SNIA
SFF TWG
Technology Affiliate

New Project Proposal: SFF-TA-1033

Presentation Date: March 22, 2024

Editor: Paul Coddington [Amphenol]

Supporters: Paul Coddington [Amphenol],
Glen Hanna [Lenovo], & Scott Shuey [Lotes]

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- Supporters:
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  2. Lenovo
  3. Lotes

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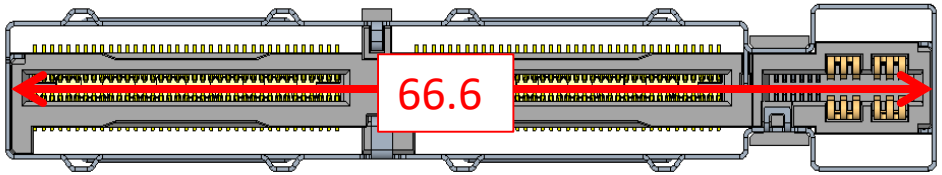
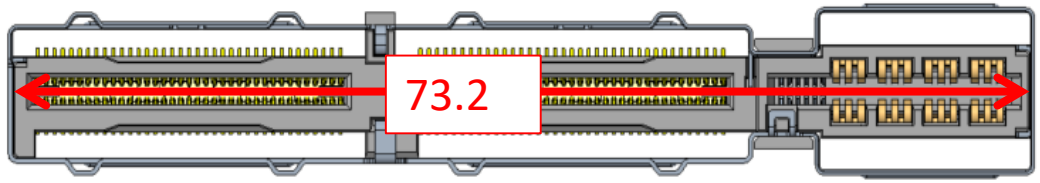
- **Some Background:** High Power version comparisons

21A



10.5A per power pin/ 21A total

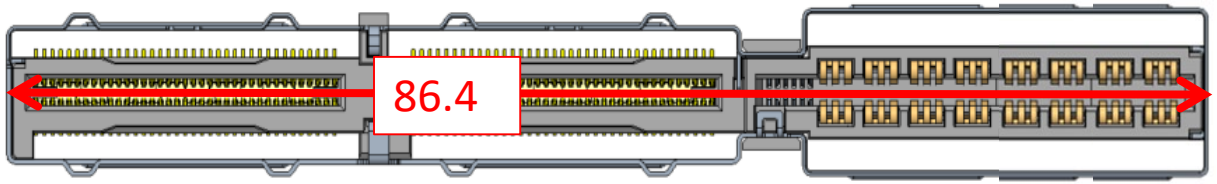
34A



8.5A per power pin/ 34A total

- When designing the 55A version …
  - Connector length, 86.4mm, was considered too long – would require stricter SMT reflow process.
  - T-Rise will exceed 30°C. To control within 30°C, we might need more CU layers to support.

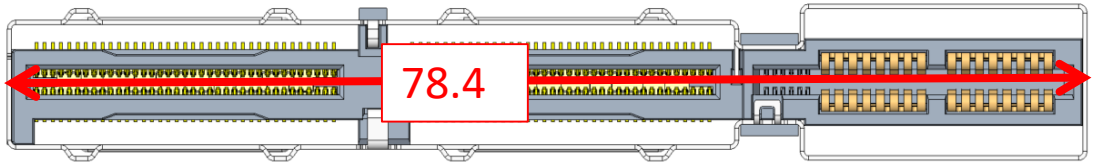
Early 55A design



6.875A per power pin (Assumed)/ 55A total with ΔT ~32˚C

  - Alternative design chosen

Rev 1.0 55A design



27.5A per power pin/ 55A total

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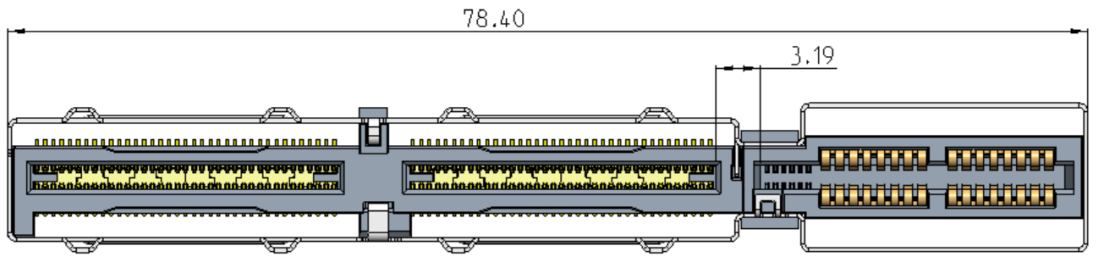
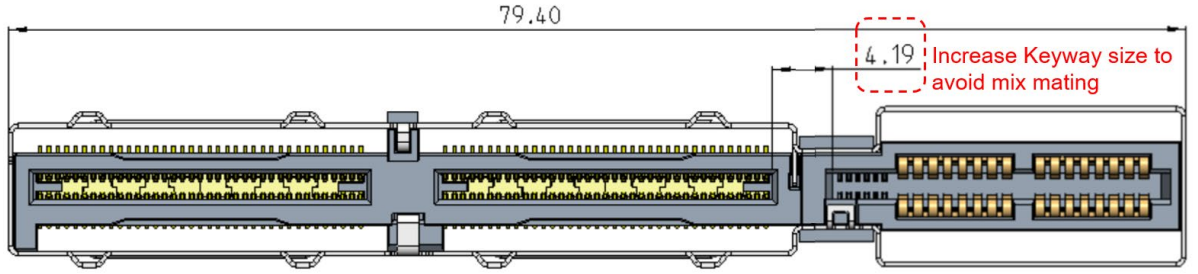
- **Issue with current 55A design**
  - In addition to mating plugs, these connectors can also accept an AIC.
  - What if someone plugs in an AIC expecting 21A or plugs in an AIC expecting 34A into the 55A connector?
    - Bad things can happen.
- **Solution:**
  - Increasing the keyway between the high speed signal portion of the connector and the sideband & power portion of the connector by 1mm will prevent unwanted AICs from accidentally plugging into the 55A connector.

Existing design (SFF-TA-1033 Rev 1.0)



New proposal



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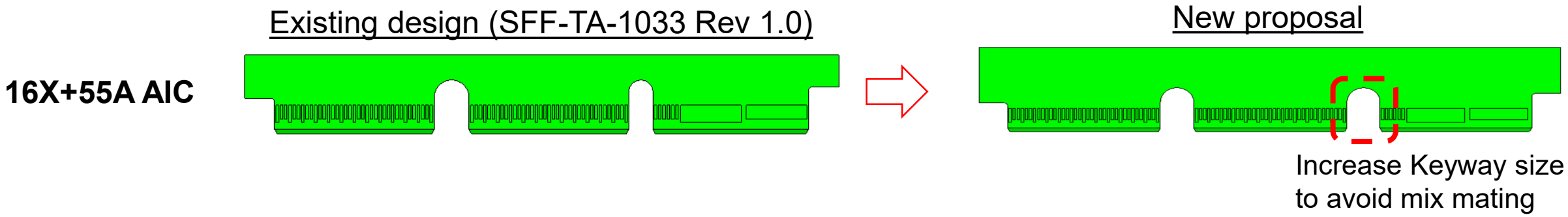
- **To go along with the proposed 55A connector key width change, a change to the 55A AIC keyway width is required.**



- **The same keyway width modification will be needed for the 55A plugs to maintain compatibility.**

- **Will add some text in Rev 2.0 to highlight incompatibility with the Rev 1.0 55A plugs, AICs, & connectors. Will also add warning notes for the mating matrix conditions indicated in yellow on slides 10 & 11 of this presentation.**

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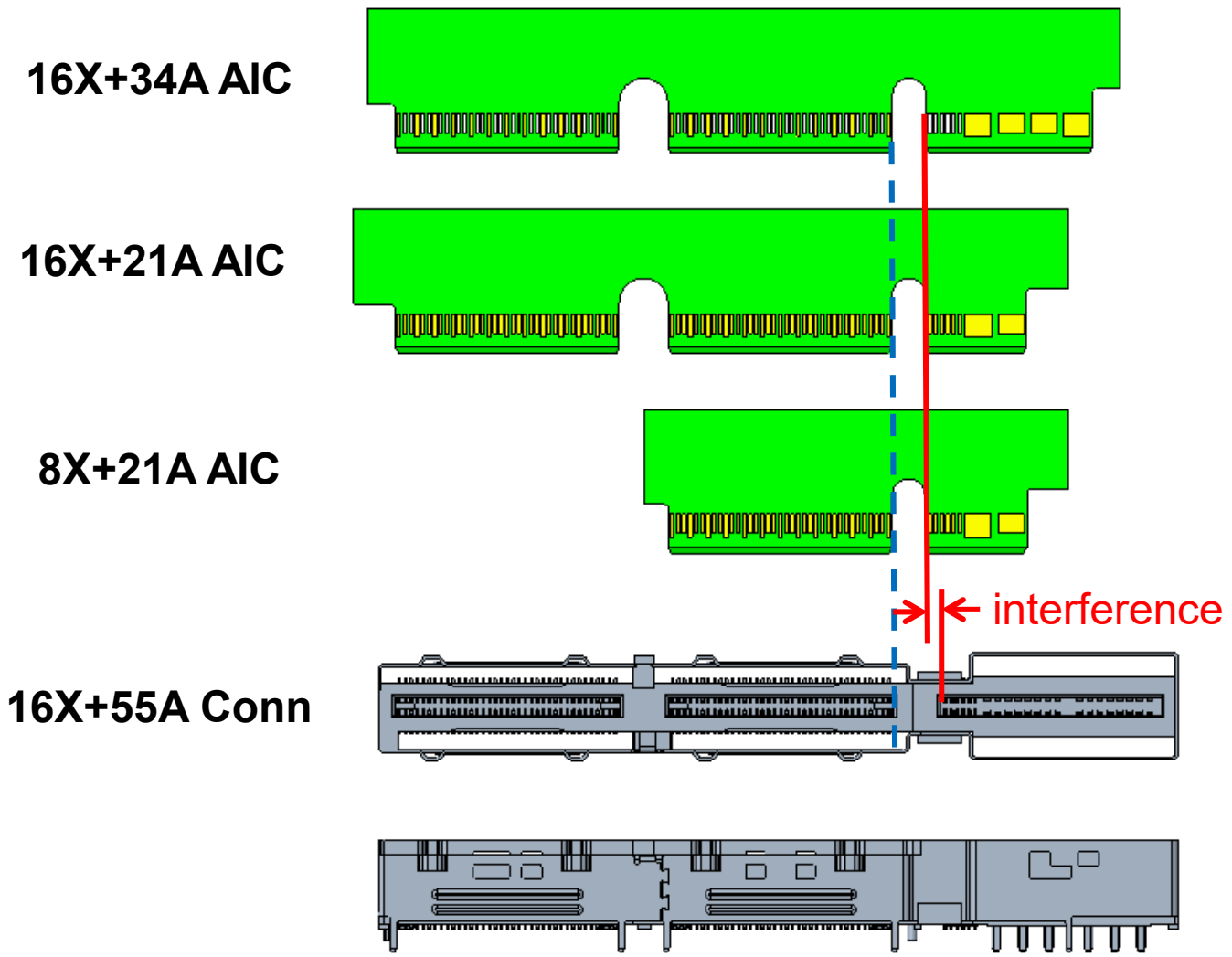
- **Mix Mating Avoided …**
  - AIC (16X+34A, 16X+21A, & 8X+21A) cannot be plugged in after the 16X+55A connector key width design change.



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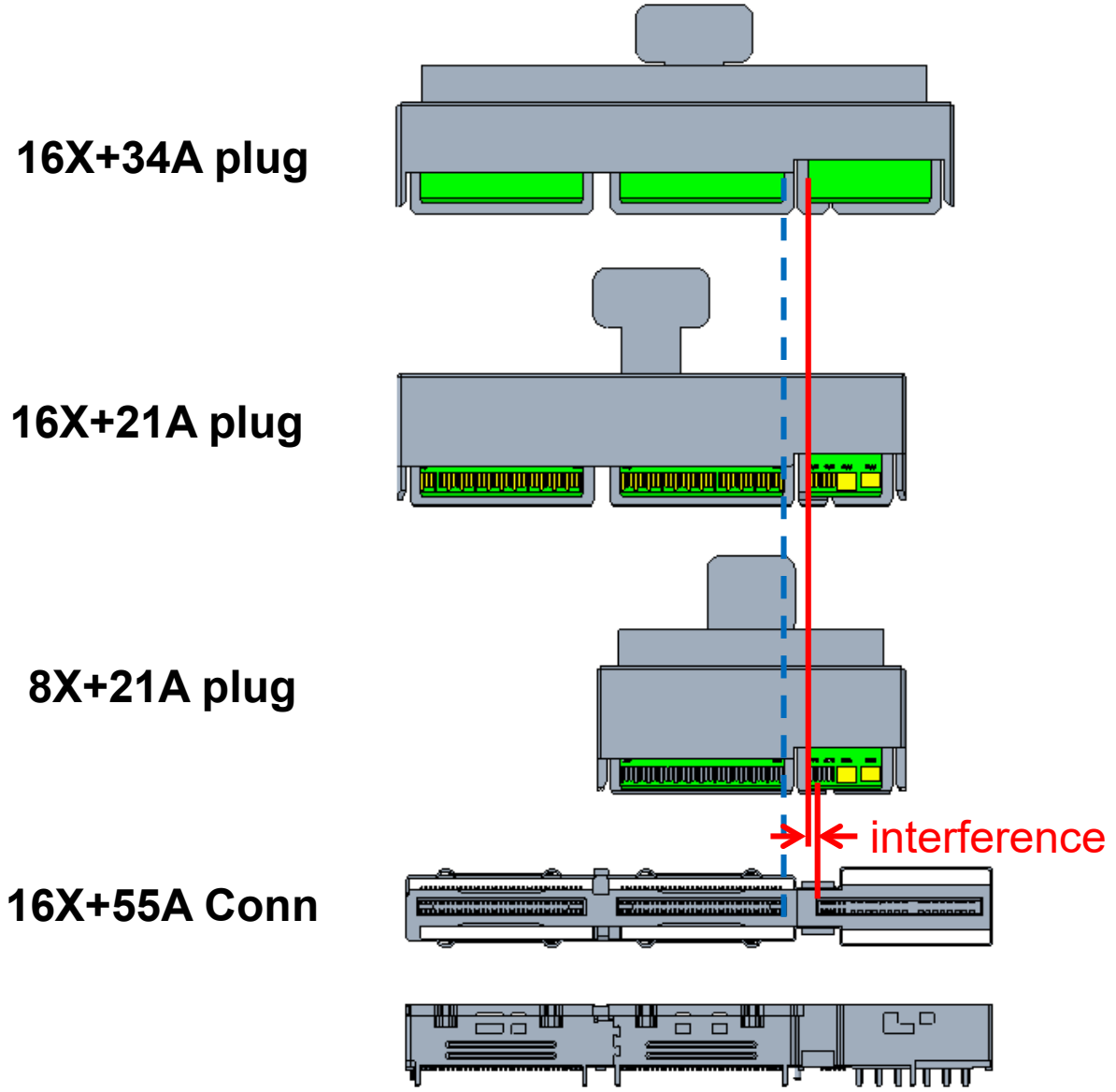
- **Mix Mating Avoided …**
  - Cable plug (16X+34A, 16X+21A, & 8X+21A) cannot be plugged in after the 16X+55A connector key width design change.



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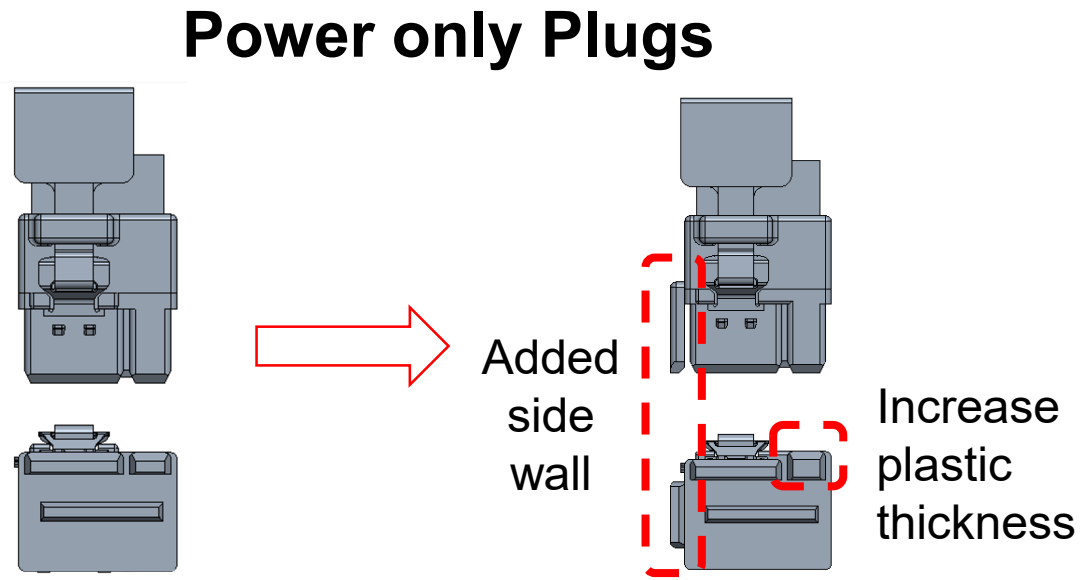
- **Another potential mix mating of a plug connector with the wrong receptacle connector …**
  - The Rev 1.0 lower amperage power-only Power Plugs could potentially plug into the 55A receptacle connectors, which could have bad results.
- **Solution:**
  - Add a side wall to the power-only Power Plugs to prevent plugging into the wrong receptacle connector.
  - Increase the plastic thickness of an existing wall to cause mating interference when trying to plug into the wrong receptacle connector.



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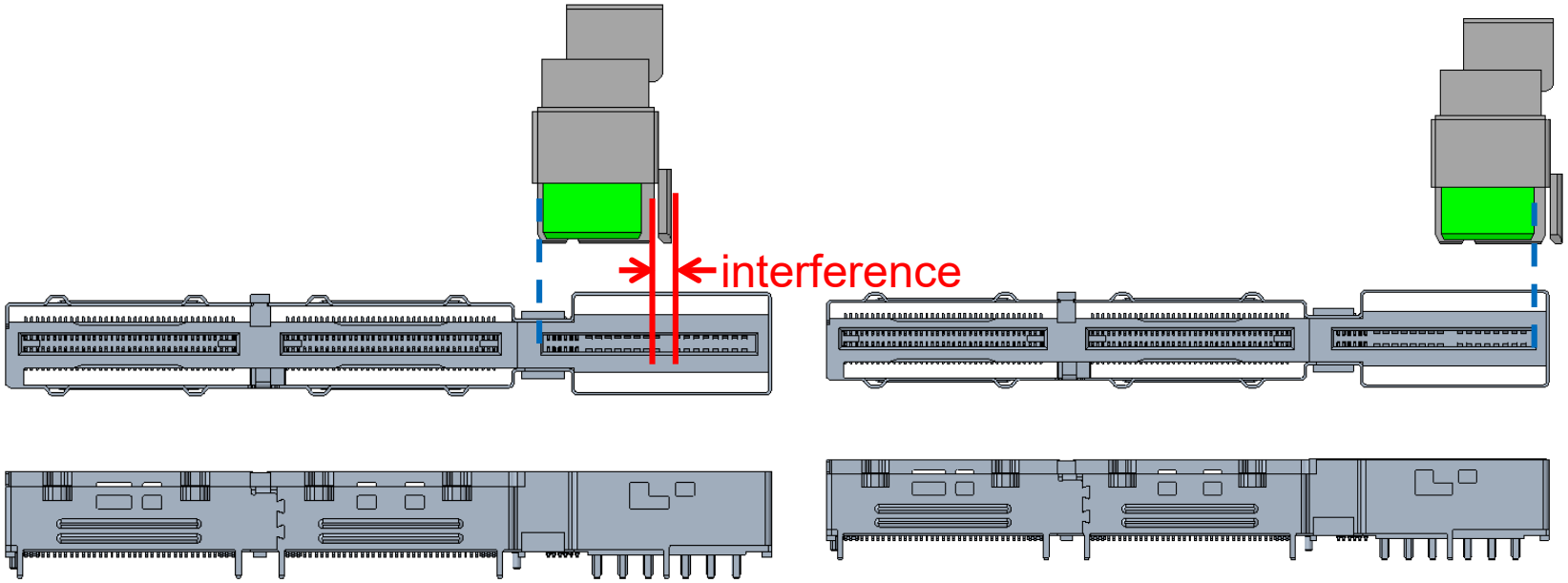
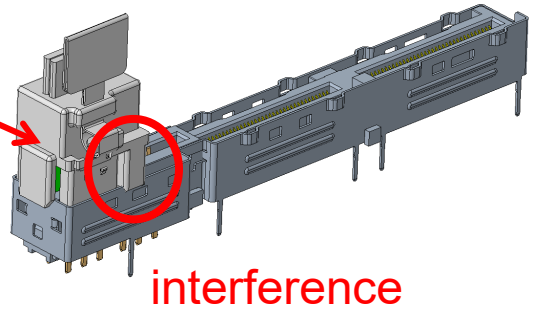
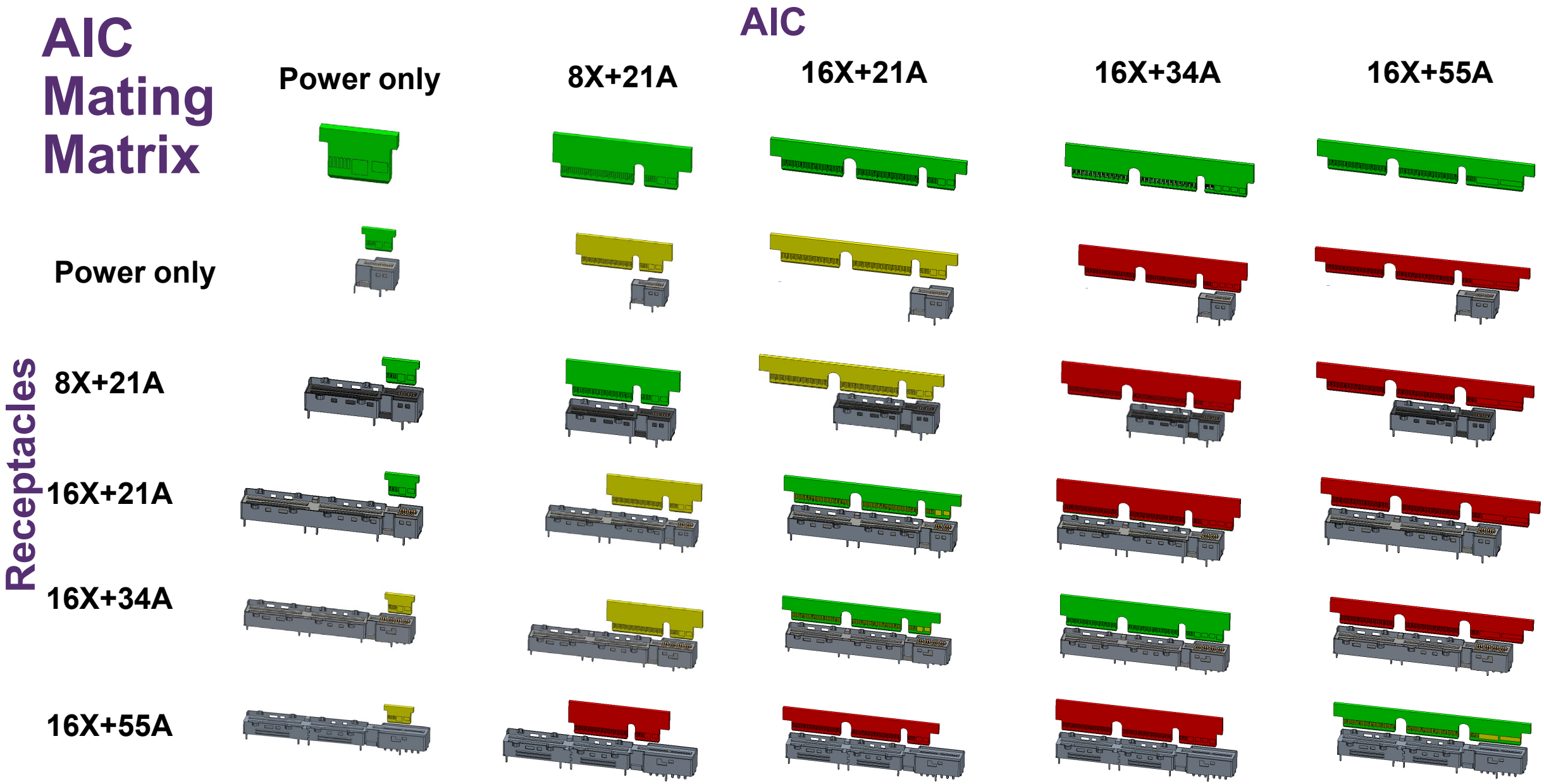
- **Mix Mating Avoided …**
- Power Plug cables cannot be plugged into the 16X+55A connector after the Power Plug design change.



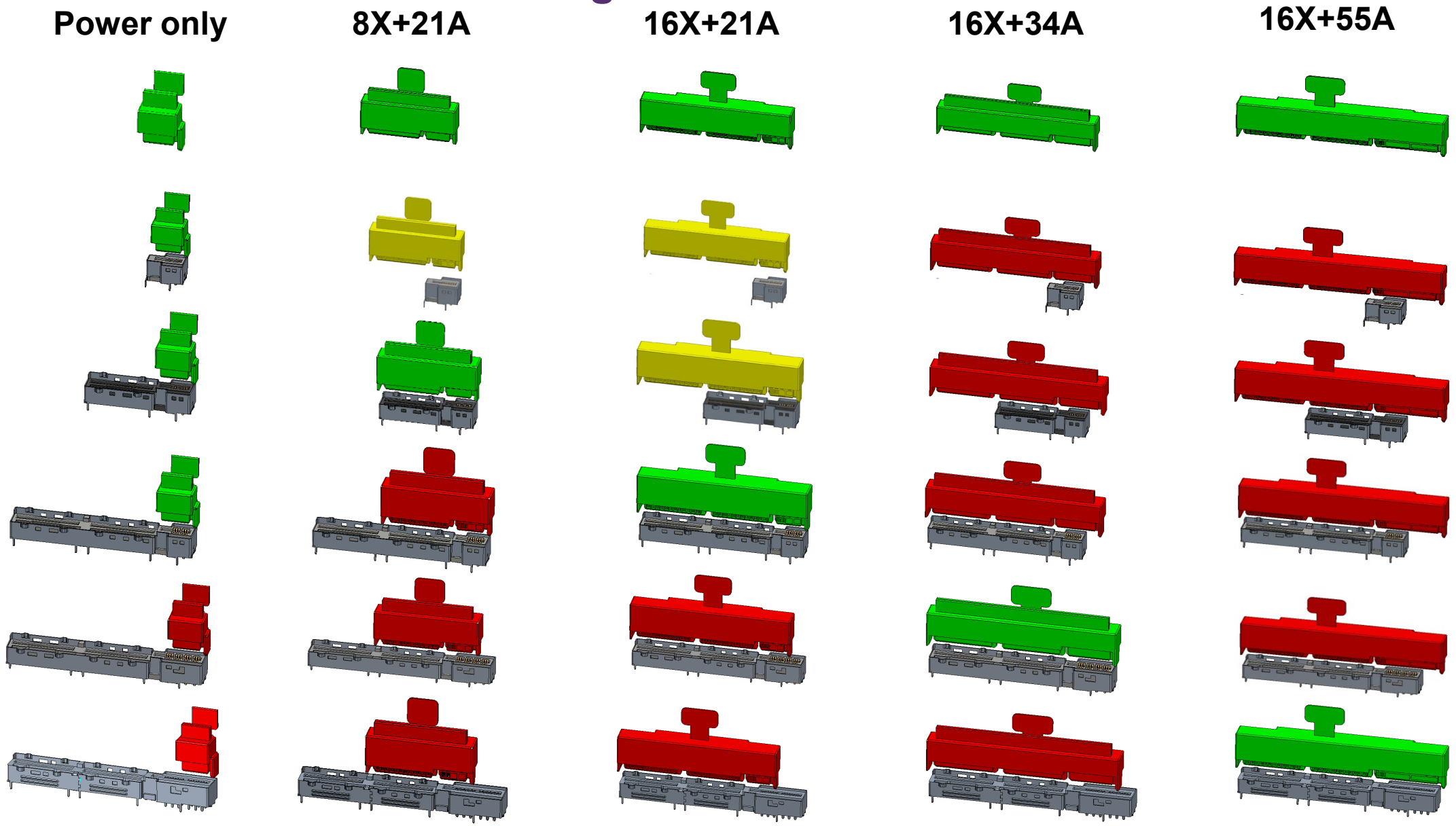
After mating attempt



AIC Mating Matrix



Plug Mating Matrix



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- **Updates to Table 5-1 Datum Descriptions**
  - Modify the description of Datum C for further clarification
  - Add Datum R (used in Figures 6-20, 6-22, & 6-24), was missing from the table

Table 5-1 Datum Descriptions

Datum	Description
A	-Mating Surfaces to the PCB or PCB Pads
B	Plug and Receptacle Mechanical Stop
C	Centerline of the Receptacle Paddle Card Slot Height / Mating Interface Centerline
D	Centerline of Paddle Card Thickness
E	Bottom Surface of Plug Body
F	Centerline of Key
G	Leading Edge of Paddle Card
J	Centerline of the Receptacle Width
K	Centerline of Plug Body
L	Receptacle Shell Surface
P	Receptacle Shell Surface
R	Power Paddle Card Interface Width Centerline
V	Centerline of the Receptacle's Locating Peg
W	Centerline of the Receptacle's Locating Peg

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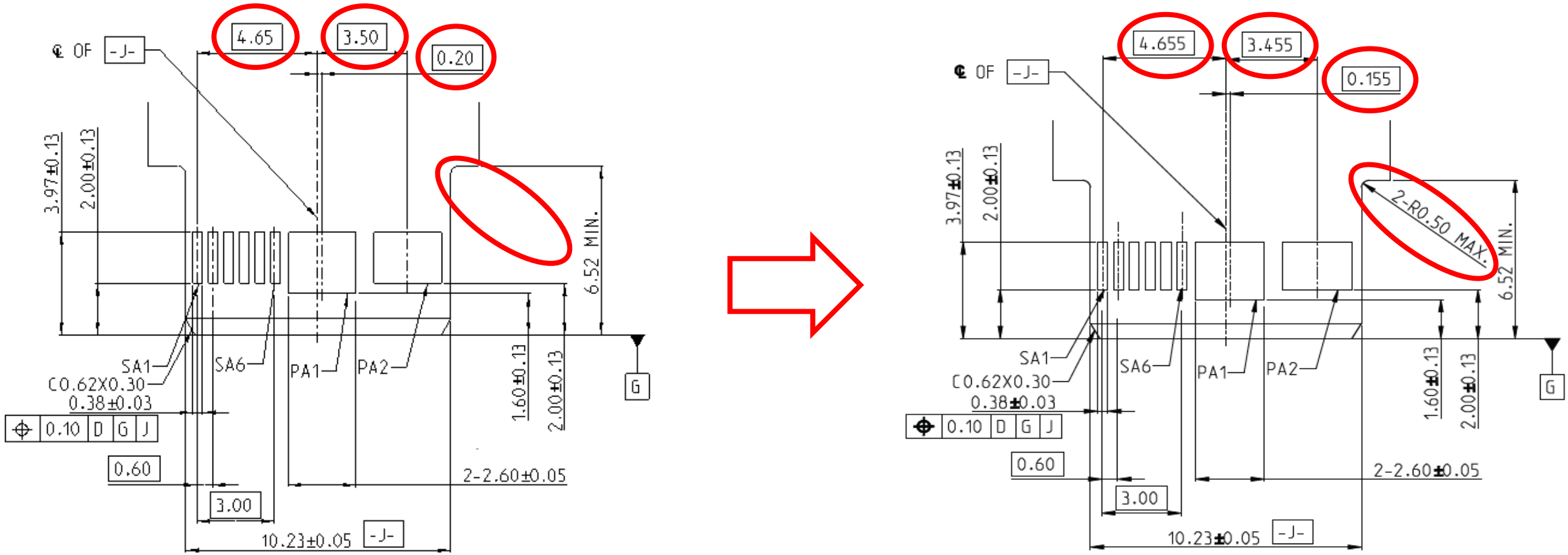
- **Corrections to 21A Power AIC (Figure 6-27)**
  - Modify pad location dimensions from Datum J, as show below
  - Add missing radius dimension, as shown below



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- IP Declaration:
  - NOTE: The document will undergo a new IP disclosure period once published as a new Rev 2.0 per the SNIA SFF Process Guide
- General timeline for project completion (subject to change)
  - Initial Project Start Approval: March 22, 2024
  - DRAFT Revision 1.0.1 estimated by April 15, 2024?
  - Review Ballot estimated to end by May 15, 2024?
  - Comment Resolution & updated revision estimated by June 7, 2024?
  - Approval Ballot end estimated by July 10, 2024?
  - Comment Resolution & final Published revision estimated by July 22, 2024?
  - IP Declaration completion estimated by September 20, 2024?

