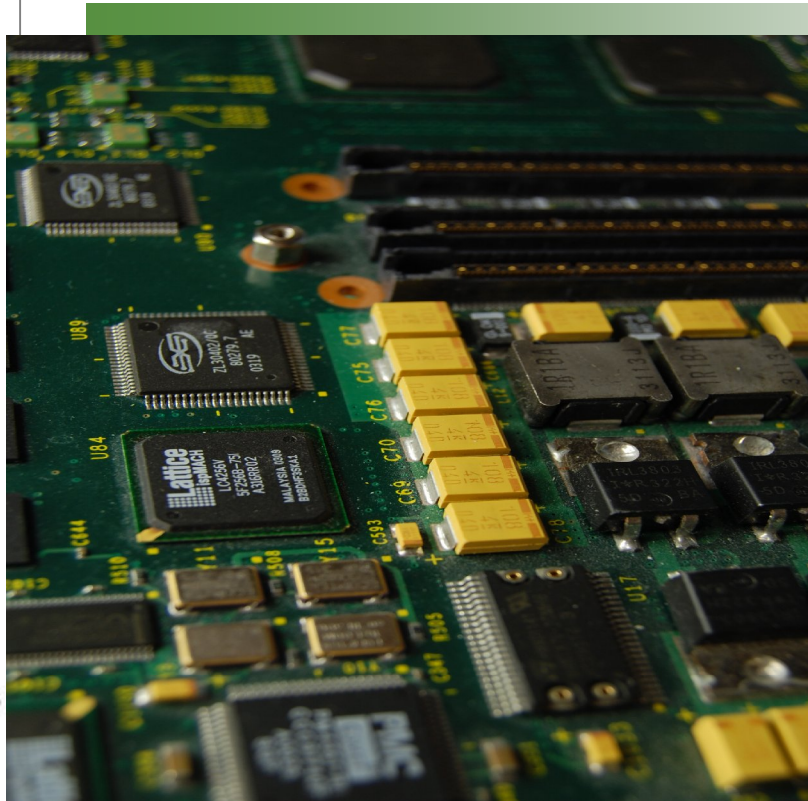
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Can You Spot the Difference?



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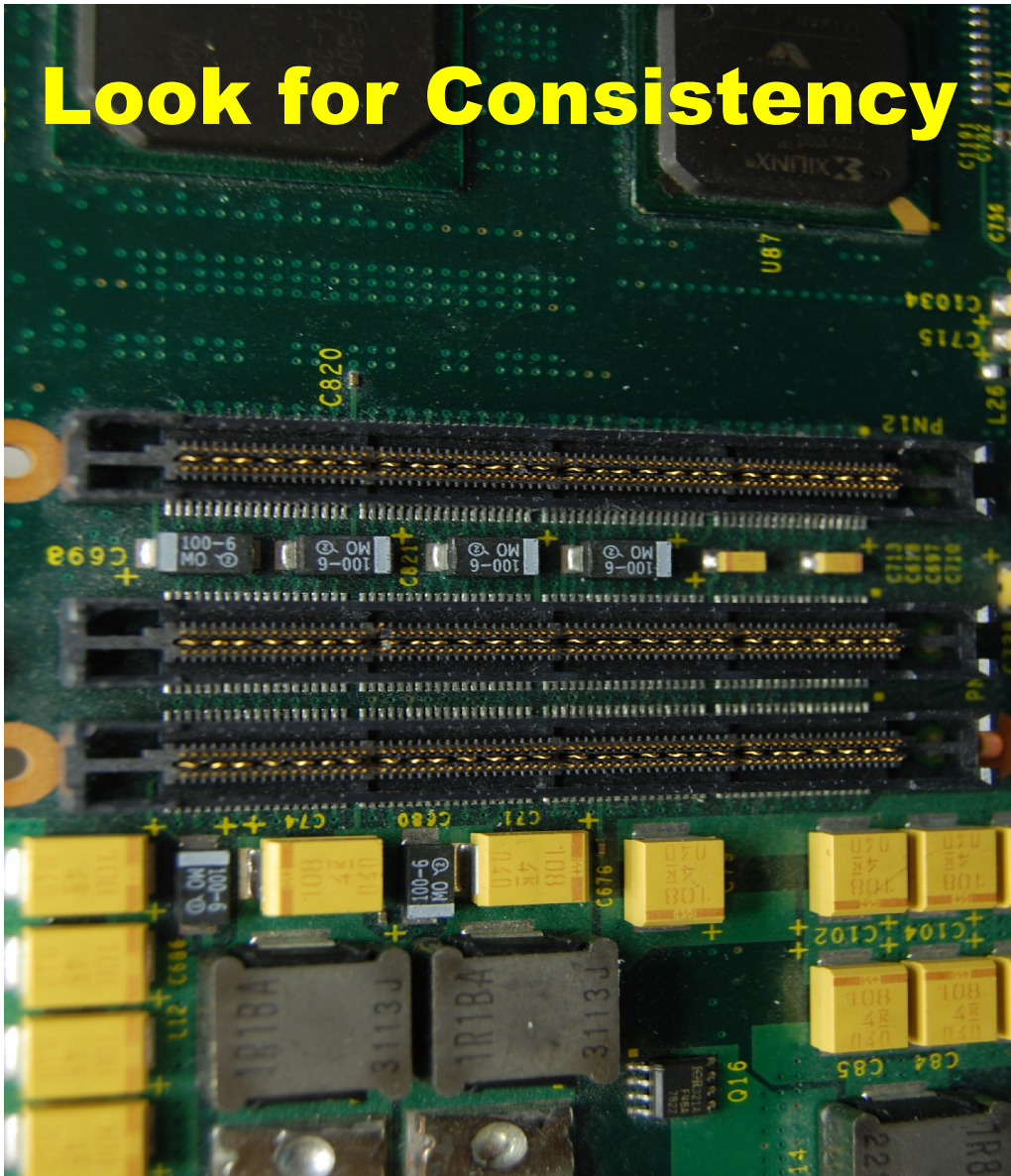


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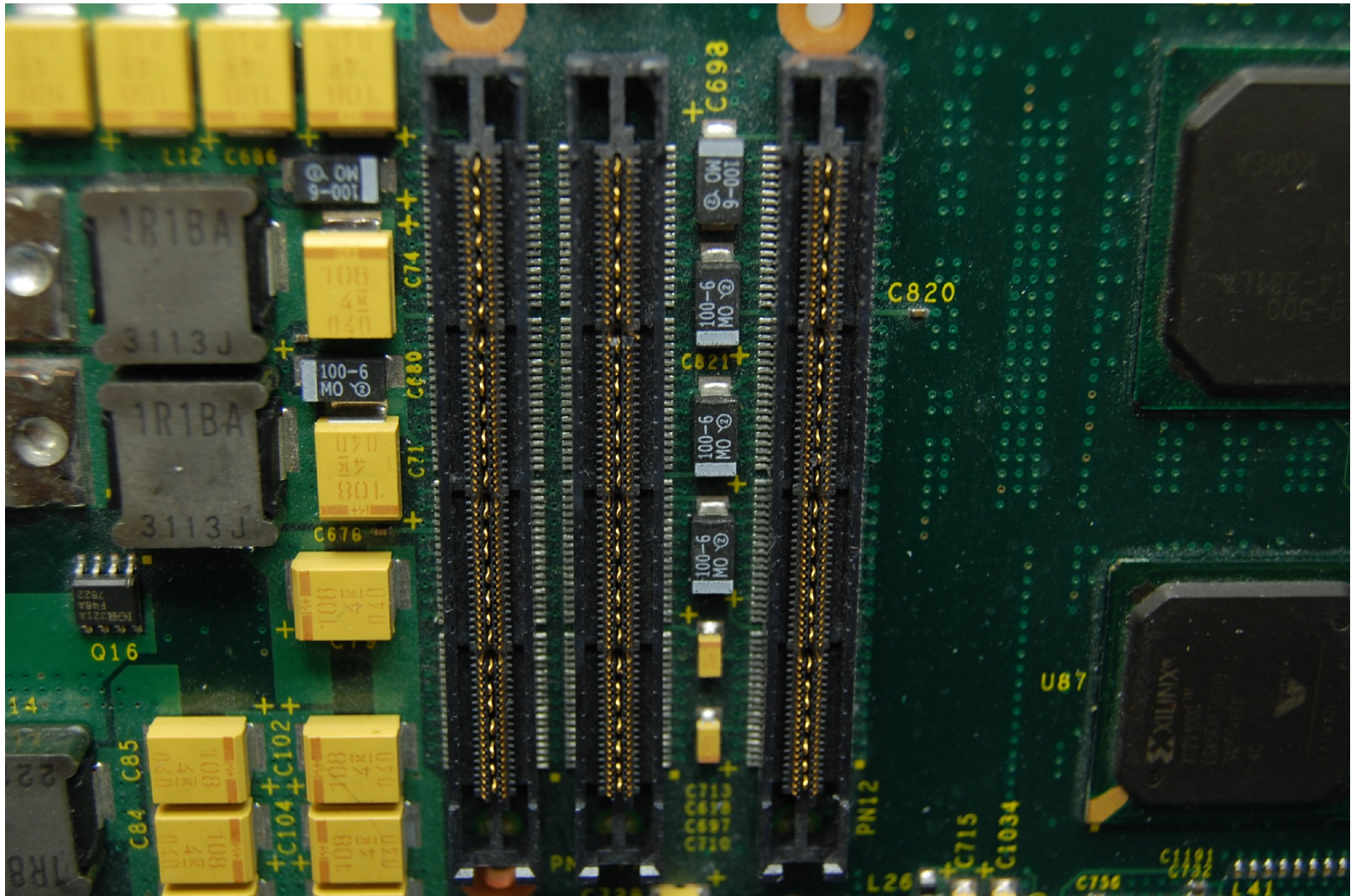
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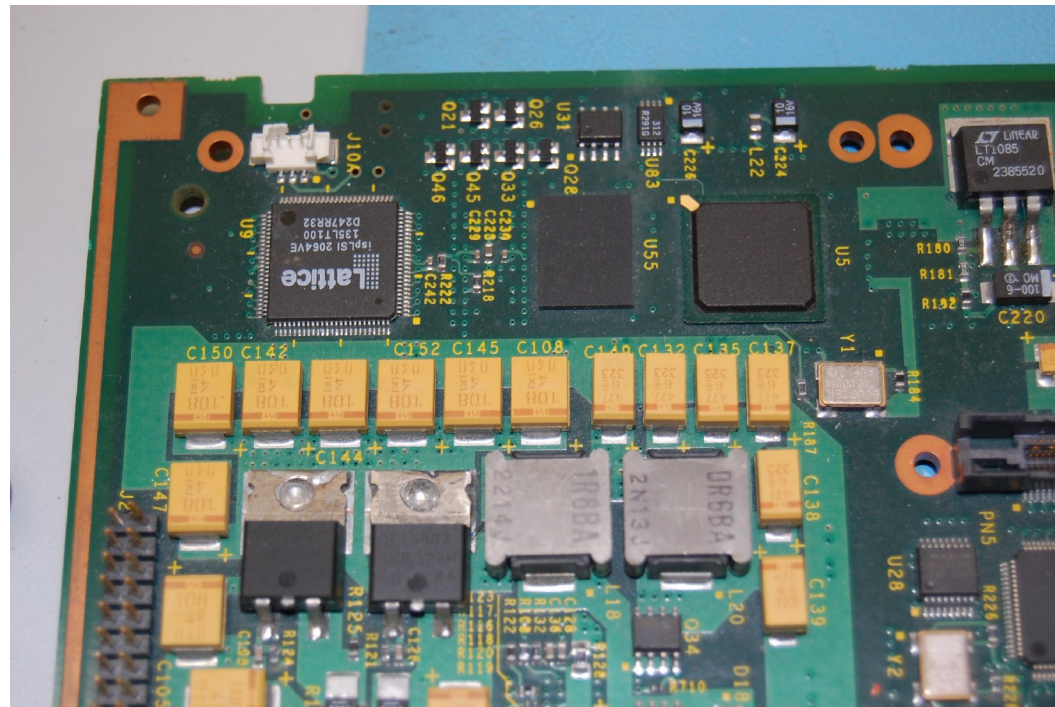


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Look for Consistency



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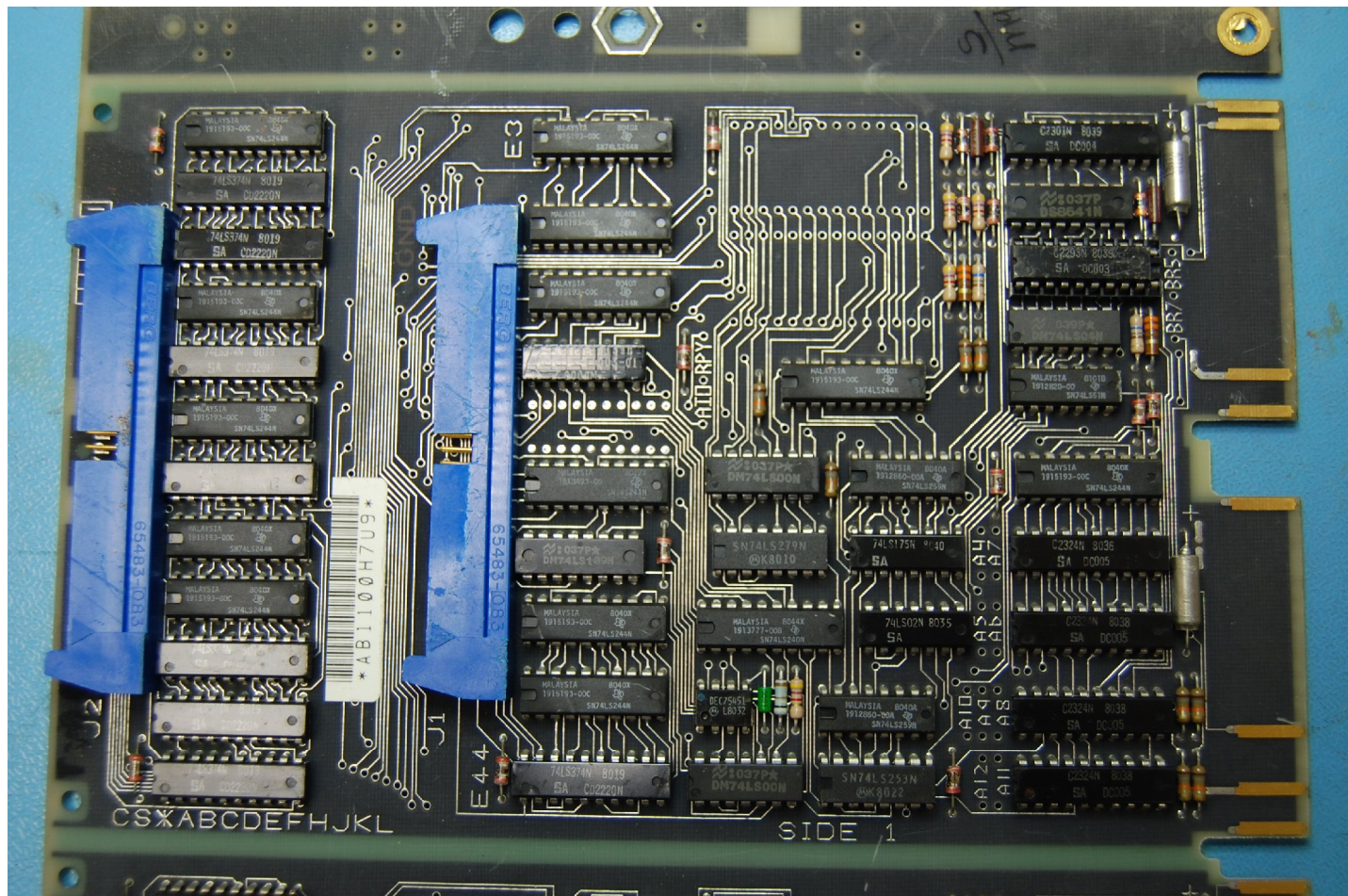


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Are the Differences Visible?





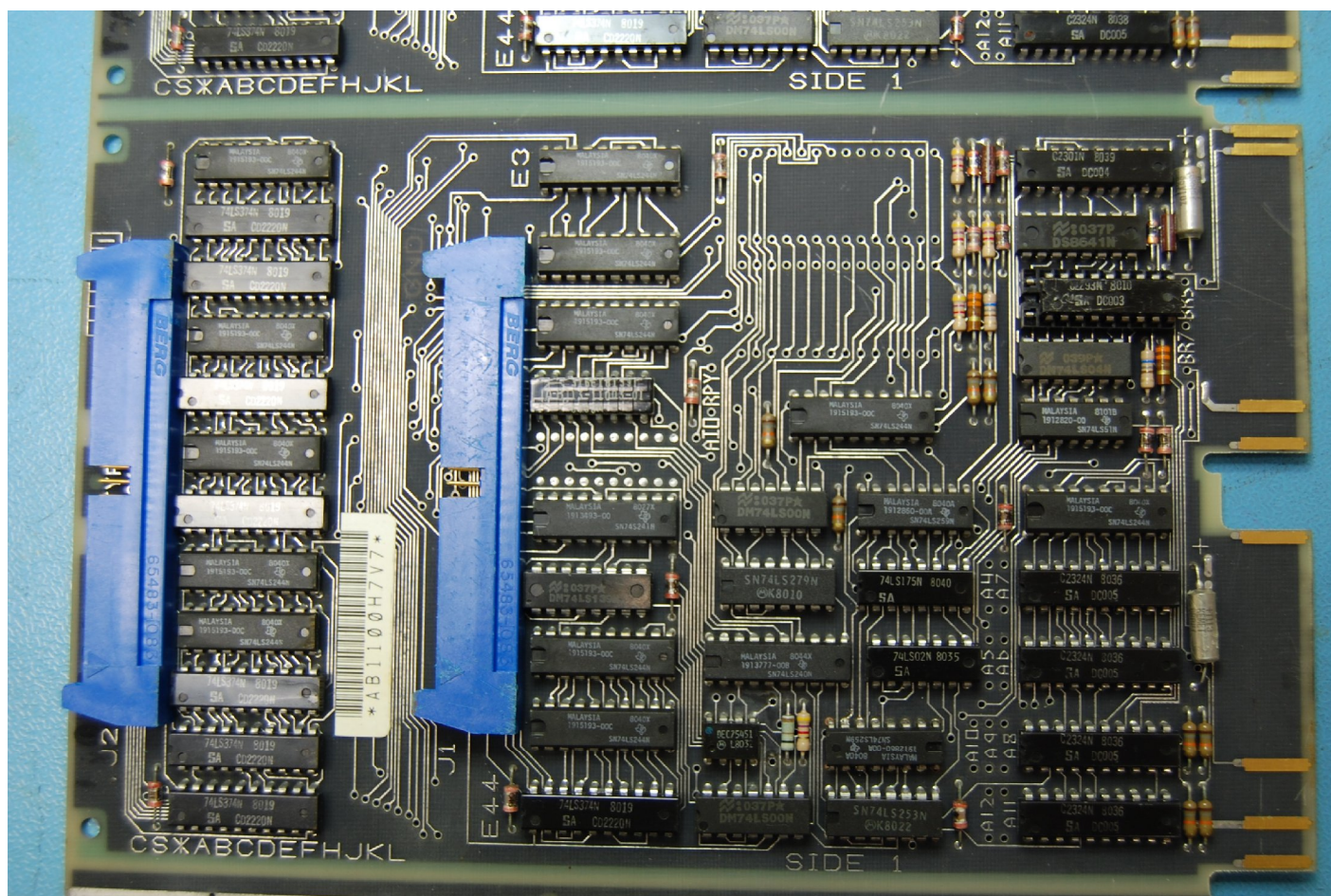
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Are the Differences Visible?

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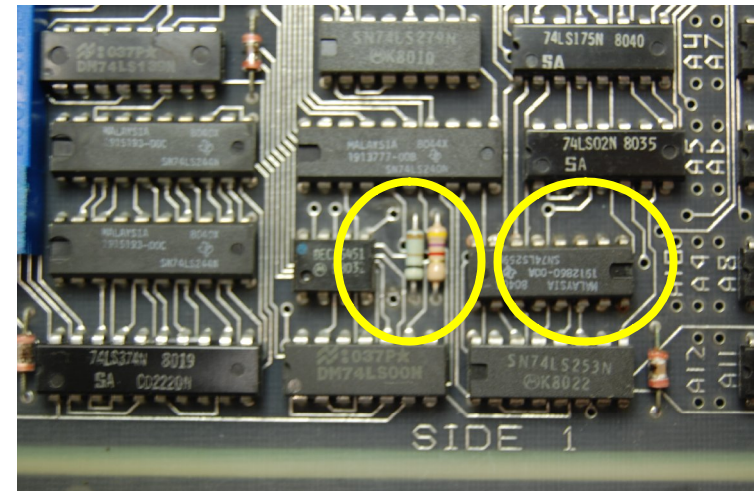
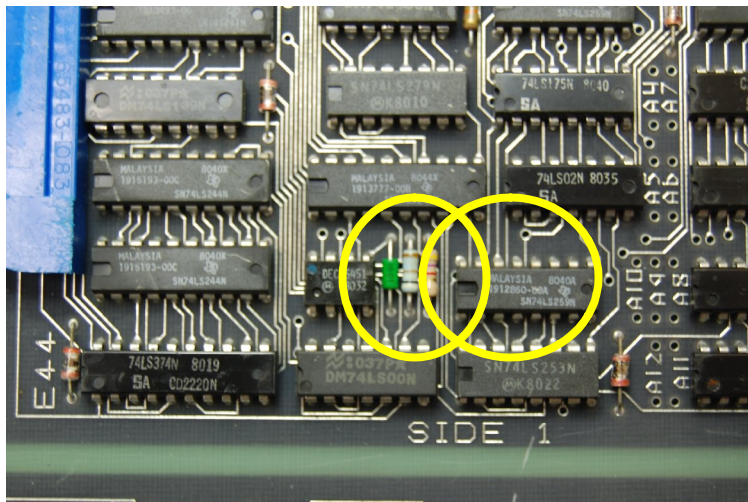
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Take A Closer Look





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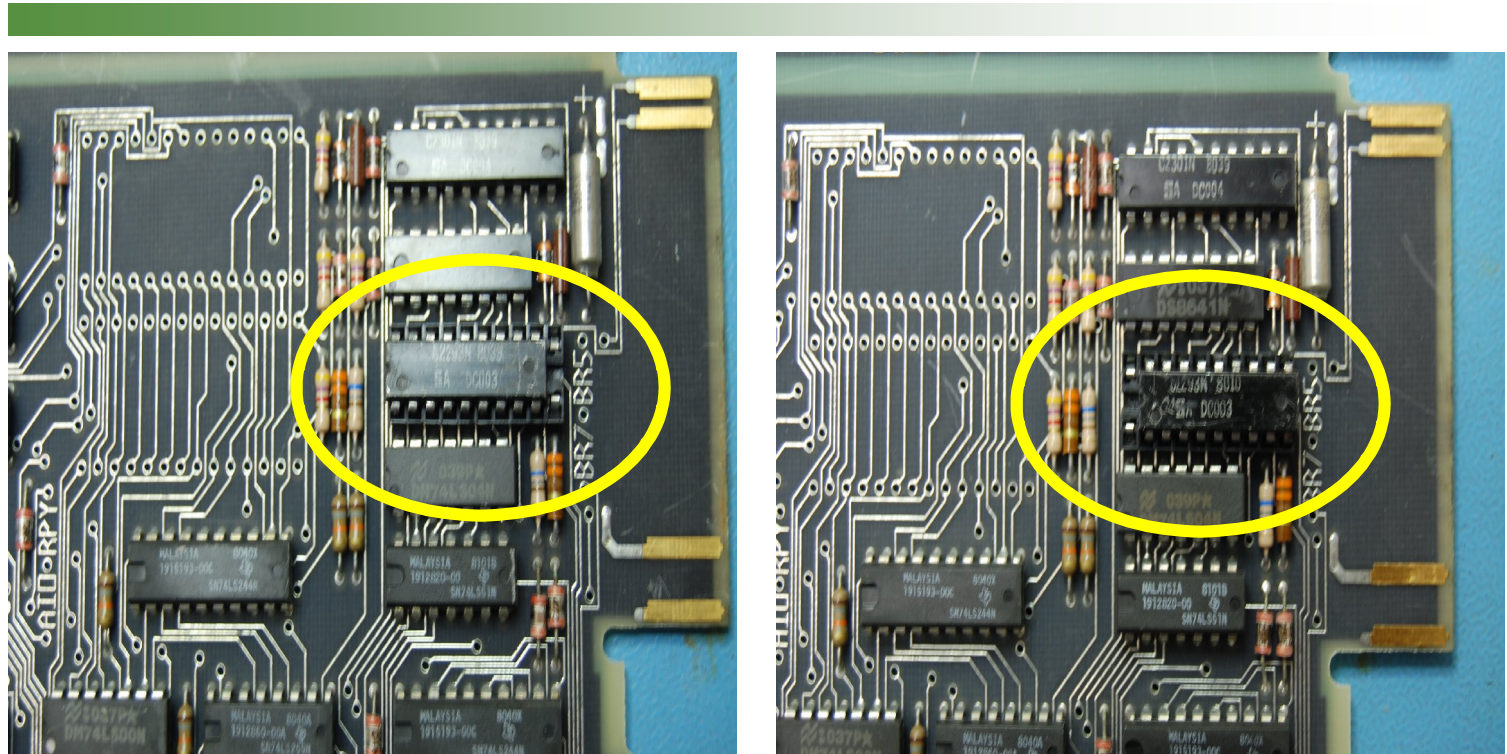
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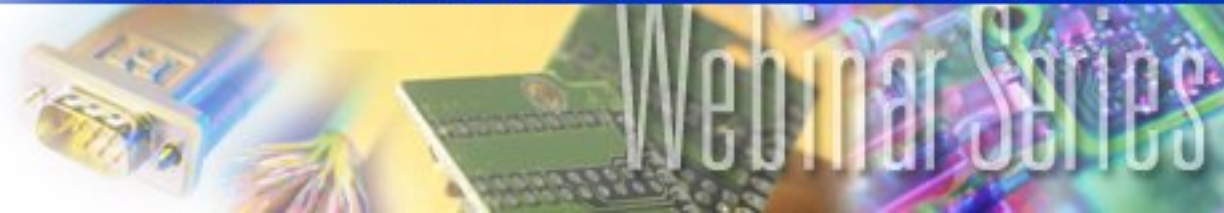


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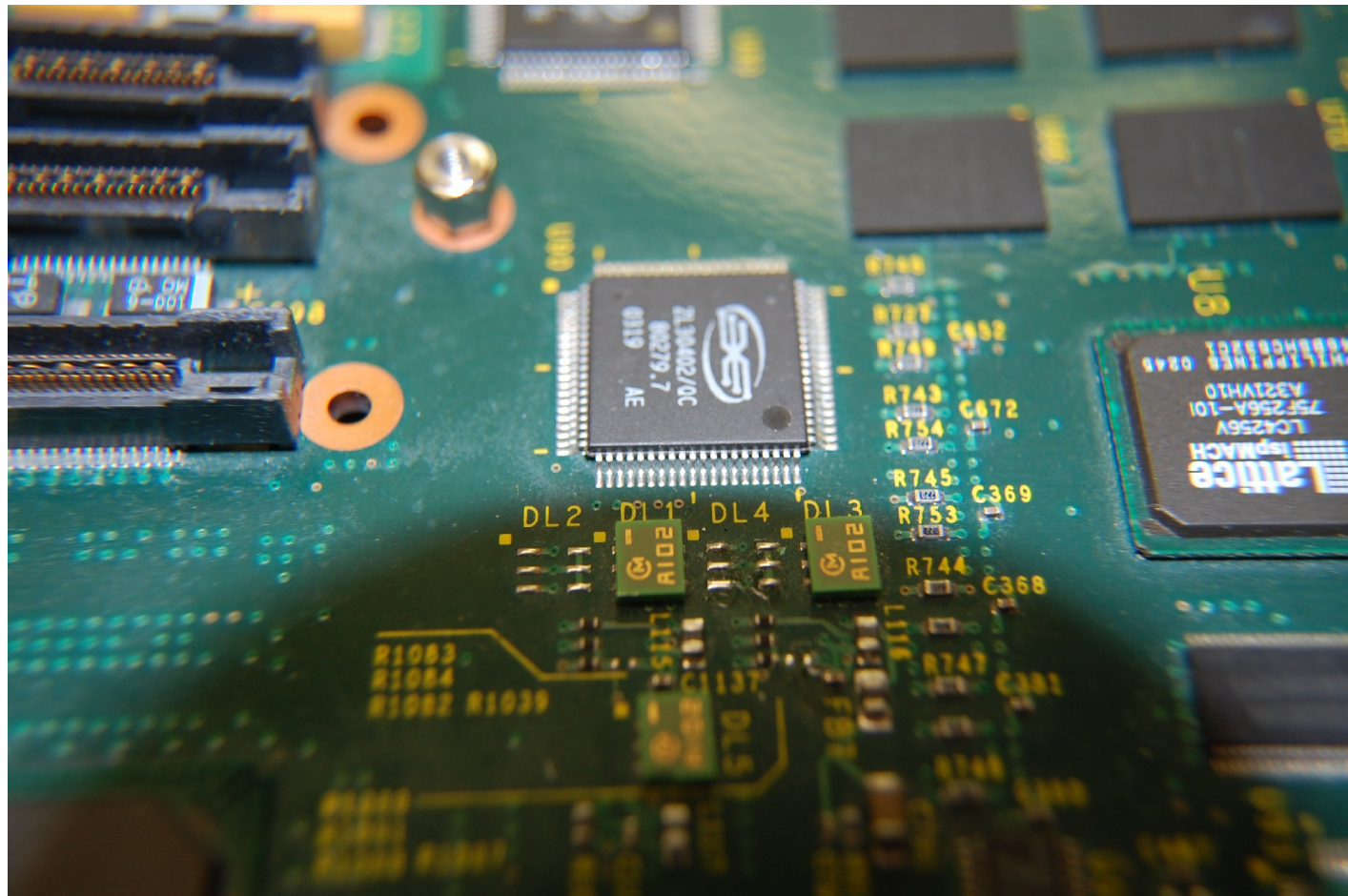


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Localized View



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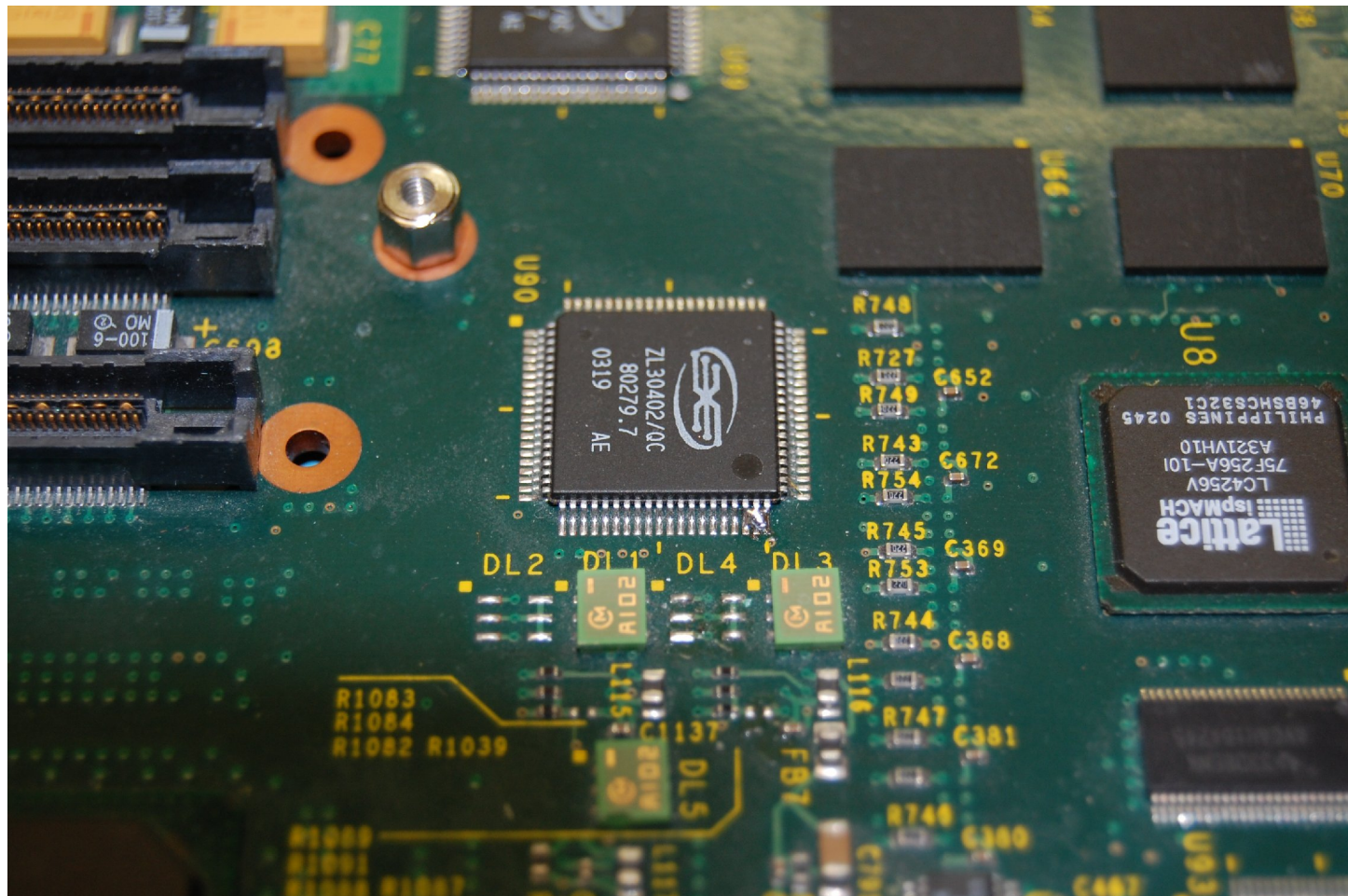


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See The Solder Short?



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Counterfeit Components



Adapted from FBI Criminal Investigation: Cisco Routers, 1/11/2008

Source: <http://www.usedcisco.com/press-my-esm_used_cisco_identifying_fake_chisco.aspx>



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Parts Identification

- Verify all parts are purchased from approved suppliers
- Know what the parts are supposed to look like from the manufacturer
- Get pictures of all the parts for reference purposes
- Certify all involved in inspection process are aware of this potential



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Upcoming . . .

- August 20th --
 - What type of training programs should I take?
 - What do they offer?
 - Why should I take them?



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