

# Pop-ups for FEMB QC Procedure

Karla Flores, Lingyun Ke

# Initial Checkout List

Please contact Tech Coordinator if any accessory is missing!



## Safety First!



Long  
Sleeve Top

Long Pants

Closed Toe  
Shoes

ODH Monitor



ESD-safe Gloves



Cryogenic Gloves

Anti-static  
Wrist Strap

Cryogenic  
Face Mask



CE box Support Structure  
(2 sets)



Cold cable bundle (2 sets)



2 accessory trays



# Checklist for accessory tray # 1

Please contact Tech Coordinator if any accessory is missing!

Item	Quantity
Screwdriver (PHILLIPS)	1
Allen wrench(3/16)	1
miniSAS cable clamp with 2 thumb nuts	1
Power cable clamp with 2 thumb nuts	1
Yellow Nylon Probe Pick Spudger	1
miniSAS cable clamp (VD)	2
M3x12 screws (VD)	>4
Thumb nut for miniSAS cable adapter (HD)	>4
miniSAS cable adapter	2
ToyTPC with cable attached	4
CE box fastener (2 unit/set)	2



screwdriver



miniSAS cable clamp



power cable clamp



Spudger



**HD** miniSAS  
cable adapter



3/16 Allen wrench



CE box fastener (B)



CE box fastener (T)



Toy TPCs (B)



Toy TPCs (T)



**VD** M3x12

**HD** M3  
thumb nuts

**VD** miniSAS  
cable clamp

# Checklist for accessory tray # 2

Please contact Tech Coordinator if any accessory is missing!

Item	Quantity
Screwdriver (PHILLIPS)	0
Allen wrench(3/16)	0
miniSAS cable clamp with 2 thumb nuts	1
Power cable clamp with 2 thumb nuts	1
Yellow Nylon Probe Pick Spudger	1
miniSAS cable clamp (VD)	2
M3x12 screws (VD)	>4
Thumb nut for miniSAS cable adapter (HD)	>4
miniSAS cable adapter	2
ToyTPC with cable attached	4
CE box fastener (2 unit/set)	2



miniSAS cable clamp



power cable clamp



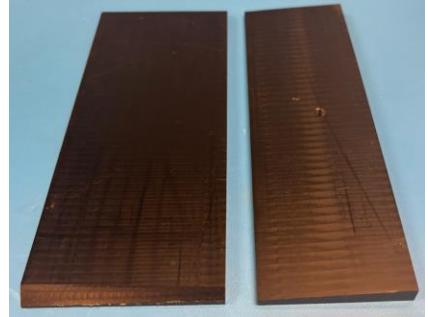
Spudger



HD miniSAS  
cable adapter



CE box fastener (B)



CE box fastener (T)



Toy TPCs (B)



Toy TPCs (T)



VD M3x12

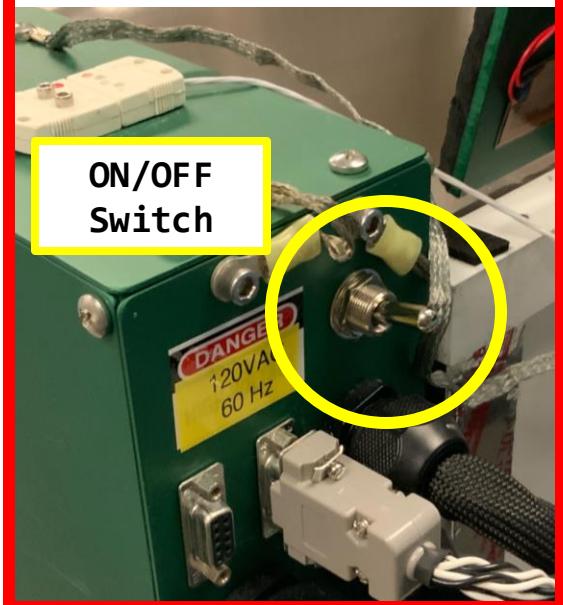
HD M3  
thumb nuts

VD miniSAS  
cable clamp

# LN2 Filling (STOP if you are NOT trained)

Follow these steps to fill the CTS dewar with LN2:

1. Turn On CTS Controller and set in IDLE



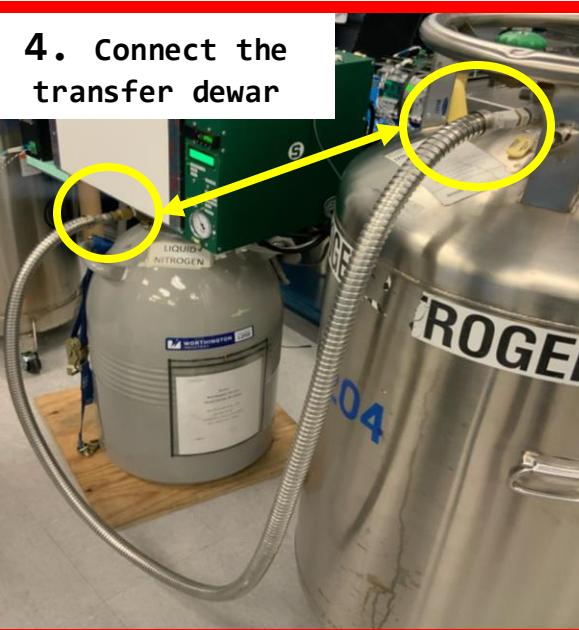
2. If value for "Dewar Full" is less than 1800, refill. Follow steps 3-10



3. Remove the LN2 Dewar plugs  
Keep CTS cover close



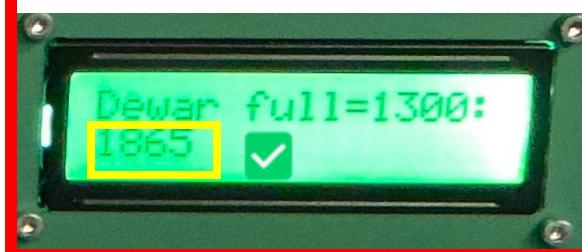
4. Connect the transfer dewar



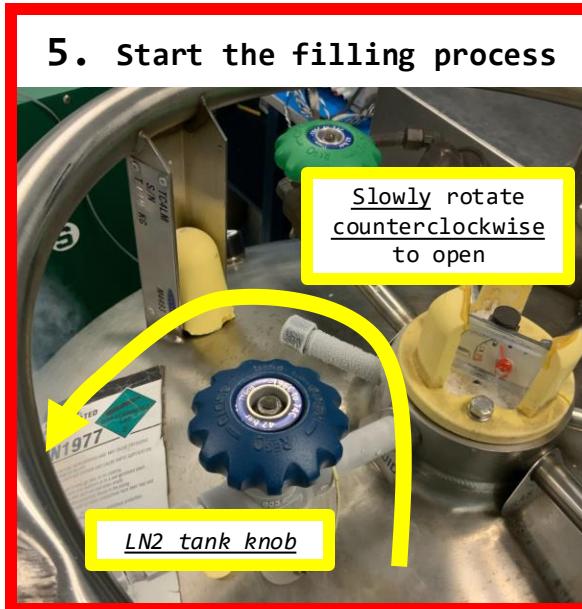
5. Start the filling process



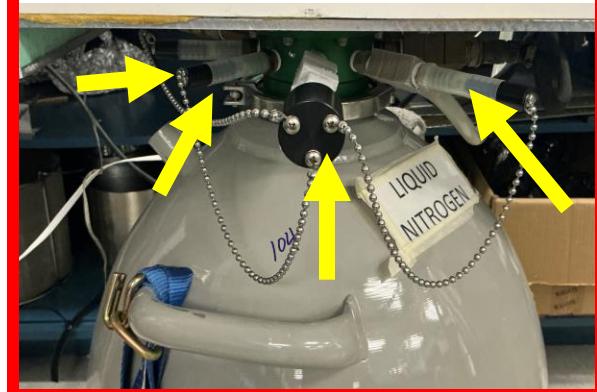
6. Monitor until "Dewar Full" > 1800



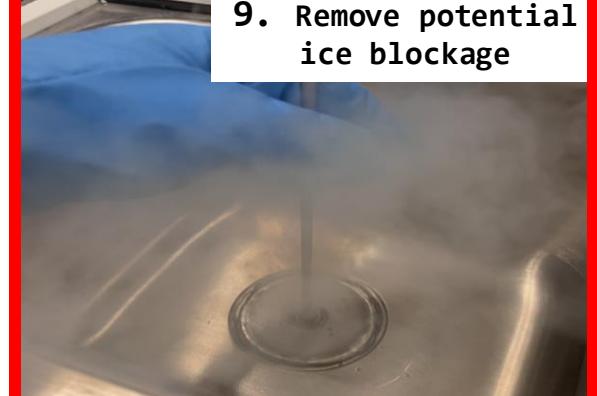
7. Stop the filling process (rotate LN2 tank knob clockwise)



8. Remove the transfer line and place LN2 Dewar plugs back.



9. Remove potential ice blockage



10. Set chamber in warm mode for 15 minutes and then turn CTS OFF.

# CE Box Visual Inspection

Please contact Tech Coordinator if abnormality is observed!

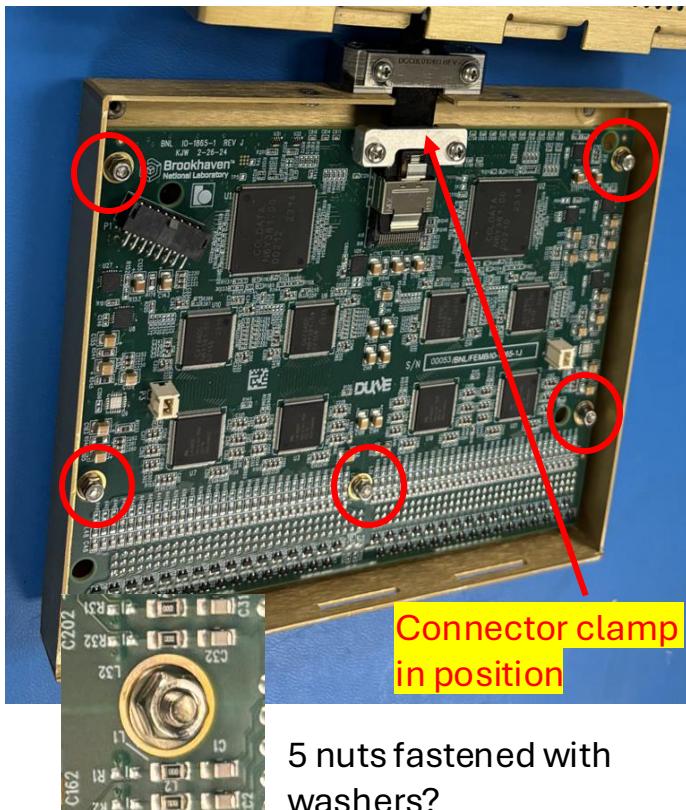


If foam box was broken?  
If HWDB QR sticker was missing?



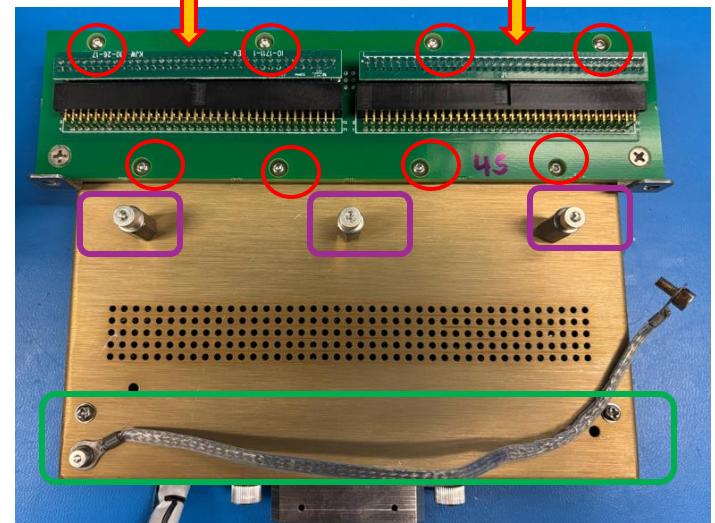
CE box enclosed by ESD bag?

## VD CE box (1865)

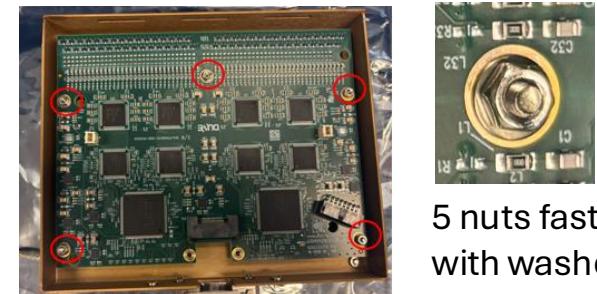


5 nuts fastened with  
washers?

## HD CE box (1826)



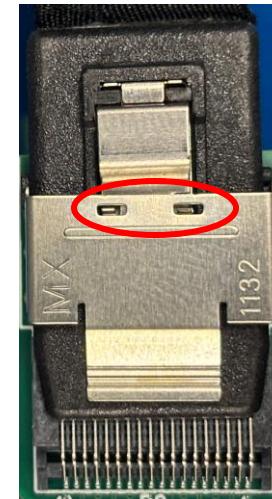
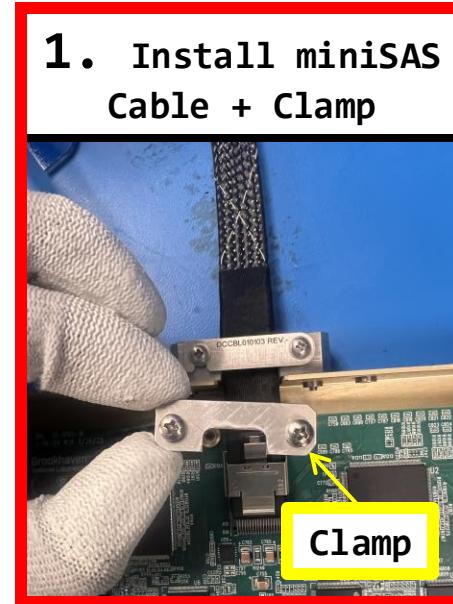
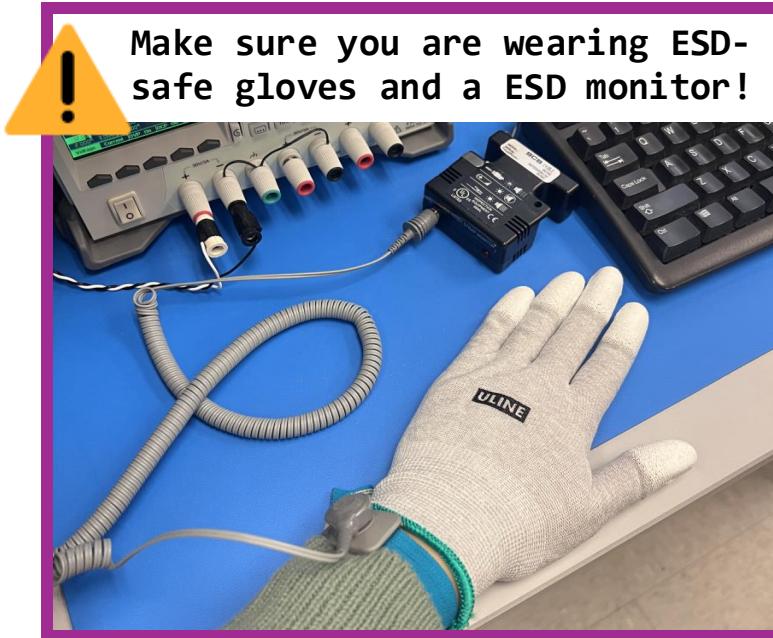
6 Nuts for CR-RC adapter board?  
3 sets of lock nut and washer?  
1 Ground strip?  
2 FE input terminators?



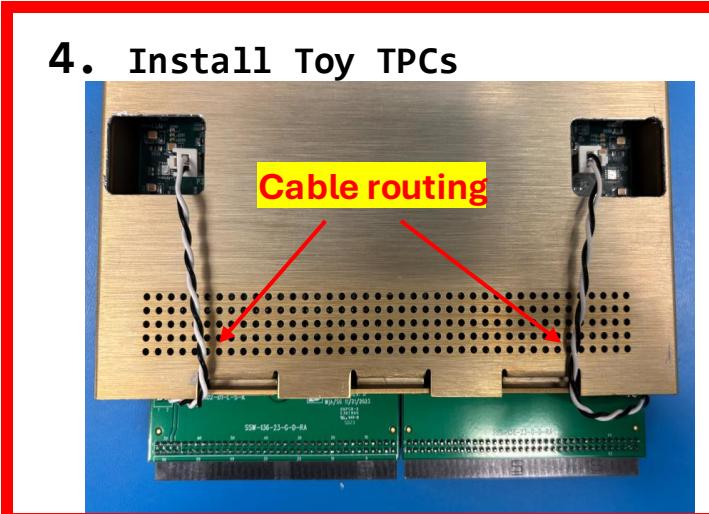
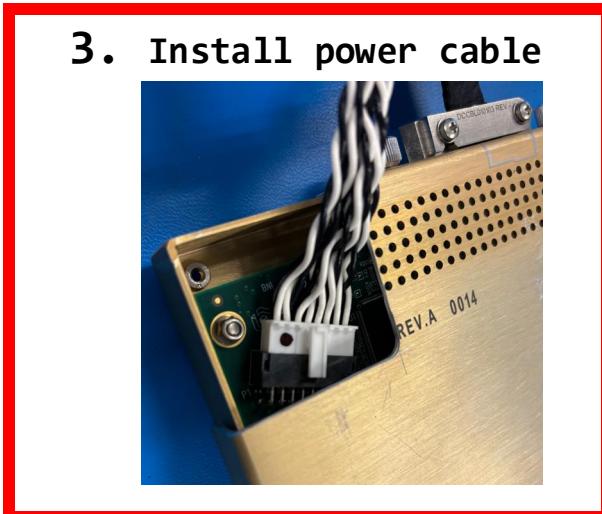
5 nuts fastened  
with washers?

# Bottom CE Box (VD) Assembly

Follow these steps to assemble the Bottom CE Box in the support structure:

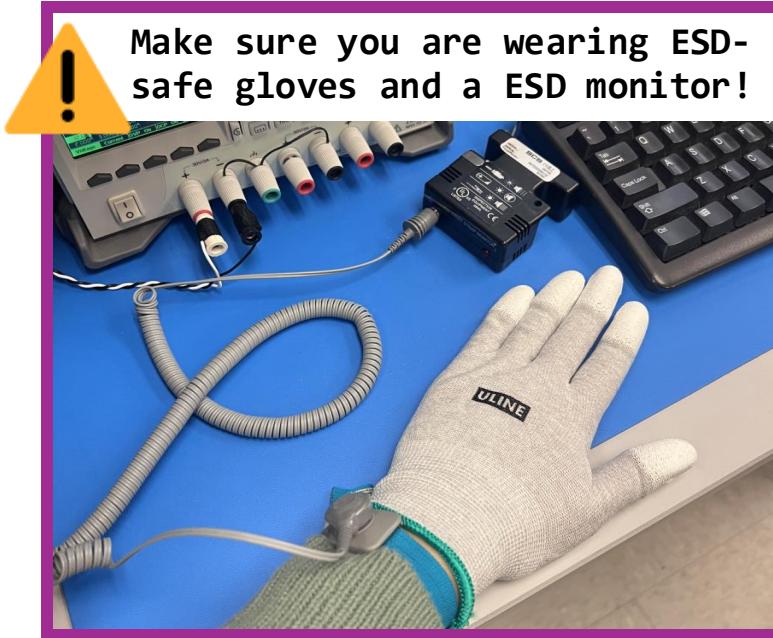


Locks in position

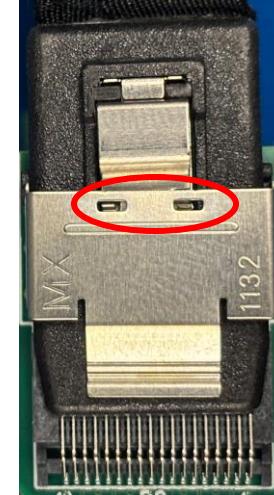
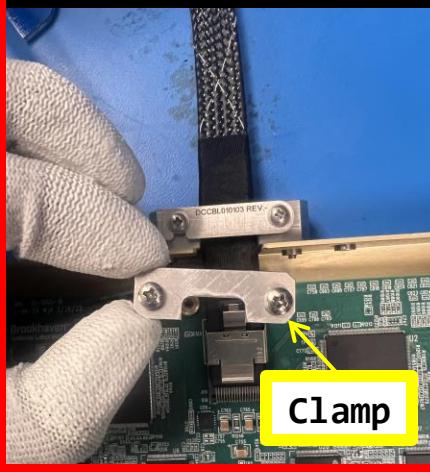


# Top CE Box (VD) Assembly

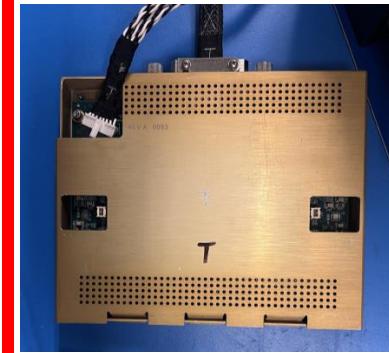
Follow these steps to assemble the Top CE Box in the support structure:



## 1. Install miniSAS Cable + Clamp



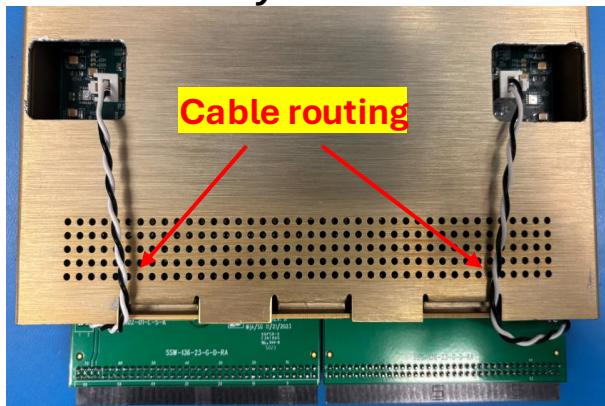
## 2. Install Test Cover



## 3. Install power cable

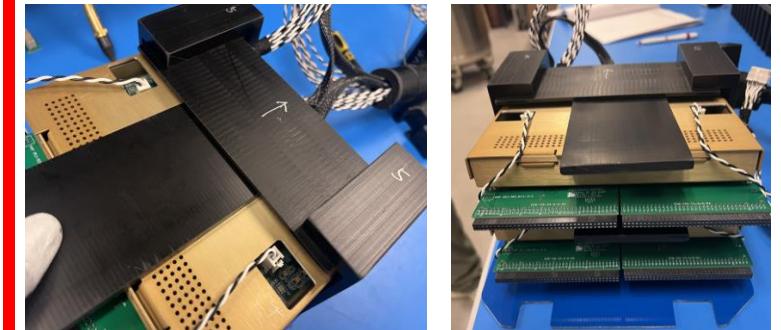


## 4. Install Toy TPCs



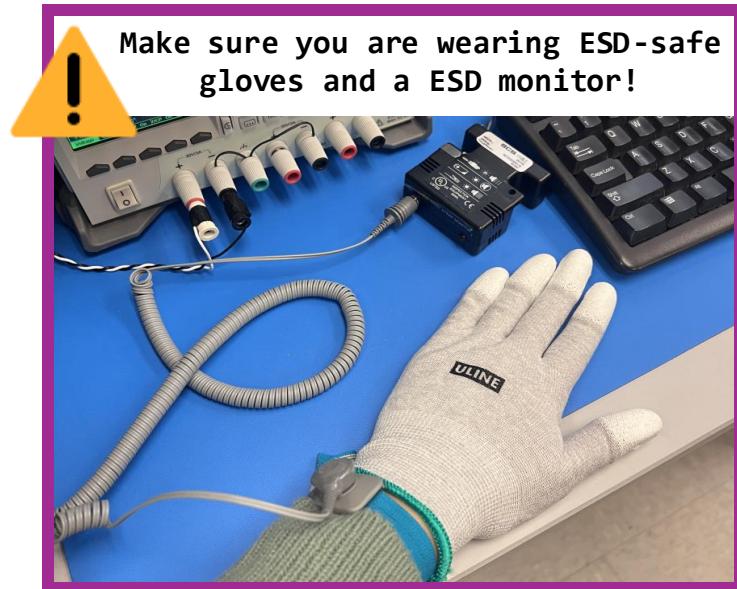
Locks in position

## 5. Insert into top Slot

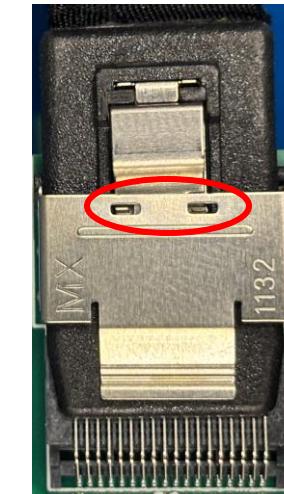


# Bottom CE Box (HD) Assembly

Follow these steps to assemble the Bottom CE Box in the support structure:



1. Install Adapter + miniSAS Cable

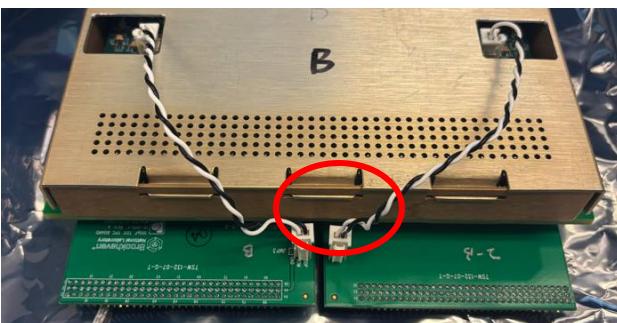


Locks in position

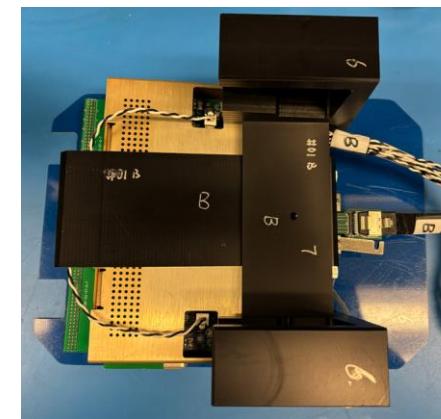
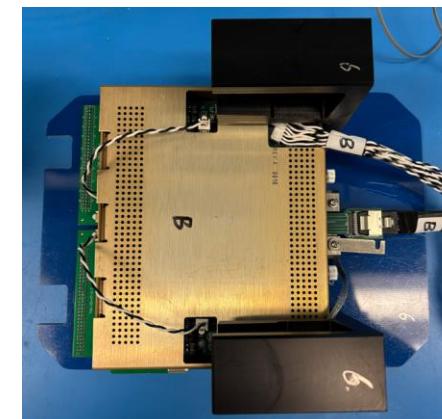
2. Install Test Cover
3. Install Power Cable



3. Remove FE terminators and install Toy TPCs

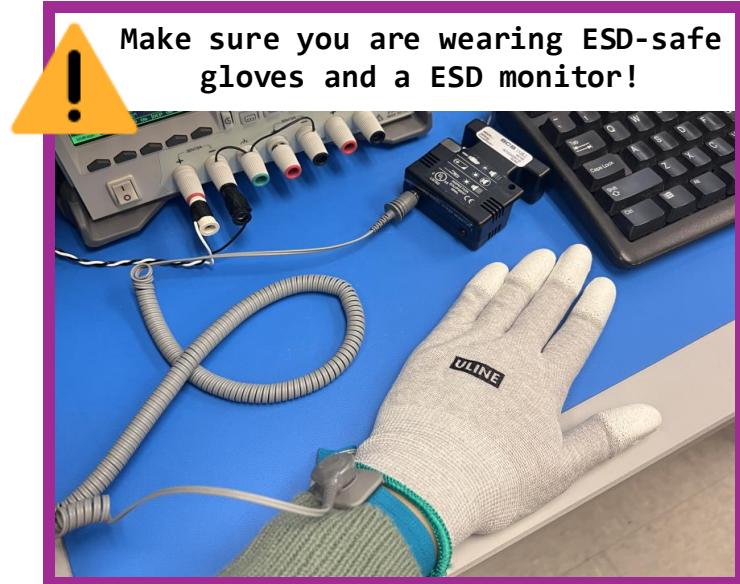


4. Insert into Bottom Slot and fasten CE box

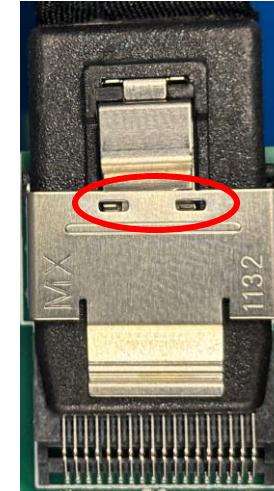


# Top CE Box (HD) Assembly

Follow these steps to assemble the Top CE Box in the support structure:



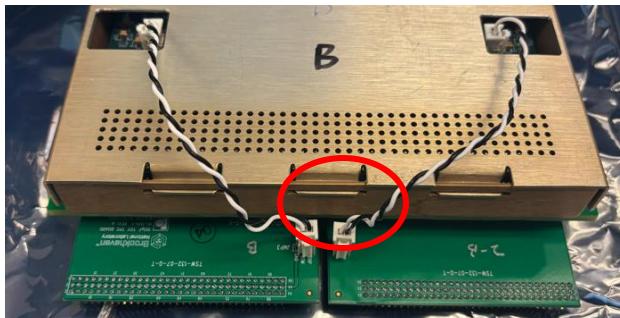
## 1. Install Adapter + miniSAS Cable



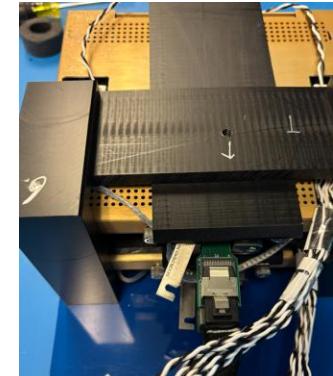
## 2. Install Test Cover 3. Install Power Cable



## 3. Remove FE terminators and install Toy TPCs

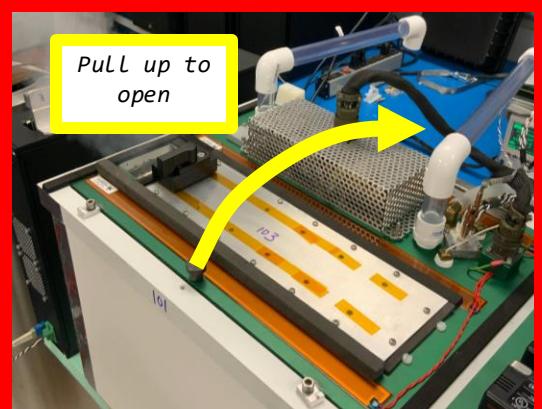


## 4. Insert into top Slot and fasten CE box (secure ground strips)



# Place CE Boxes into CTS Chamber

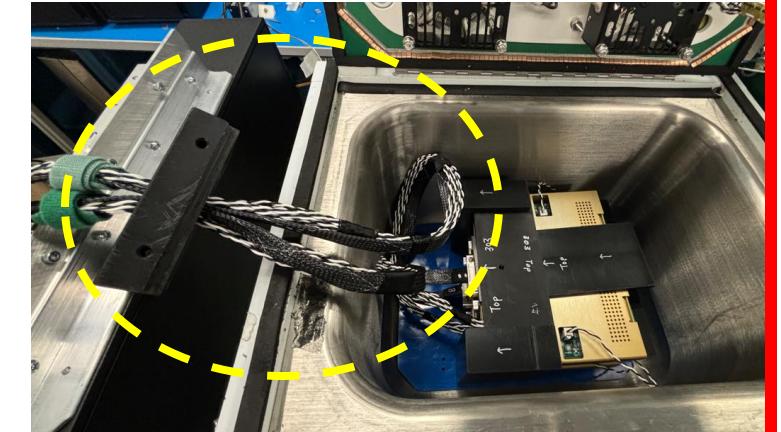
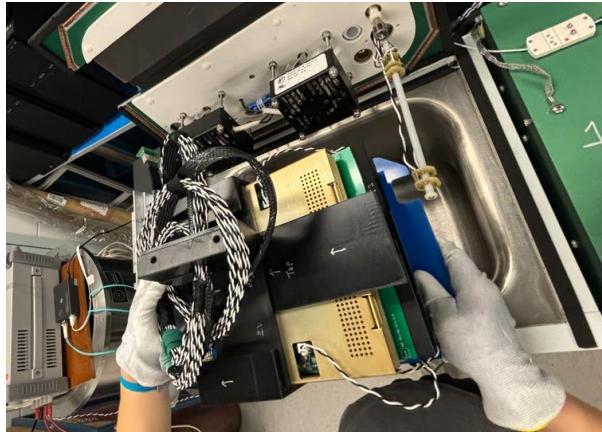
Follow these steps to install the FEMBs in the CTS:



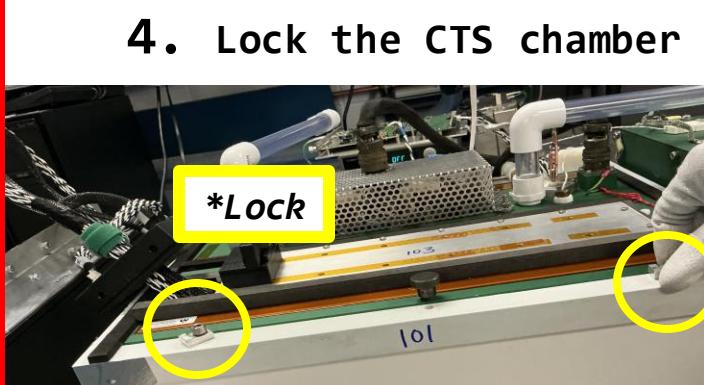
1. Open the CTS cover



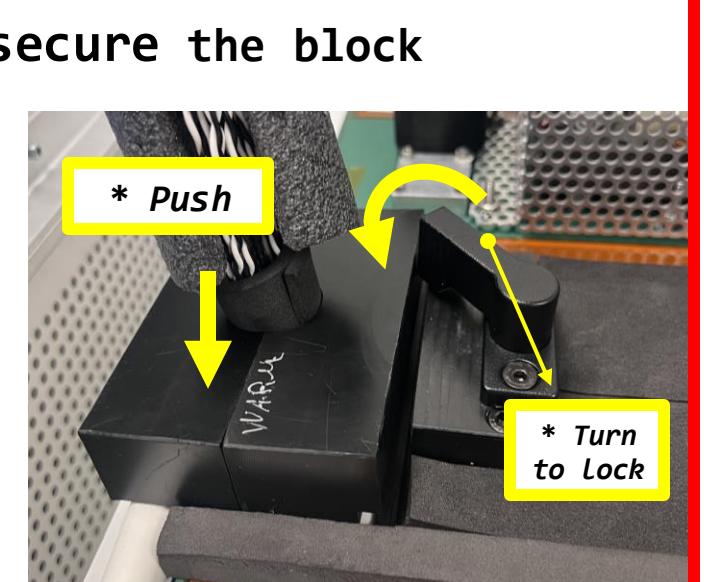
2. Place the CE Box Structure inside the CTS chamber



3. Carefully close the CTS cover



4. Lock the CTS chamber



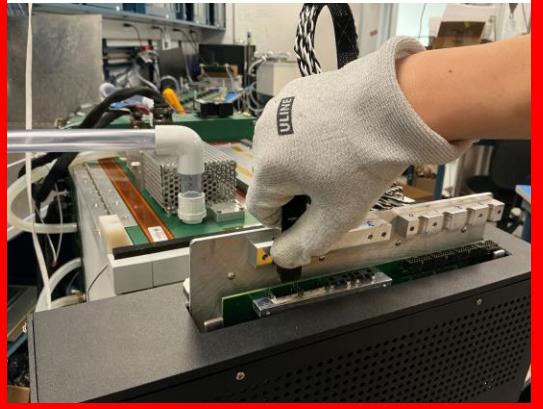
\* Push

\* Turn to Lock

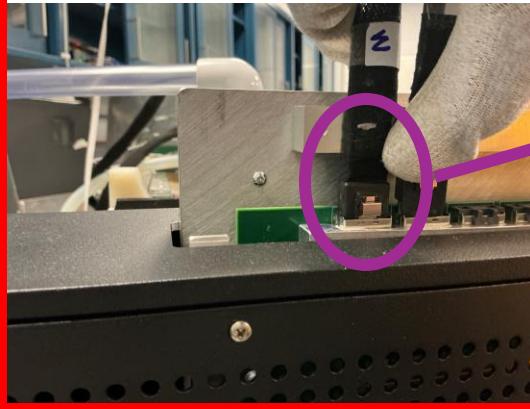
# WIB Cable Connection

Follow these steps to connect the FEMBs to the WIB

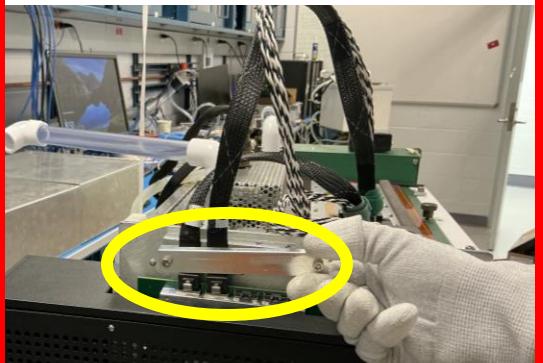
1. Place the Bottom Data Cable (B) in Slot B



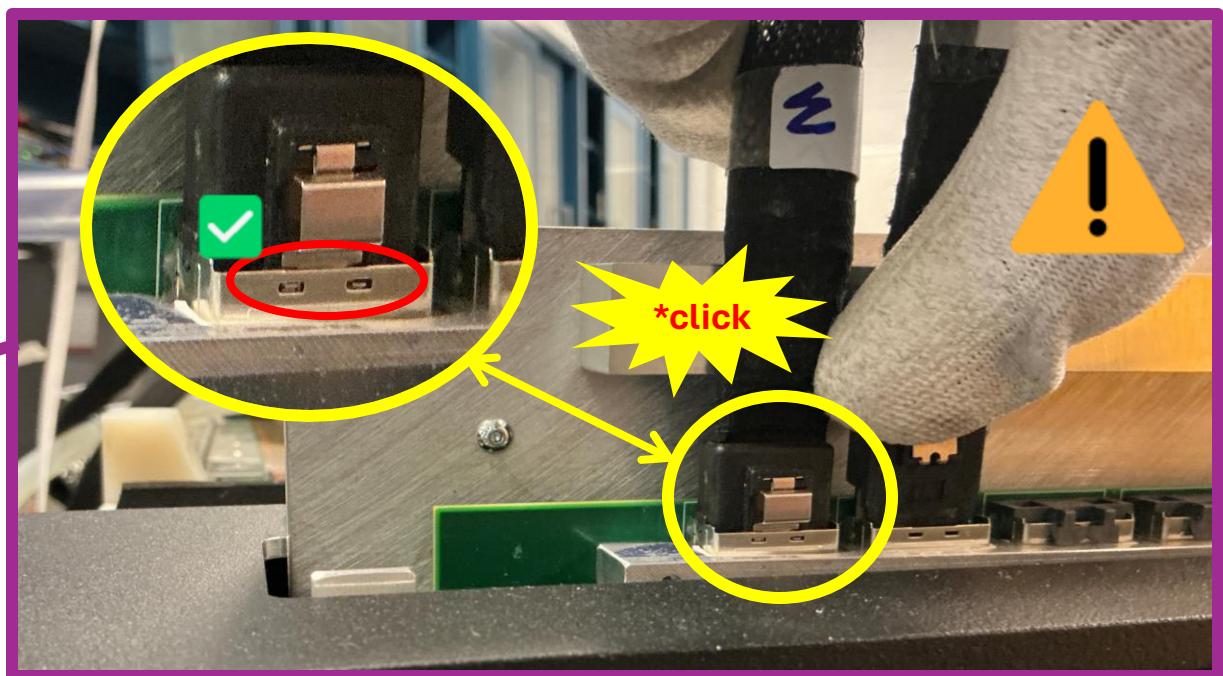
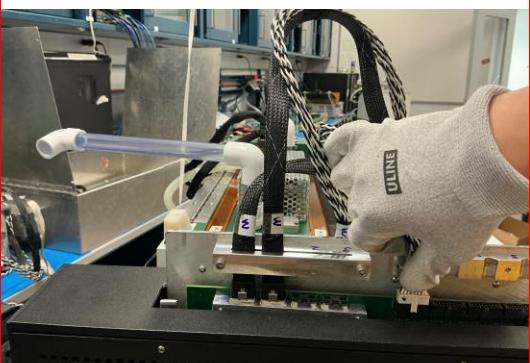
2. Place the Top Data Cable (T) in Slot T



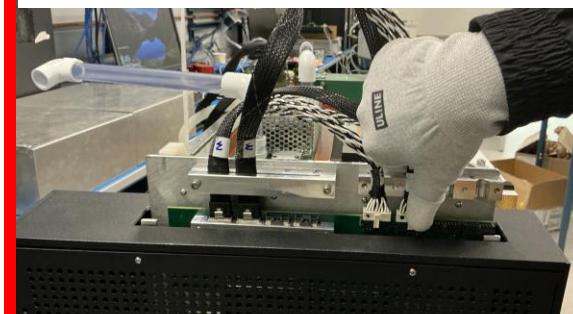
3. Install the Strain Relief Clamp



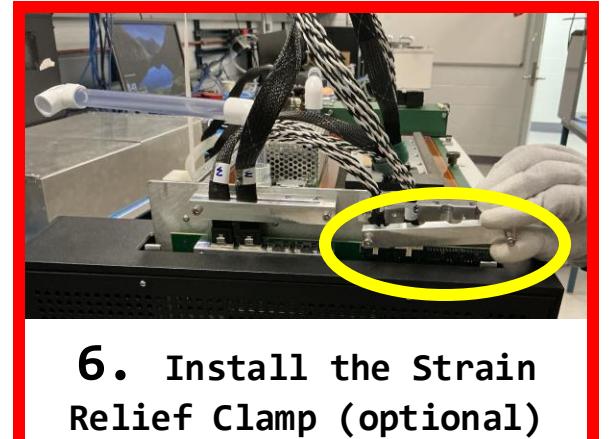
4. Install the Bottom Power Cable in Slot B



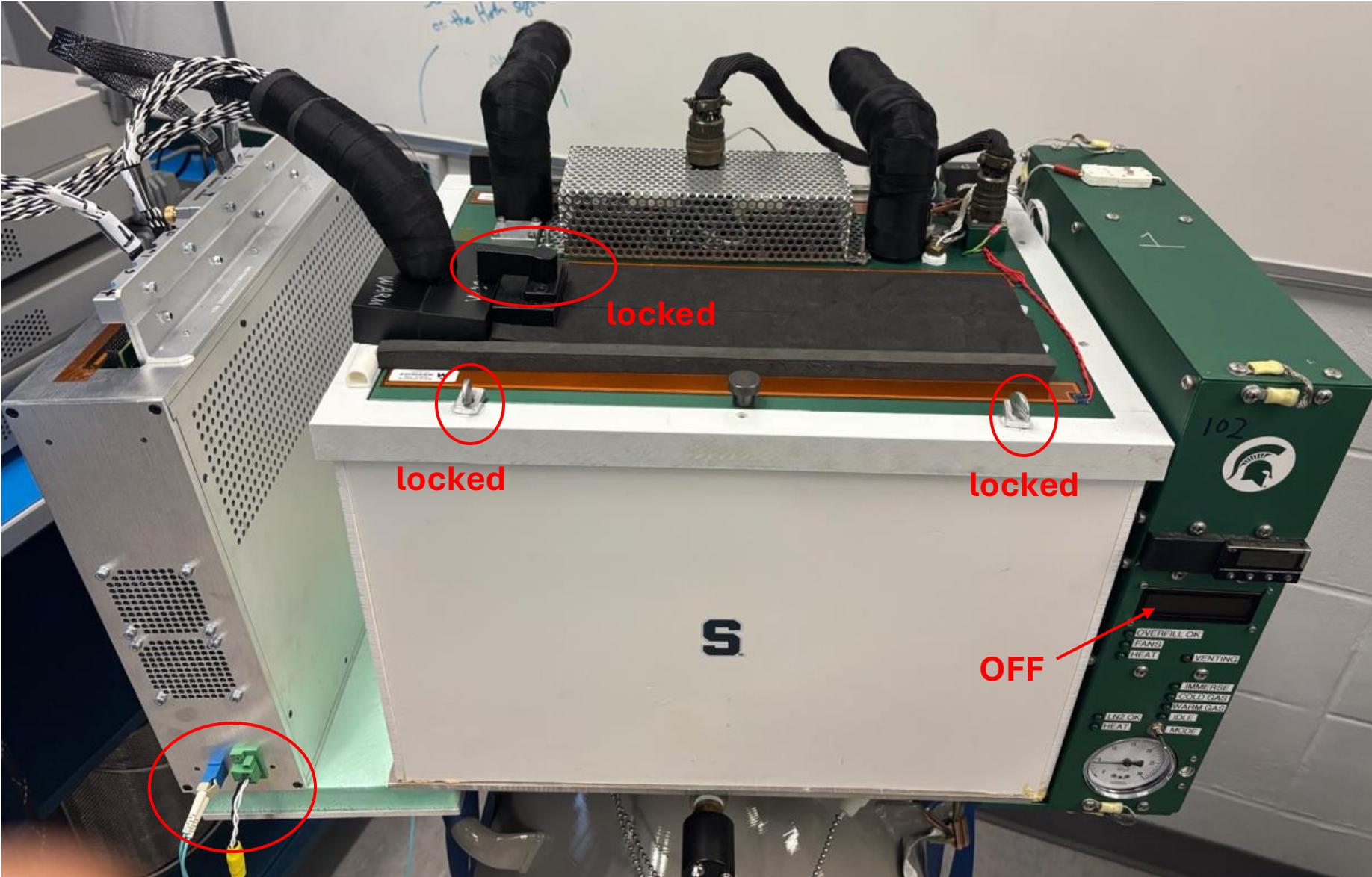
5. Install the Top Power Cable in Slot T



6. Install the Strain Relief Clamp (optional)



# Make sure CTS is closed, locked and ready to use

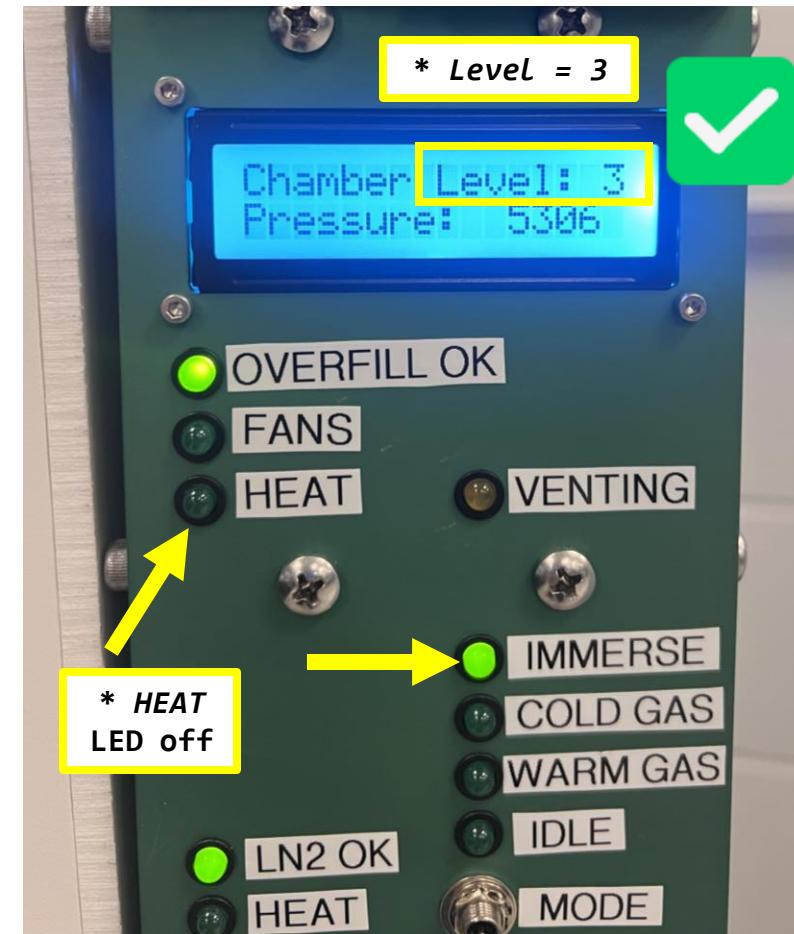


# Preparation for Cold QC: CTSCooldown

1. Switch to *COLD GAS* for 5 minutes

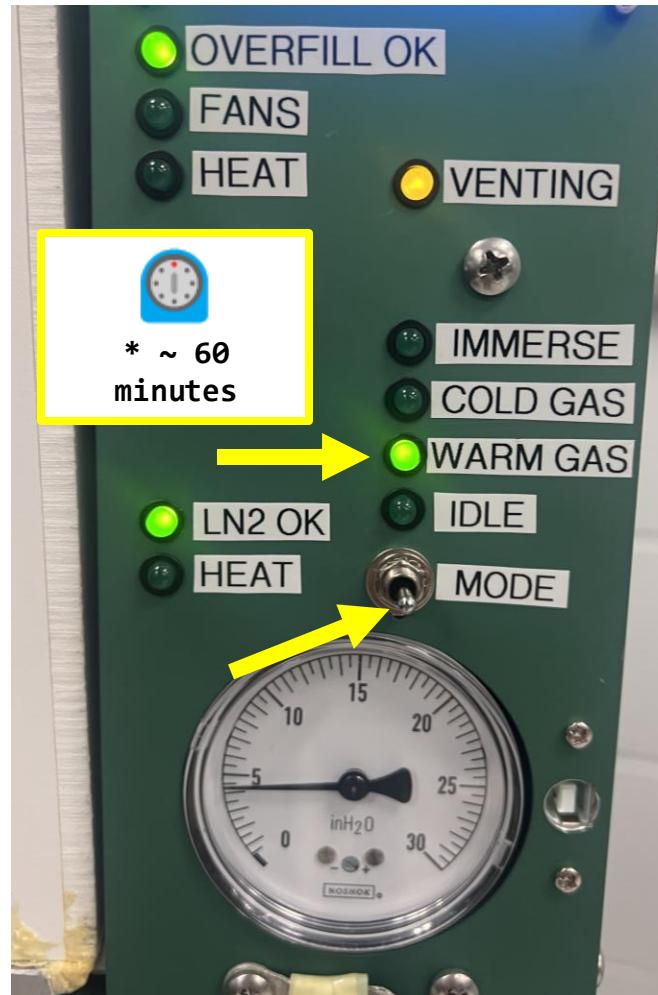


2. Switch to *IMMERSE* and wait for Level 3 + Heat LED off



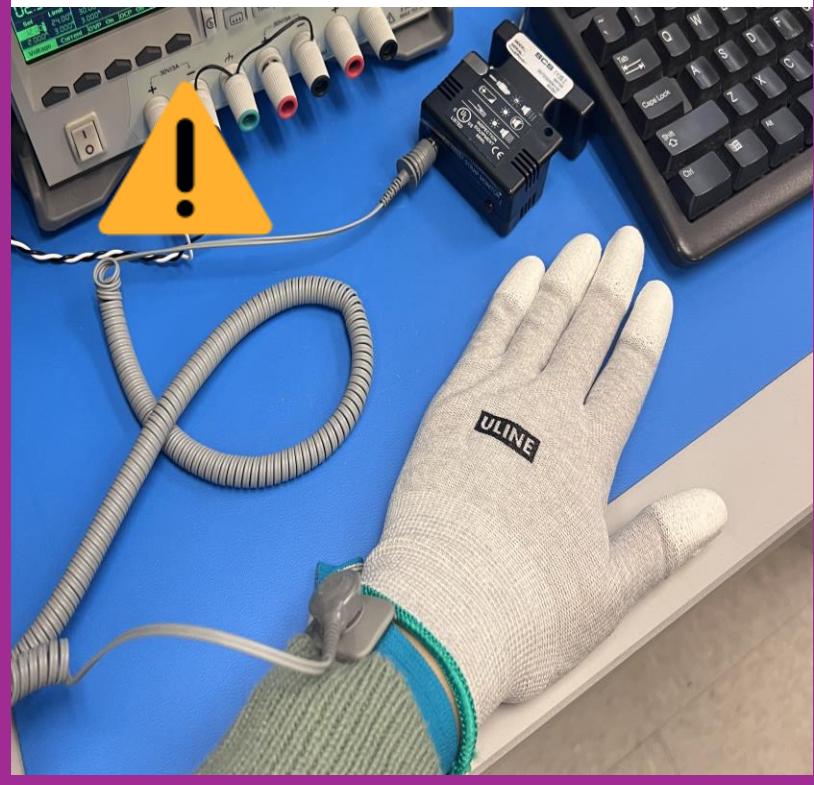
# Post-Cold QC: Switch CTS to WARM

Switch to **WARM GAS** and  
wait 60 minutes

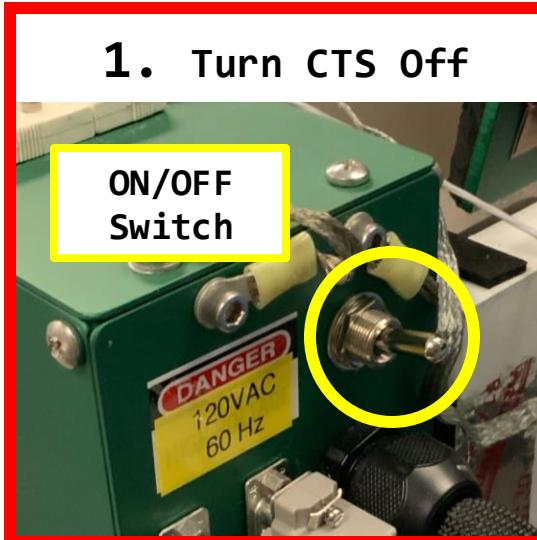


# Take CE boxes out of the Chamber

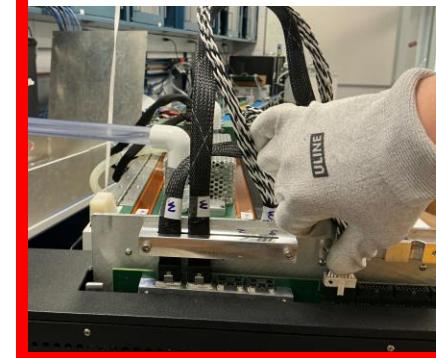
Remember to wear ESD-safe gloves and a ESD monitor!



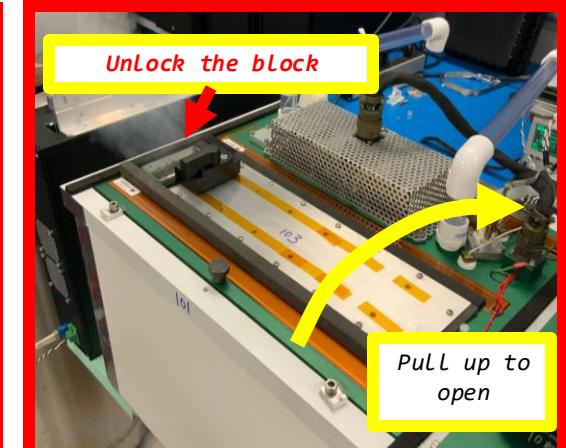
1. Turn CTS Off



2. Disconnect the Data and Power cables from the WIB

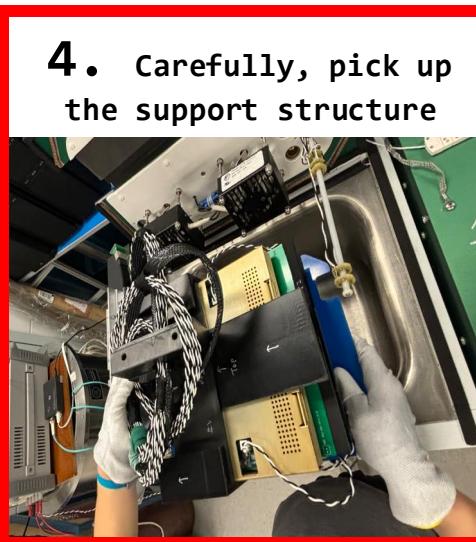


*UnLock the block*



3. Open the CTS cover

4. Carefully, pick up the support structure

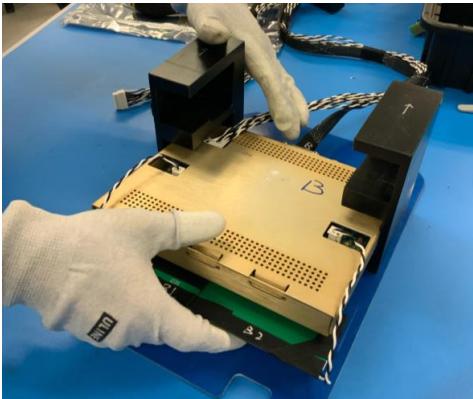


5. Place it on the desk



# Disassembly: CE box (VD)

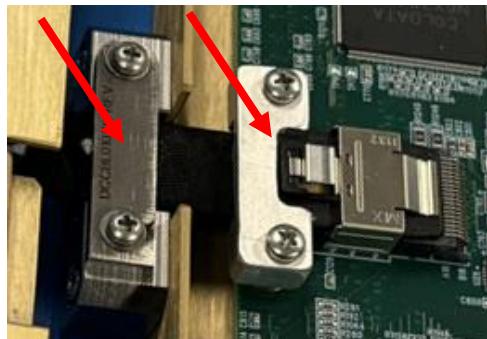
1. Remove the CE Box from the support structure



2. Remove Toy TPCs



3. Remove Power Cable  
4. Remove the test cover  
5. Remove the miniSAS cable  
6. Secure connector clamp and cable relief clamp



7. Install the original CE box cover



8. Pack CE box in ESD Bag and Foam Box



QC PASS      "PASS" or "NG"      NG

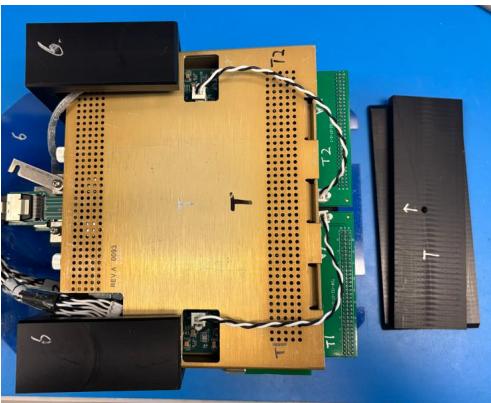


10. Put accessories back to tray!

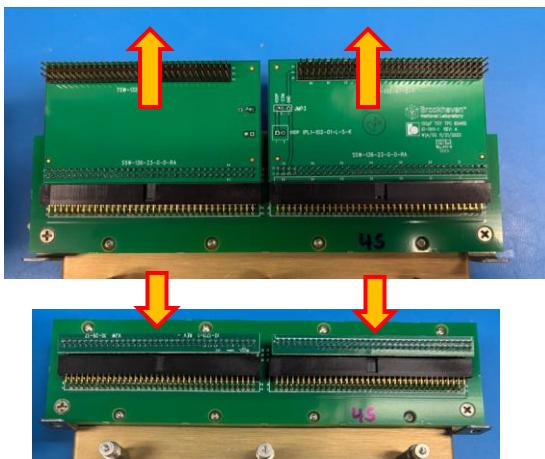


# Disassembly: CE box (HD)

1. Remove the CE Box from the support structure



2. Remove Toy TPCs and install FE terminators back



3. Remove Power Cable  
4. Remove the test cover  
5. Remove the miniSAS cable and its adapter board  
6. Secure cable relief clamp



7. Install the original CE box cover



8. Pack CE box in ESD Bag and Foam Box



“PASS” or “NG”



9. Put accessories back to tray!





How to convert each slide in a PowerPoint (.pptx) file into a .png image file — one image per slide.

<https://drive.google.com/file/d/1LLRxvgbRMVB5utvlPry4vlhtx9JX7j-2/view?usp=sharing>

If you're on **Windows** and have **Microsoft PowerPoint** installed, you can use the `comtypes` automation library to export slides directly to images.

backup

# Initial Checkout List (FEMB-VD)

Locate the following items before starting:



## Safety First!



Long Sleeve Top

Long Pants

Closed Toe Shoes

ODH Monitor



ESD-safe Gloves

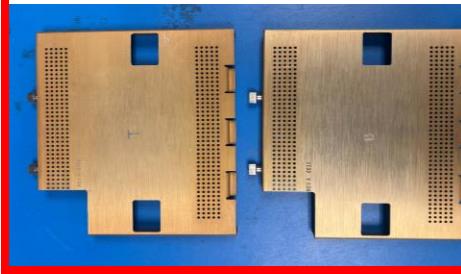


Cryogenic Gloves

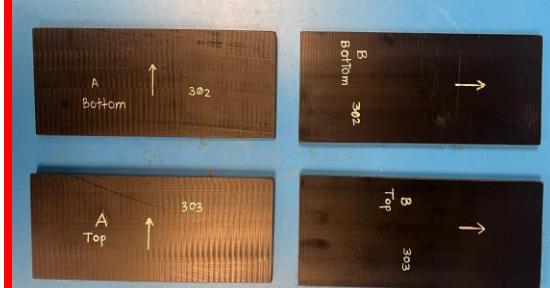
Anti-static Wrist Strap

Cryogenic Face Mask

### Top & Bottom Test Covers



### Top & Bottom Clamps



Data cable clamps (x2)



Support Structure

### Toy TPC with Cables (2 pairs)



Lingyun: Replace with new picture



1m Cable Bundle

Lingyun: Replace with new picture

# Initial Checkout List (FEMB-HD)

Locate the following items before starting:



## Safety First!



Long Sleeve Top

Long Pants

Closed Toe Shoes

ODH Monitor



ESD-safe Gloves

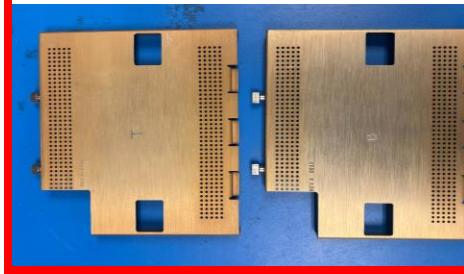


Cryogenic Gloves

Anti-static Wrist Strap

Cryogenic Face Mask

### Top & Bottom Test Covers



### Top & Bottom Clamps



Lingyun: MiniSAS cable adapter and thumb-nuts

### Data cable clamps (x2)



Support Structure

### Toy TPC with Cables (2 pairs)



Lingyun: Replace with new picture

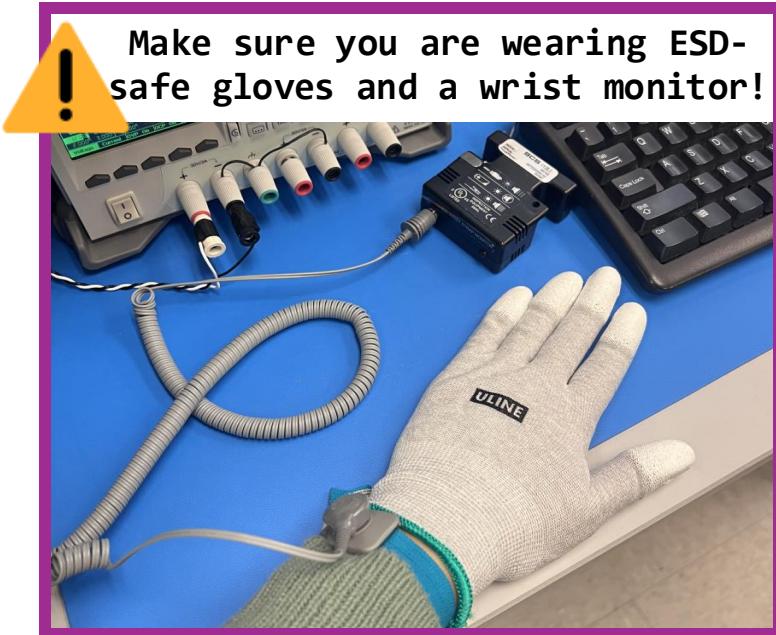


1m Cable Bundle

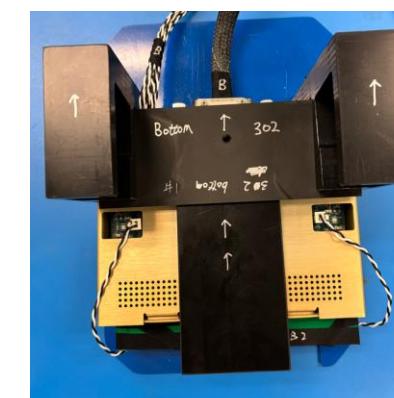
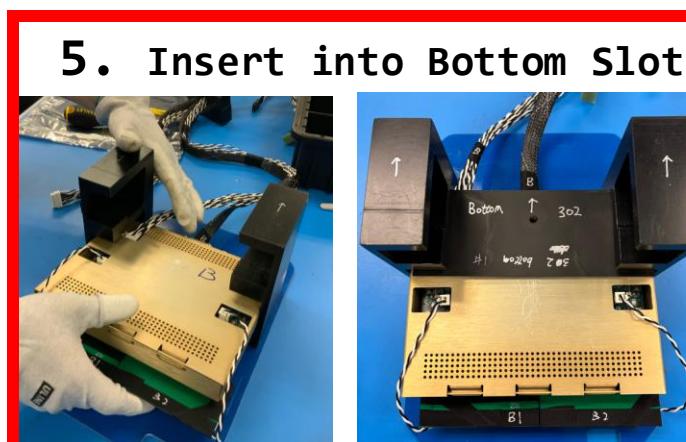
Lingyun: Replace with new picture

# Bottom CE Box (VD) Assembly

Follow these steps to assemble the Bottom CE Box in the support structure:



1. Install the Signal Cable + Clamp
2. Install Test Cover
3. Install Power Cable

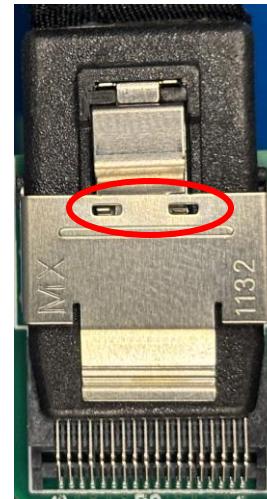
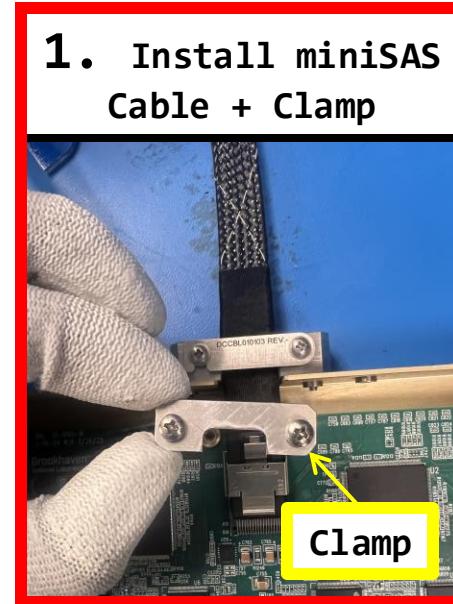
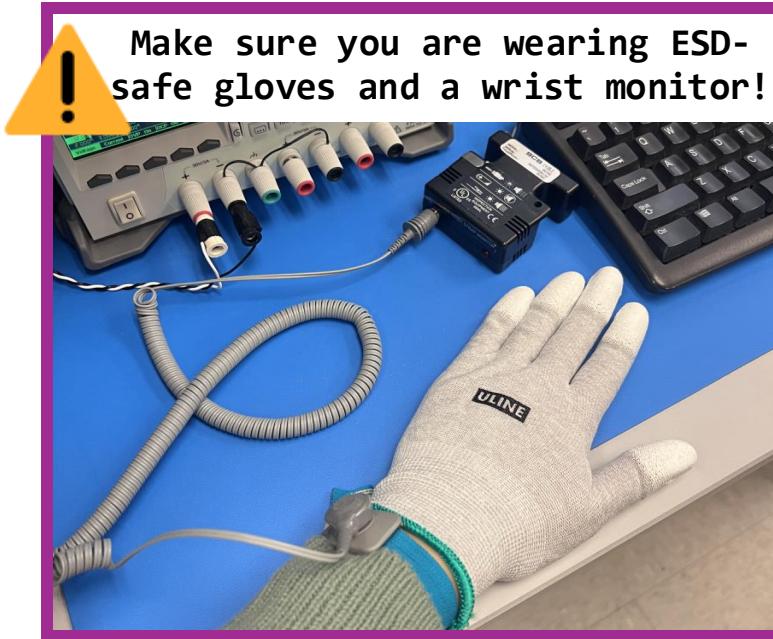


Done

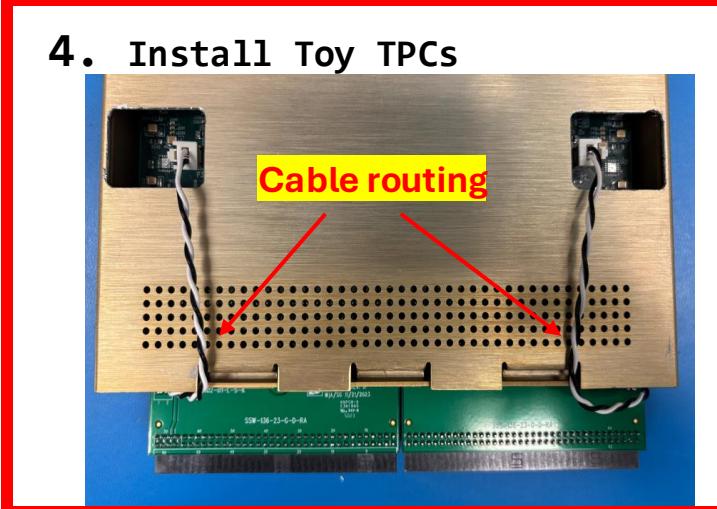
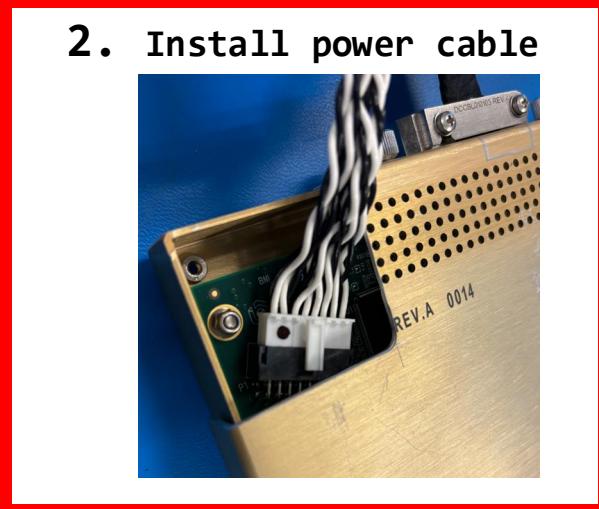
@Lingyun, Provide the routing of cables between ToyTPCs and FEMB?

# Bottom CE Box (VD) Assembly

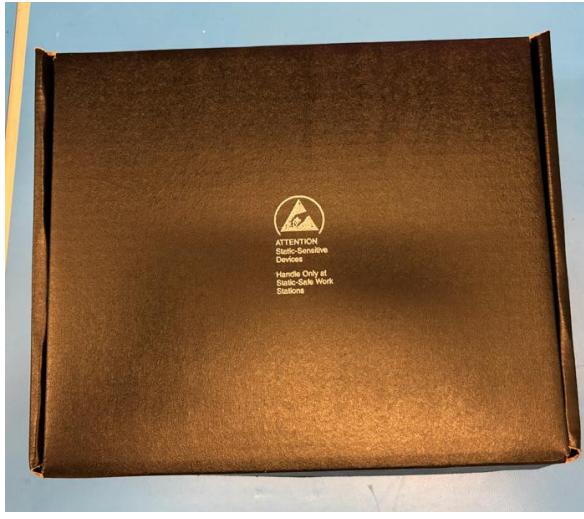
Follow these steps to assemble the Bottom CE Box in the support structure:



Locks in position



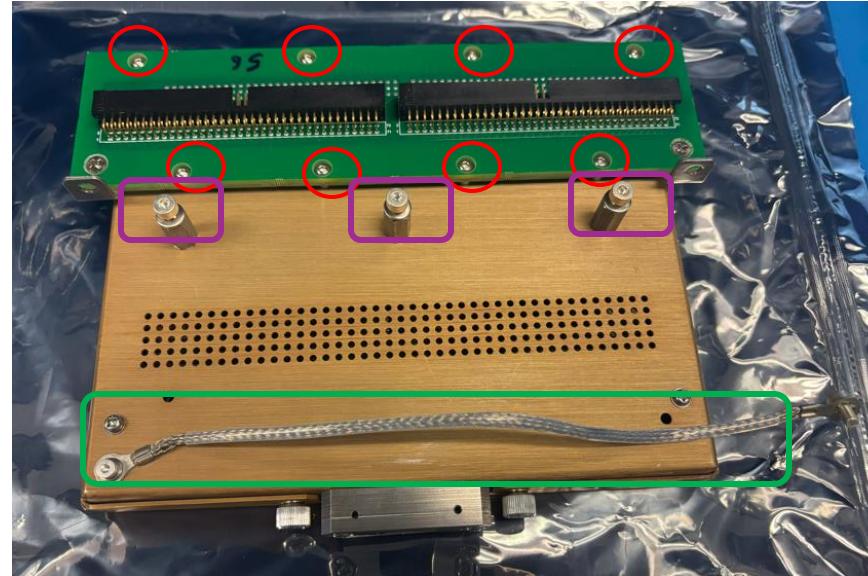
# Bottom CE Box (HD) Visual Inspection



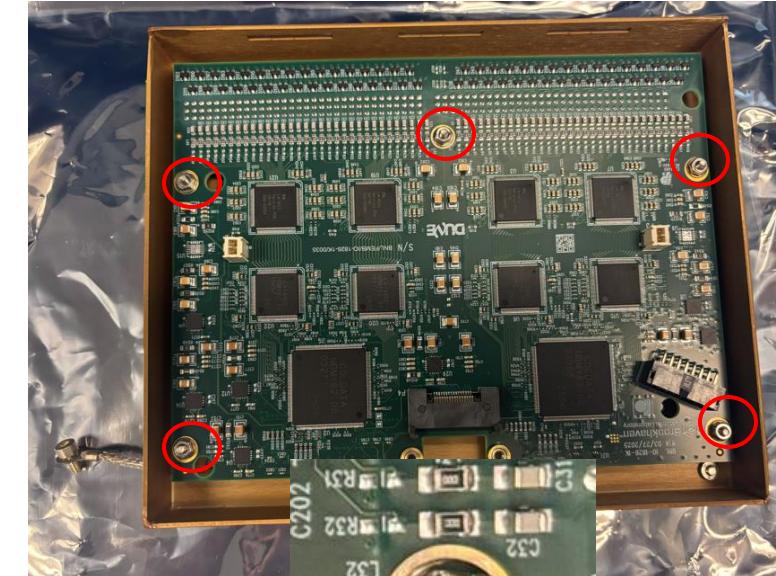
If foam box was broken?



CE box enclosed by ESD bag?



Nuts for CR-RC adapter board in position?  
3 sets of lock nut and washer in position?  
Ground strip in position?



Are these 5 nuts fastened  
with washers?

# Bottom CE Box (HD) Assembly

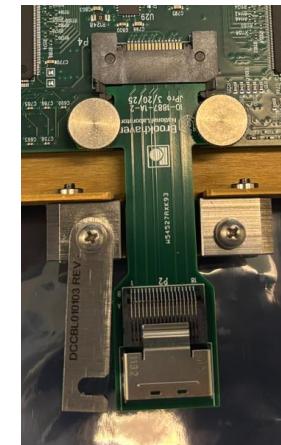
Follow these steps to assemble the Bottom CE Box in the support structure:



Make sure you are wearing ESD-safe gloves and a wrist monitor!



1. Install Adapter + miniSAS Cable



2. Install Test Cover
3. Install Power Cable

3. Install Power Cable



4. Connect Toy TPCs

Update for HD

5. Insert into Bottom Slot

Update for HD

Update for HD

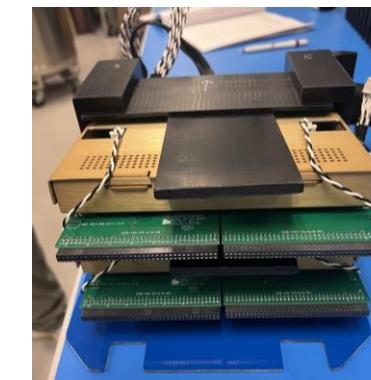
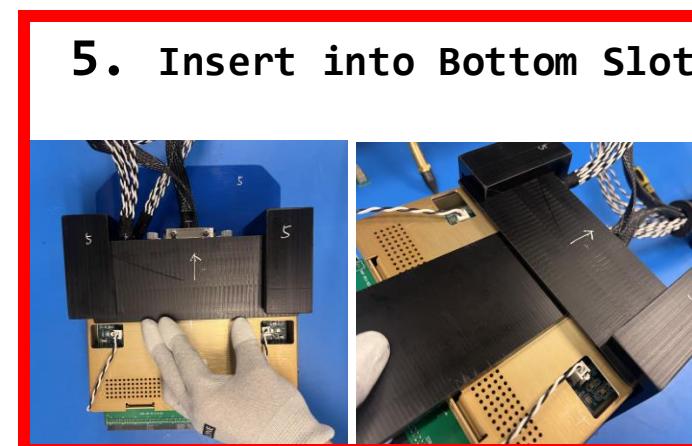
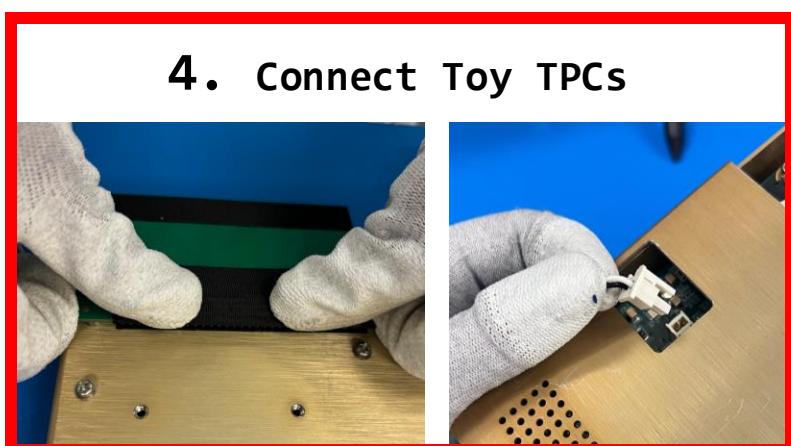
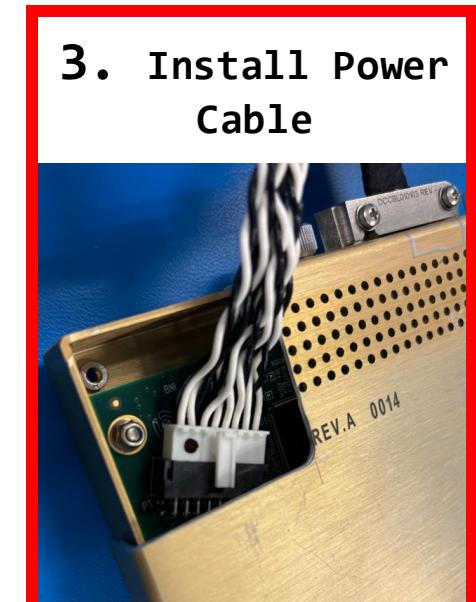
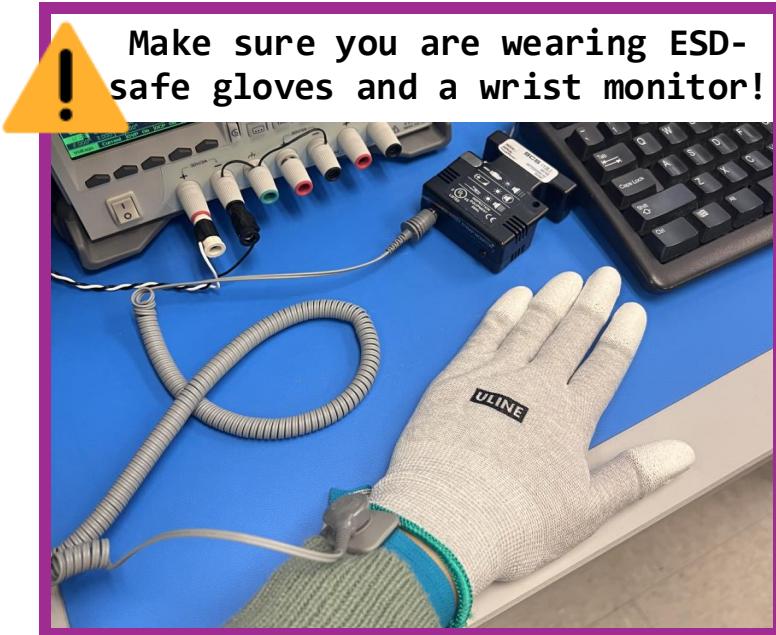


Done

@Lingyun, Provide the routing of cables between ToyTPCs and FEMB?

# Top CE Box (VD) Assembly

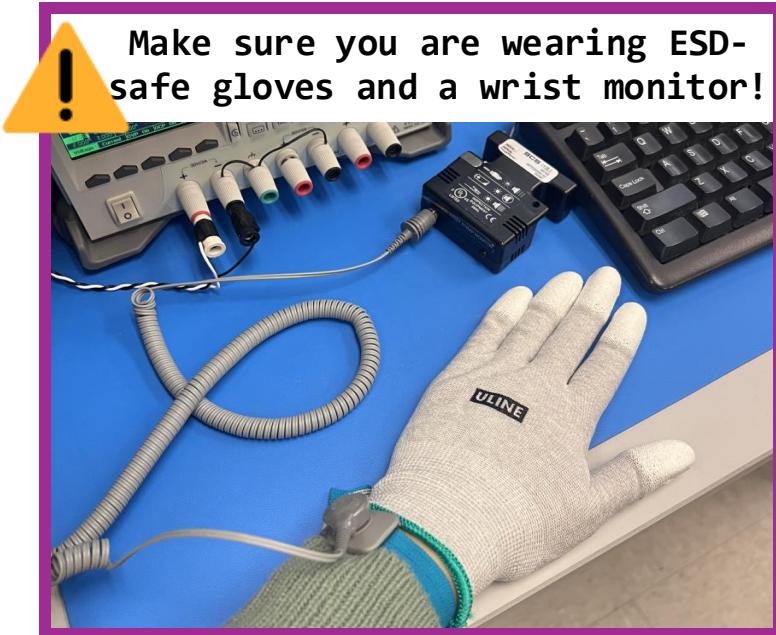
Follow these steps to assemble the Top CE Box in the support structure:



Done

# Top CE Box (HD) Assembly

Follow these steps to assemble the Top CE Box in the support structure:



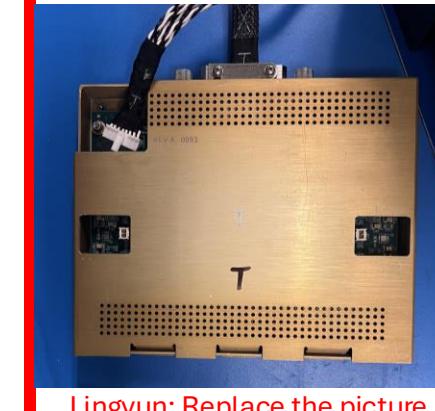
Make sure you are wearing ESD-safe gloves and a wrist monitor!

1. Install the Signal Cable + Clamp

Update for HD



2. Install Test Cover



Lingyun: Replace the picture

3. Install Power Cable



4. Connect Toy TPCs

Update for HD

5. Insert into Bottom Slot

Update for HD

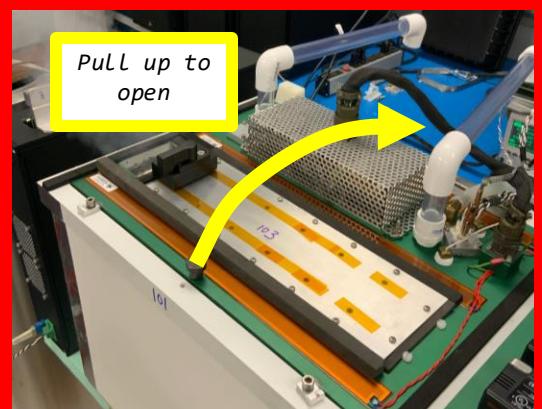
Update for HD



Done

# Place CE Boxes into CTS Chamber

Follow these steps to install the FEMBs in the CTS:



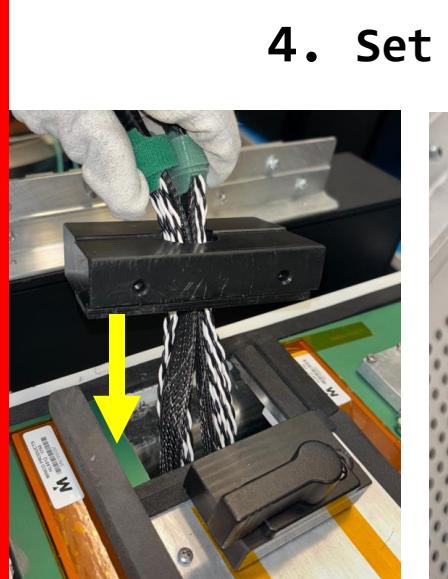
1. Open the CTS cover



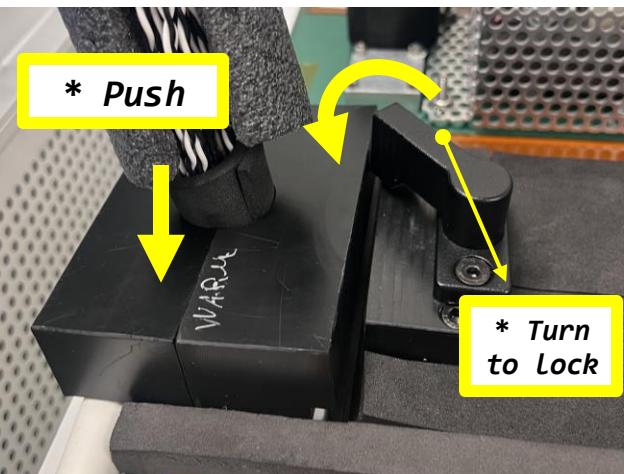
2. Place the CE Box Structure inside the CTS chamber



3. Carefully close the CTS cover

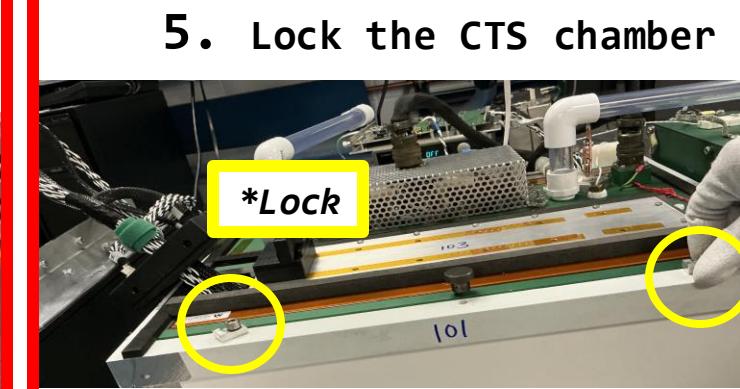


4. Set up cable bundle



\* Push

\* Turn to Lock



\*Lock

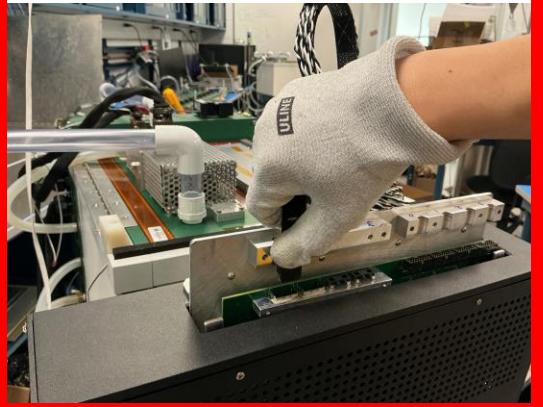
unlocked

locked

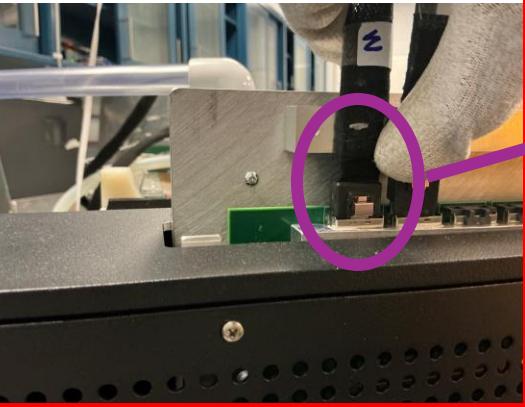
# WIB Cable Connection

Follow these steps to connect the FEMBs to the WIB

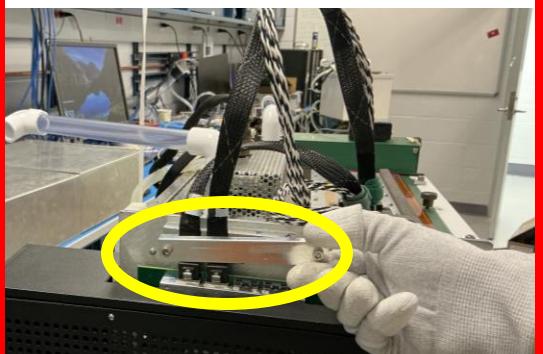
1. Place the Bottom Data Cable in Slot B



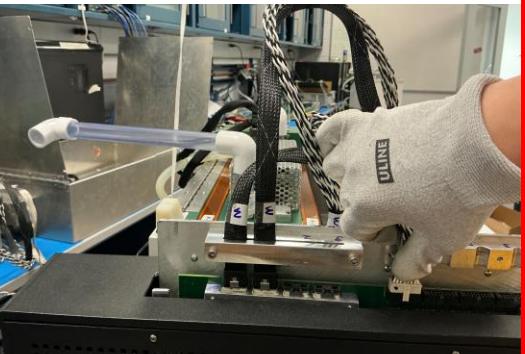
2. Place the Top Data Cable in Slot T



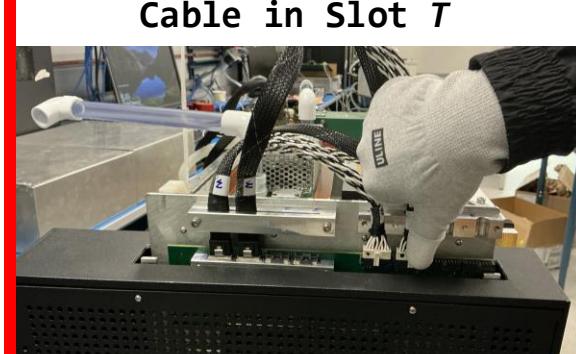
3. Install the Strain Relief Clamp



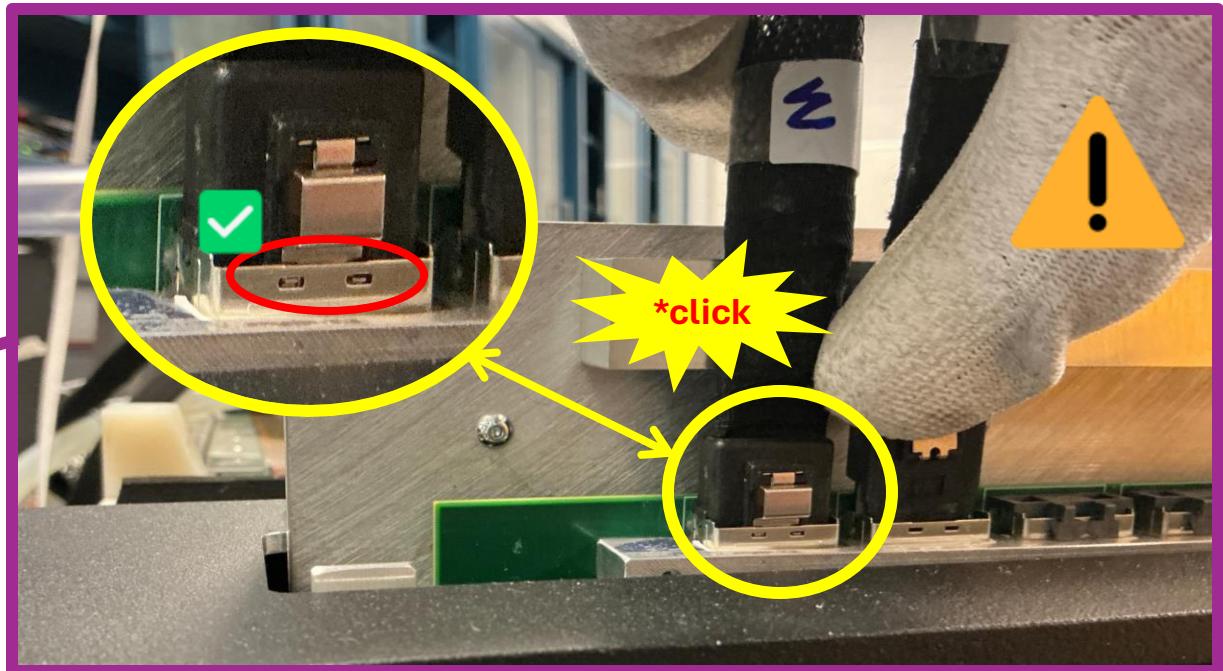
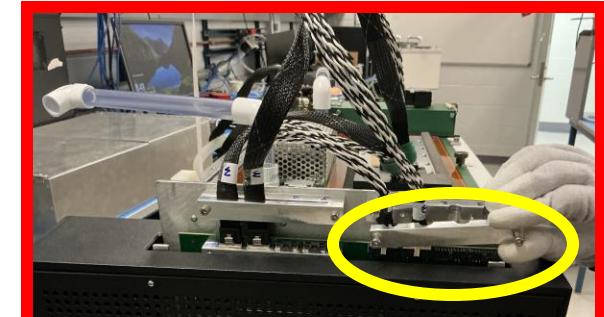
4. Install the Bottom Power Cable in Slot B



5. Install the Top Power Cable in Slot T



6. Install the Strain Relief Clamp

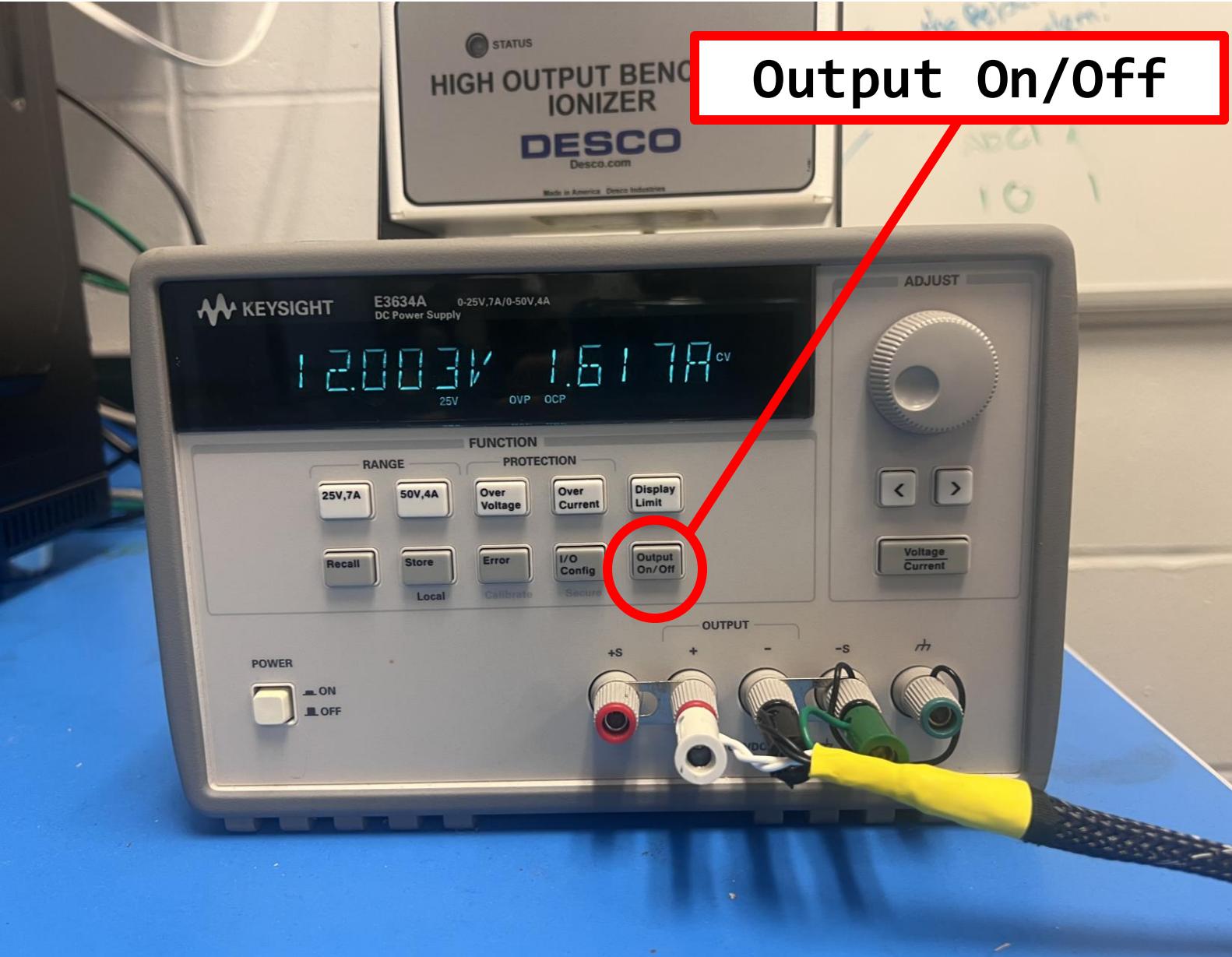


# Make sure CTS is closed, locked and ready to use



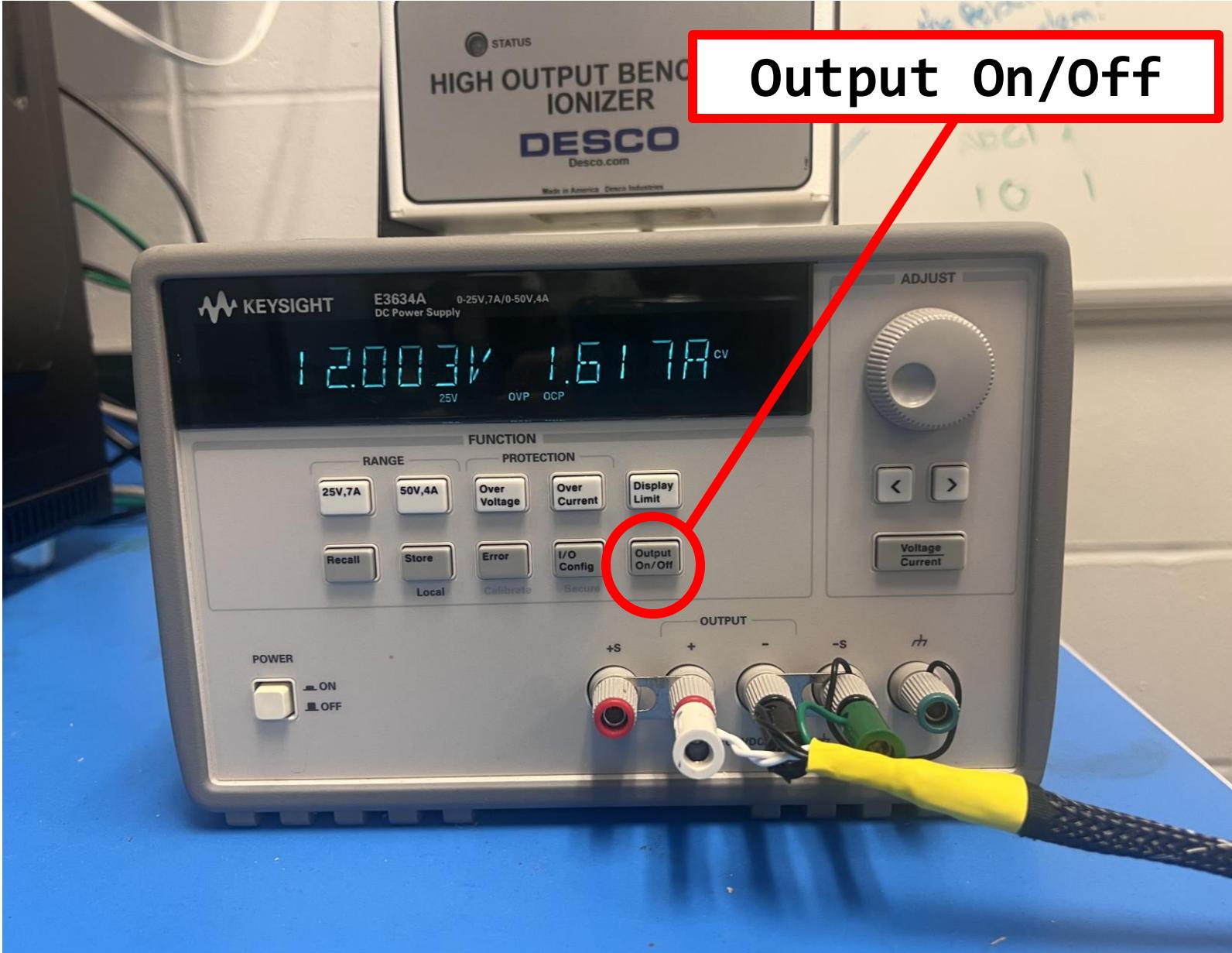
Lingyun: Rigol power supply will be in use, so that computer can control 12V ON/OFF for WIB.  
The pop-windows related to power supply should be removed.

# Warm QC: Power On WIB



Output On/Off

# Warm QC is Done! Power Off WIB



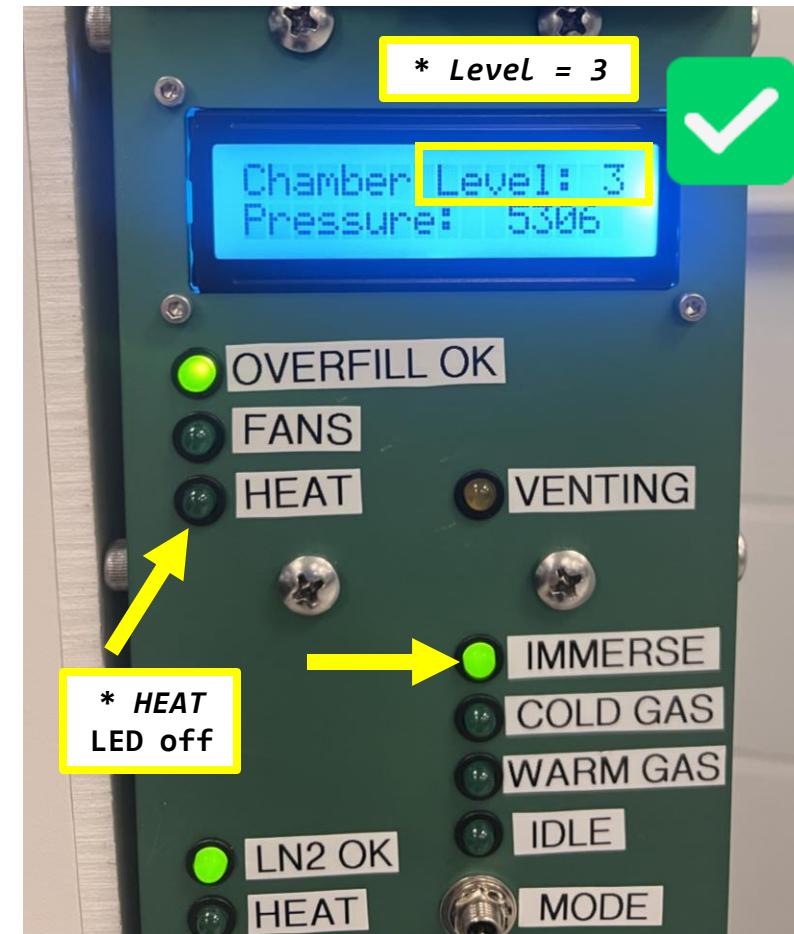
Output On/Off

# Preparation for Cold QC: CTSCooldown

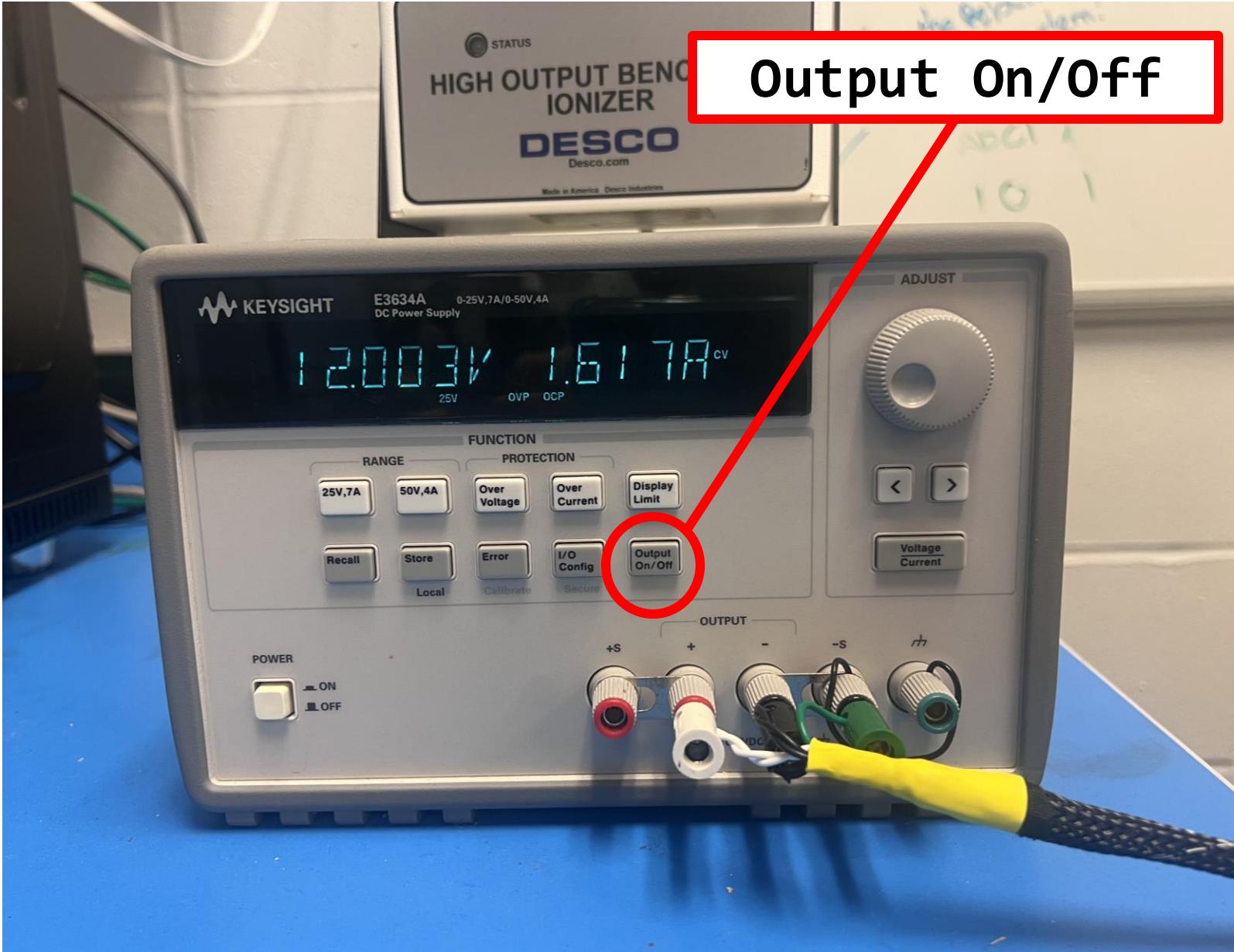
1. Switch to *COLD GAS* for 5 minutes



2. Switch to *IMMERSE* and wait for Level 3 + Heat LED off

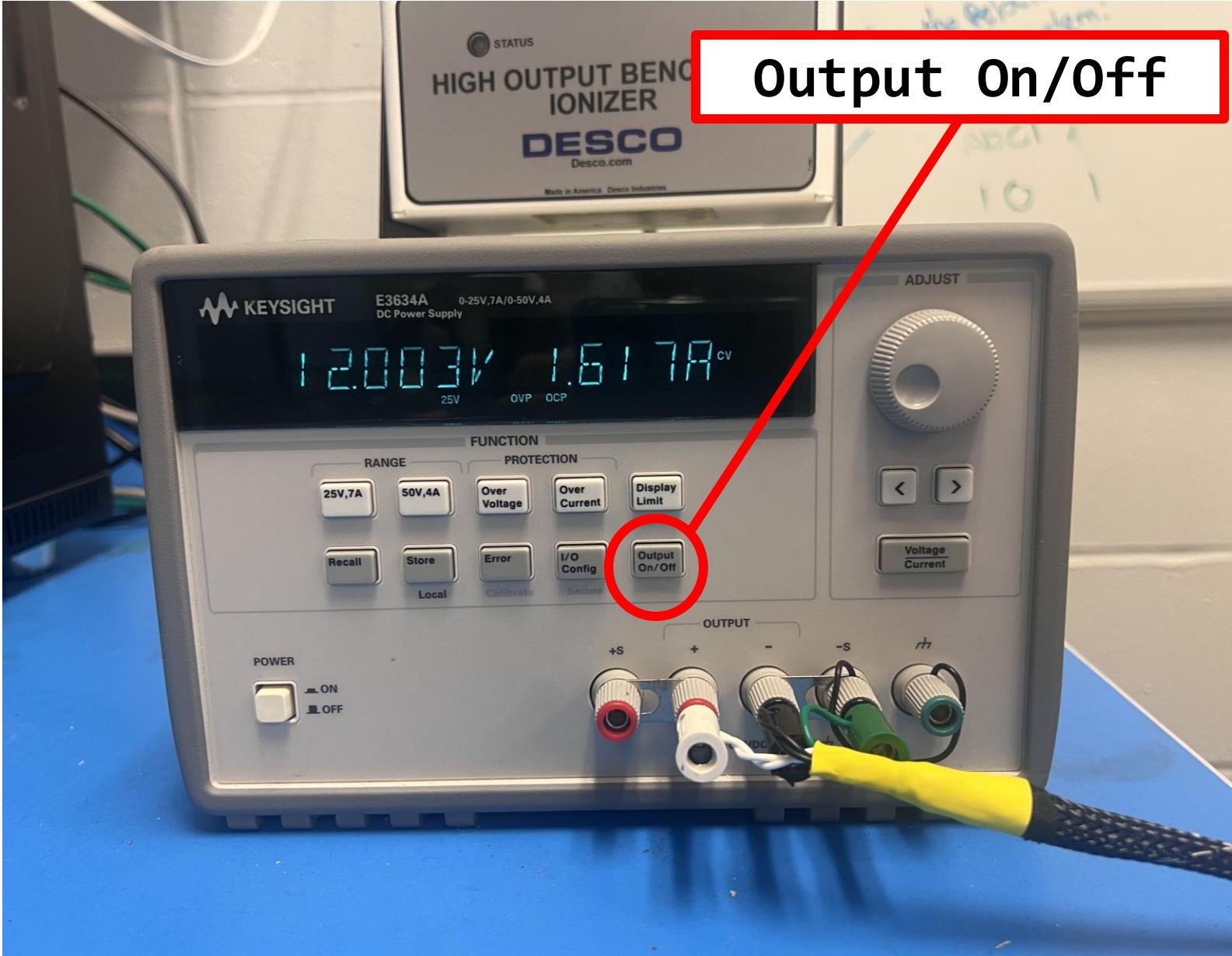


# Cold QC: Power On WIB



Output On/Off

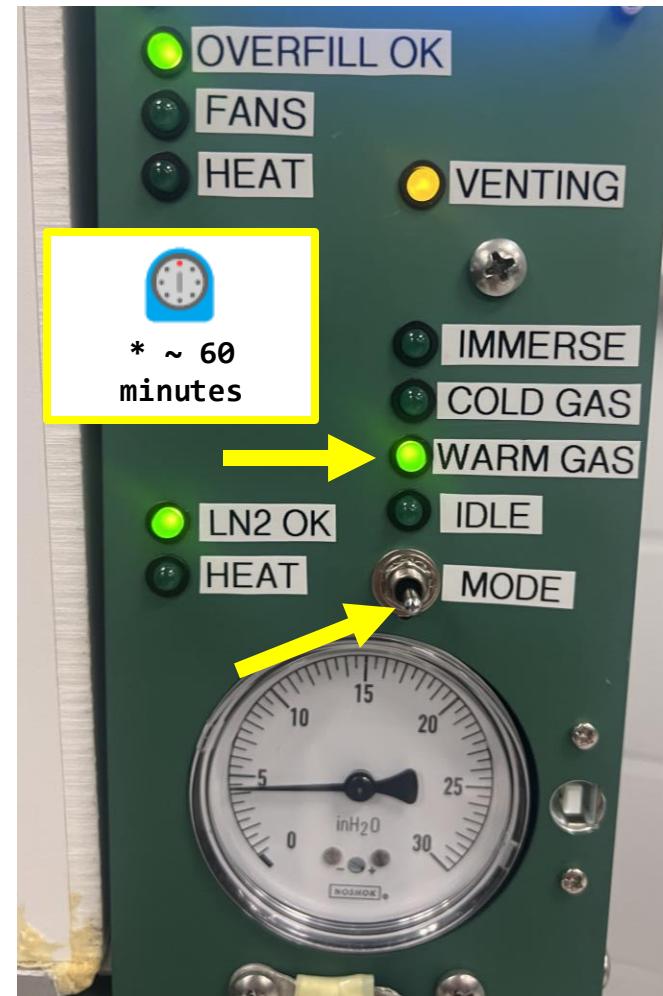
# Cold QC is Done! Power Off WIB



Output On/Off

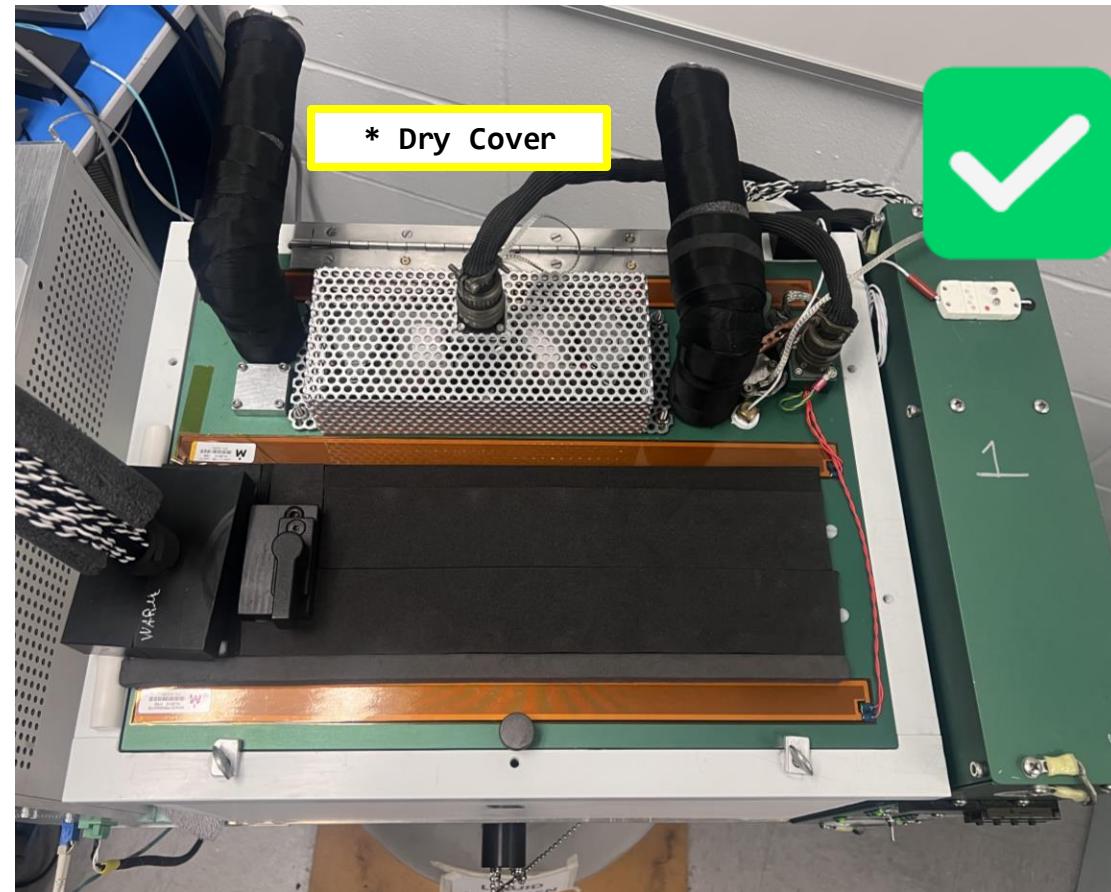
# Post-Cold QC: Switch CTS to *WARM*

Switch to *WARM GAS* and  
wait 60 minutes or  
~~until the temperature  
reaches 45°C~~

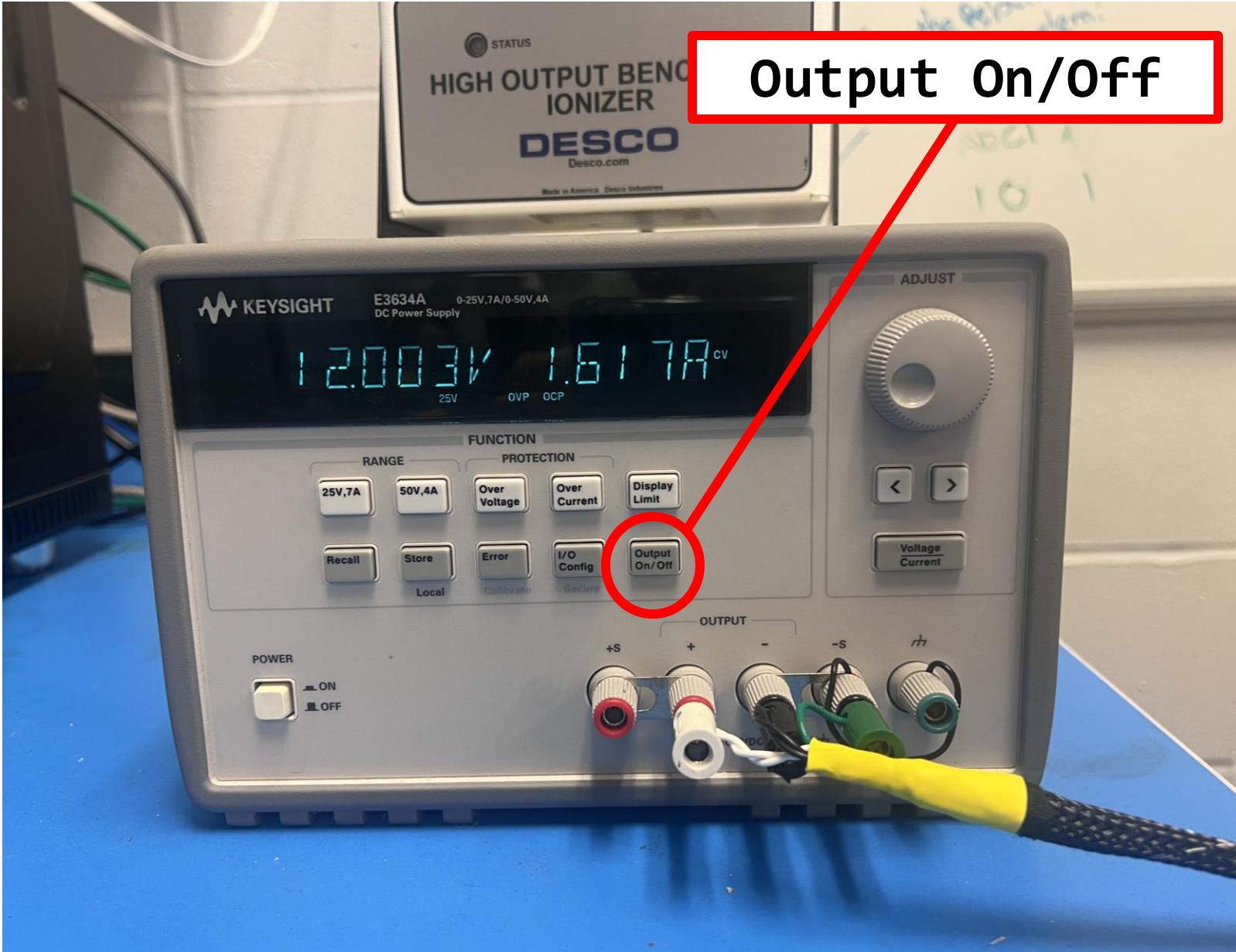


# Post-Warm Up Check

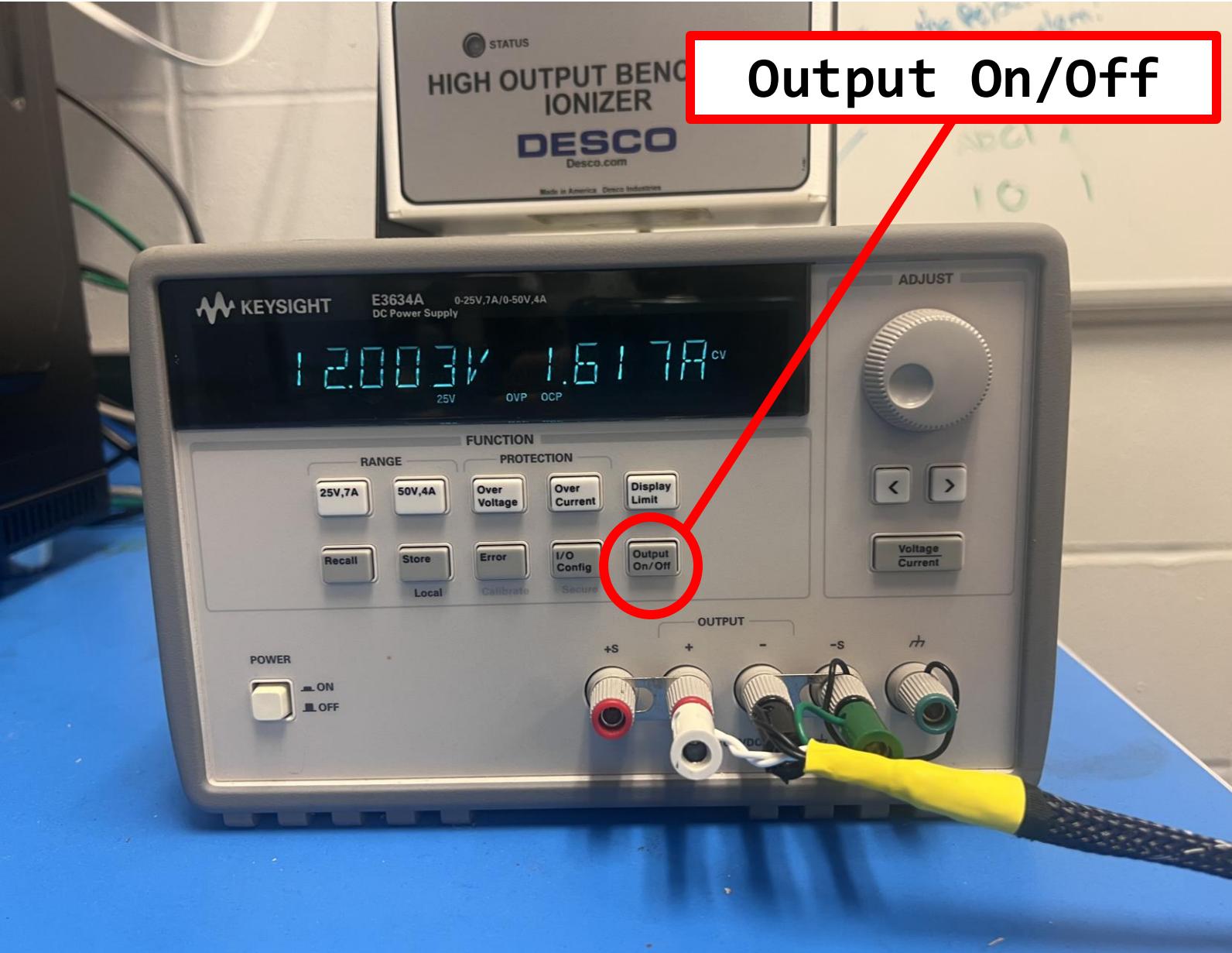
Make sure there is no water on the CTS cover. If there is, wipe it off.



# Final Checkout: Turn On WIB



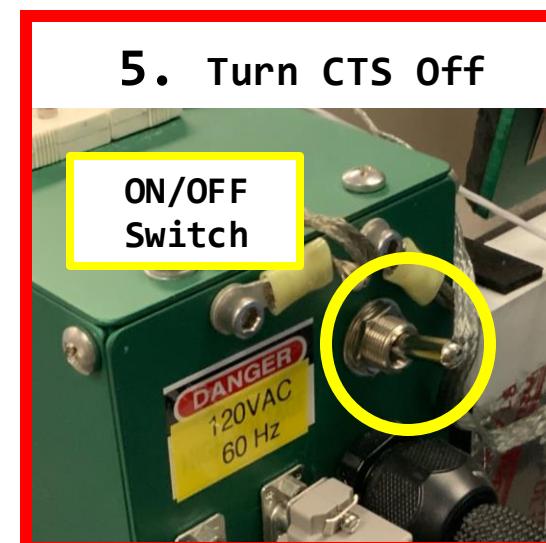
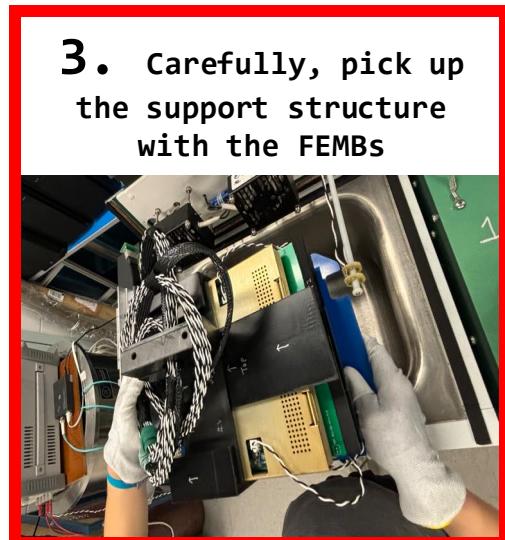
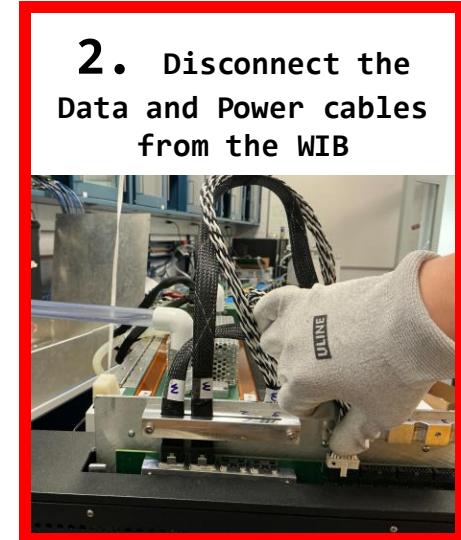
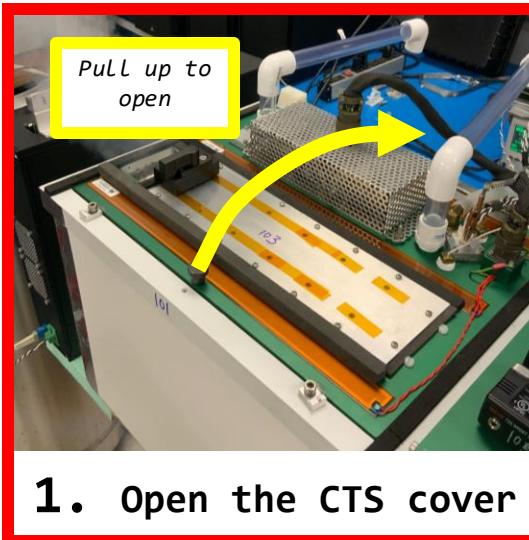
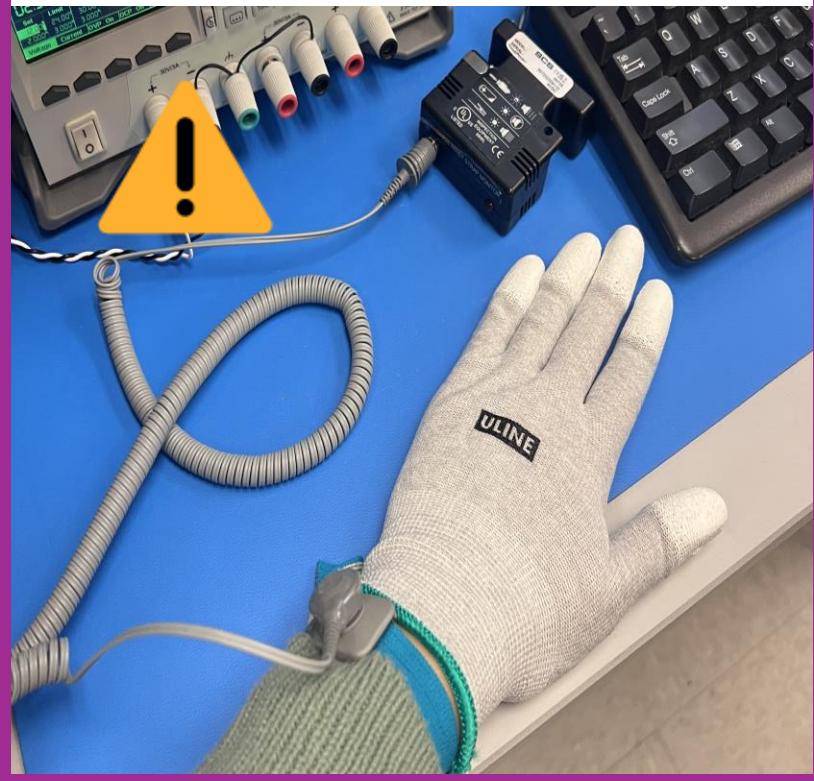
# Final Checkout is done! Turn Off WIB



Output On/Off

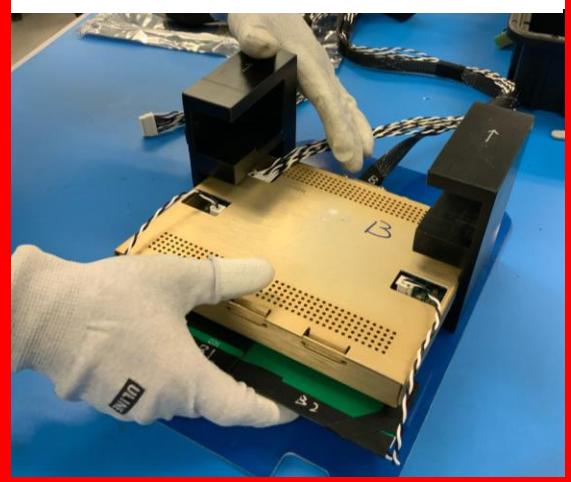
# Take the FEMBs out of the CTS Chamber

Remember to wear ESD-safe gloves and a wrist monitor!



# Disassembly: Top FEMB

1. Remove the Top CE Box



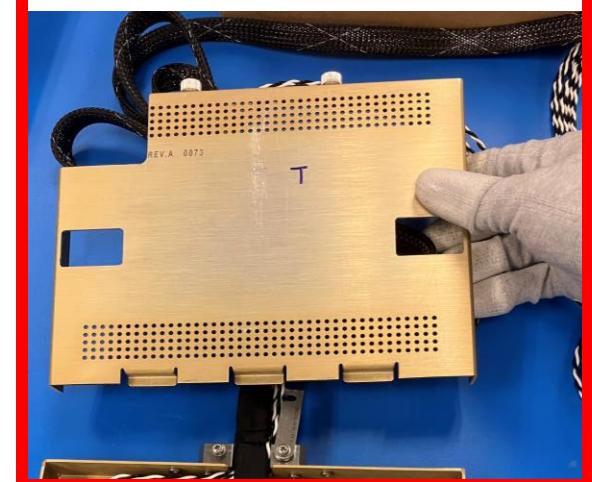
2. Remove Toy TPCs



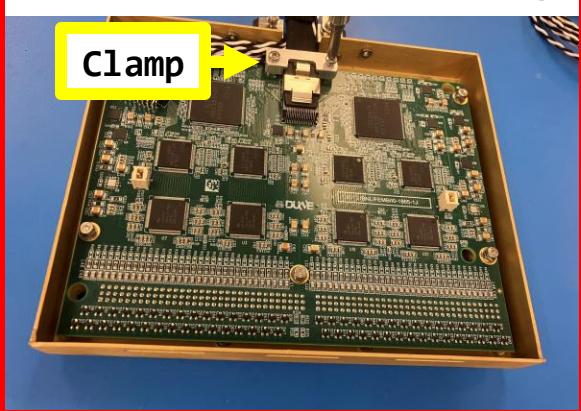
3. Disconnect the Power Cable



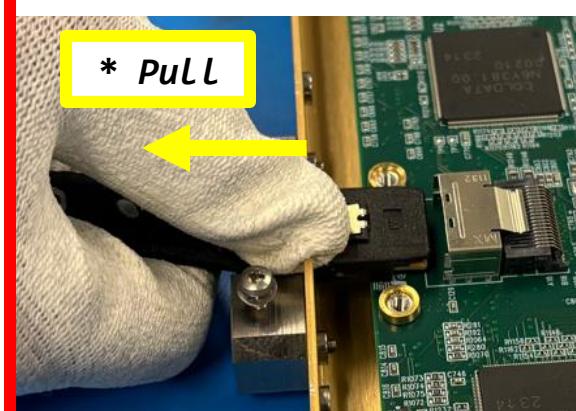
4. Remove the test cover



5. Remove the cable clamp



6. Disconnect the Data cable



7. Install the original CE box cover



8. Pack FEMB in ESD Bag and Foam Box



# Disassembly: Bottom FEMB

1. Remove the Bottom CE Box



2. Remove Toy TPCs



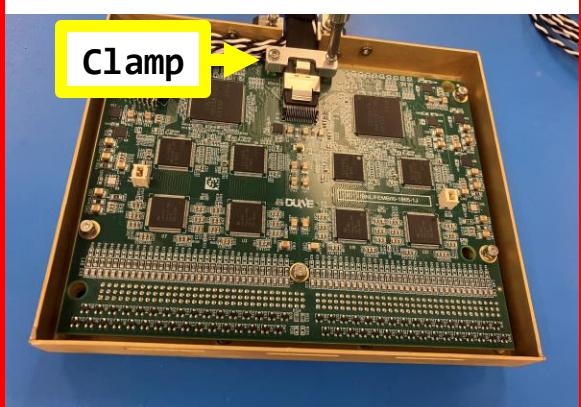
3. Disconnect the Power Cable



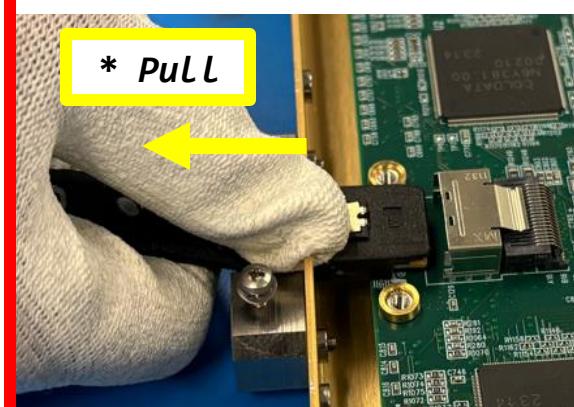
4. Remove the test cover



5. Remove the cable clamp



6. Disconnect the Data cable



7. Install the original CE box cover



8. Pack FEMB in ESD Bag and Foam Box



# CE Box Visual Inspection

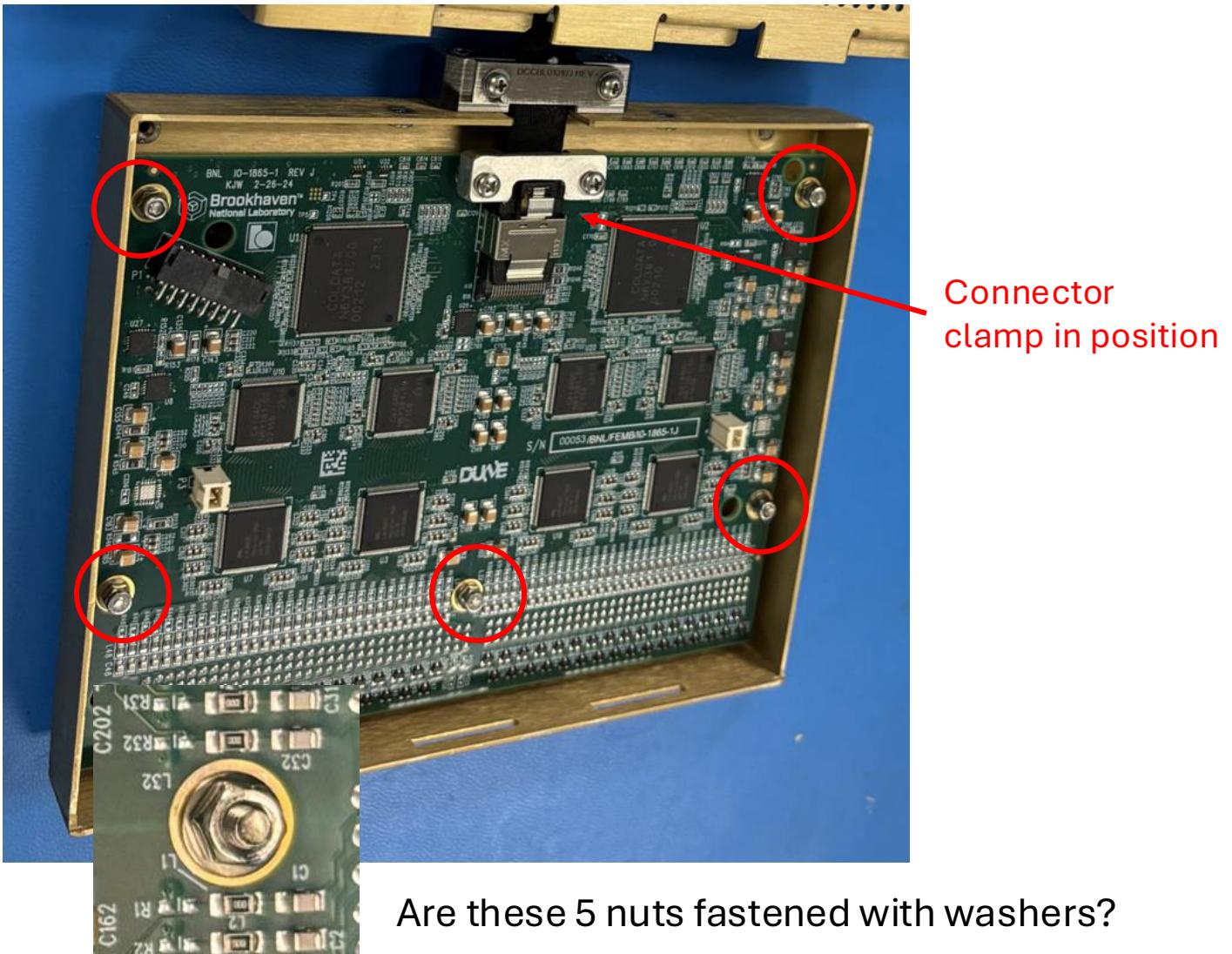


If foam box was broken?

If HWDB QR sticker was missing?



CE box enclosed by ESD bag?



Are these 5 nuts fastened with washers?

# Bottom CE Box (HD) Visual Inspection

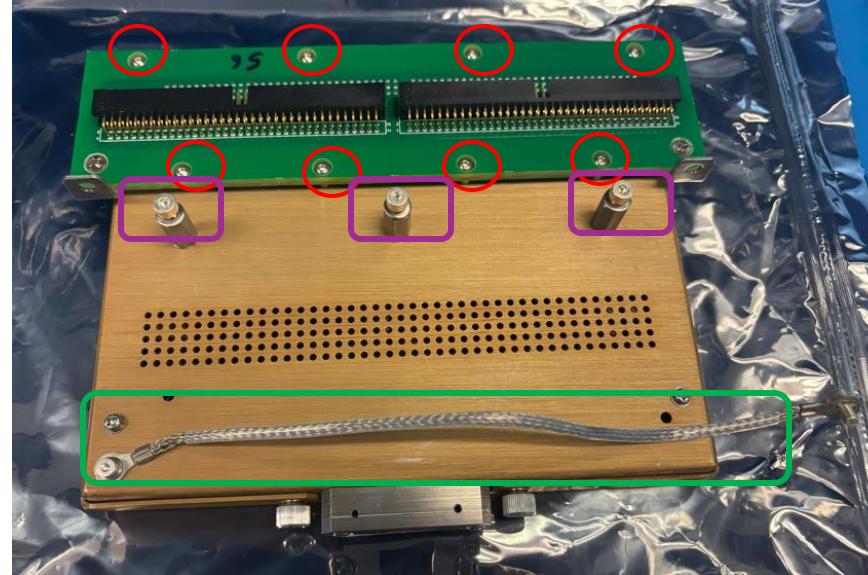


If foam box was broken?

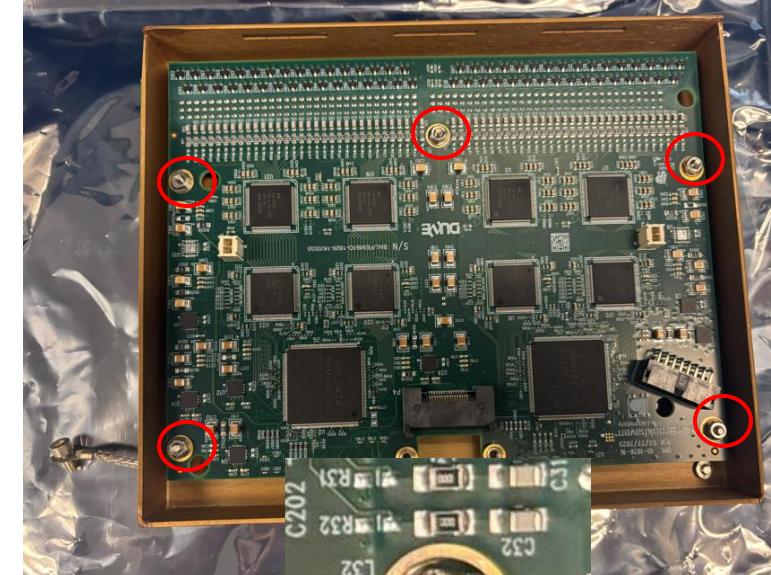
If HWDB QR sticker was missing



CE box enclosed by ESD bag?



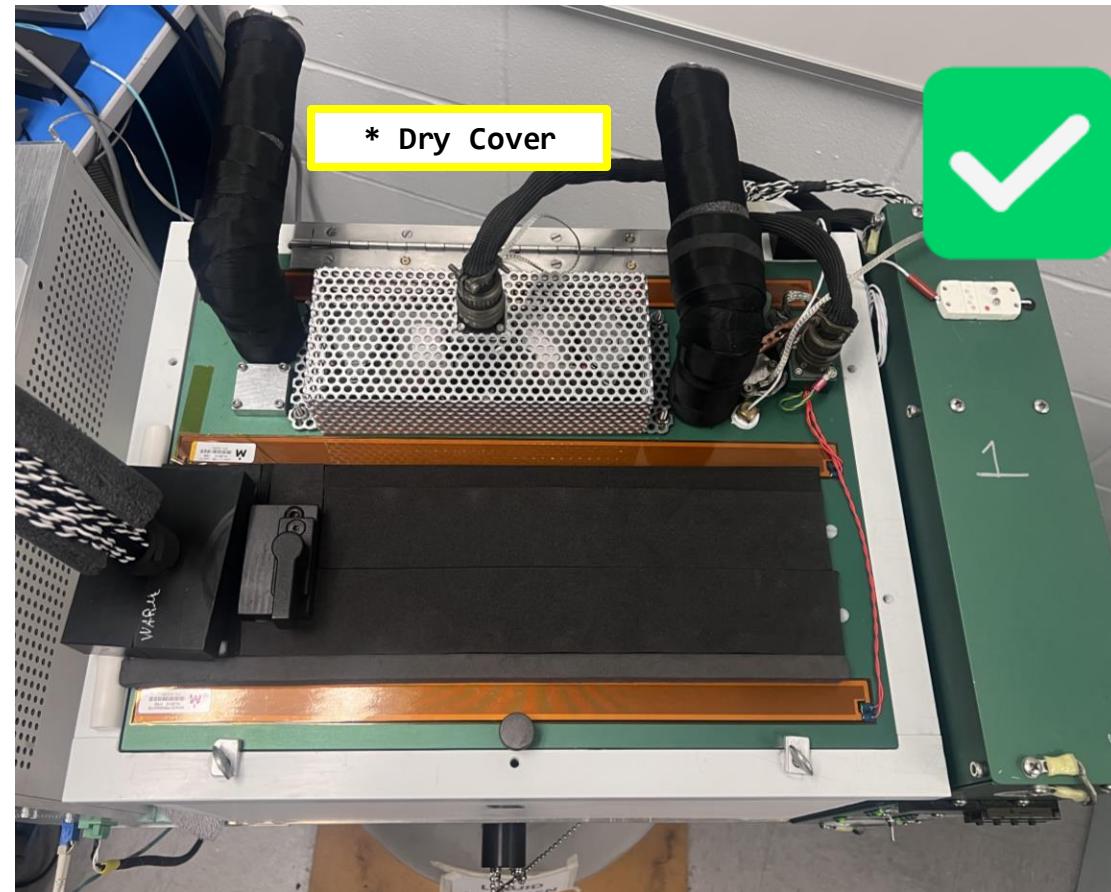
Nuts for CR-RC adapter board in position?  
3 sets of lock nut and washer in position?  
Ground strip in position?  
FE input terminator in position



Are these 5 nuts fastened  
with washers?

# Post-Warm Up Check

Make sure there is no water on the CTS cover. If there is, wipe it off.

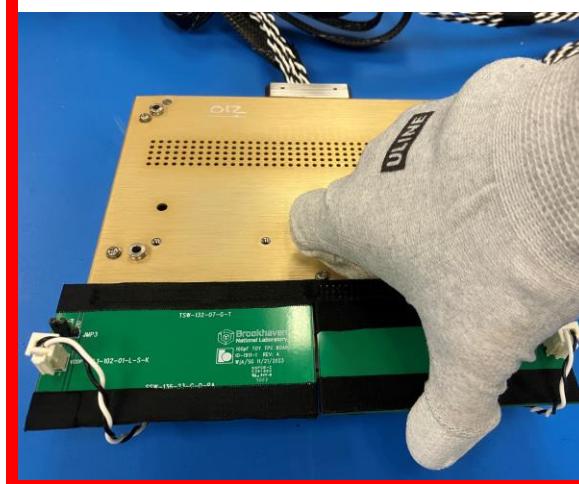


# Disassembly: Bottom CE box (HD)

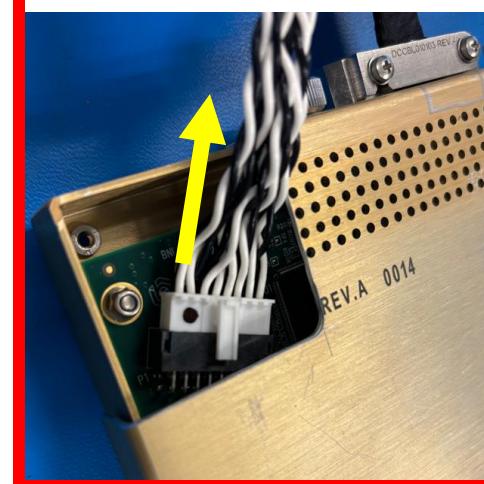
1. Remove the Bottom CE Box



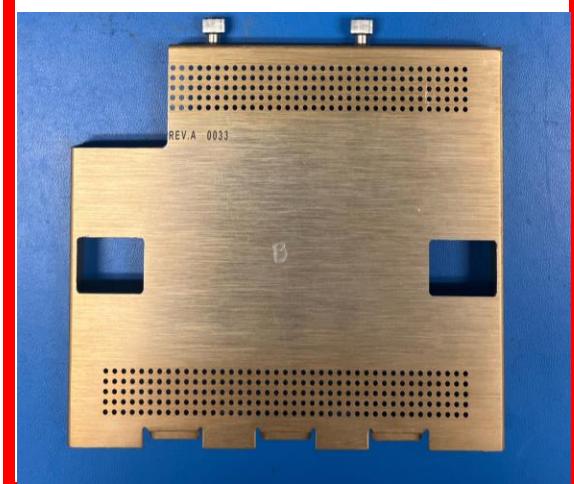
2. Remove Toy TPCs



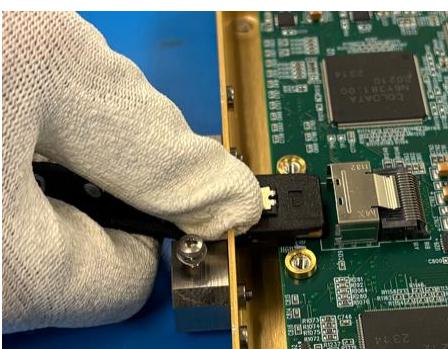
3. Disconnect the Power Cable



4. Remove the test cover



5. Remove the miniSAS cable



6. Place the connector clamp back on FEMB if it comes with CE box



7. Install the original CE box cover



8. Pack FEMB in ESD Bag and Foam Box

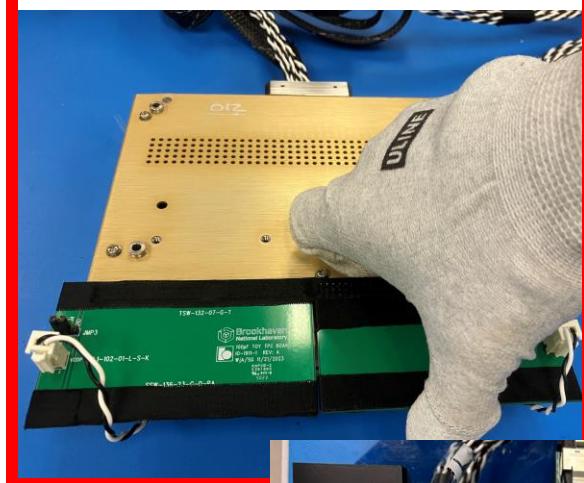


# Disassembly: Top CE box (VD)

1. Remove the Top CE Box



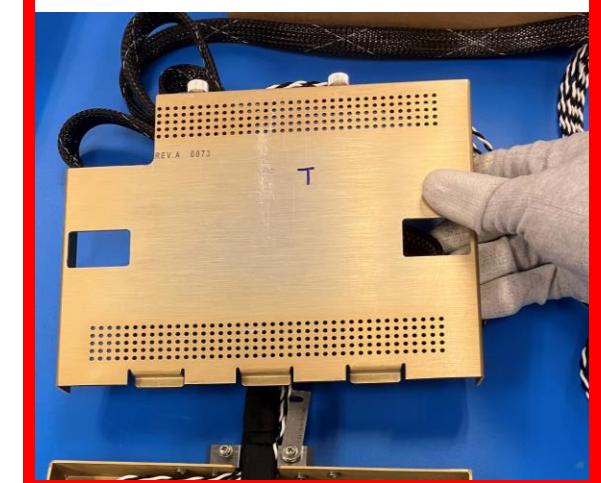
2. Remove Toy TPCs



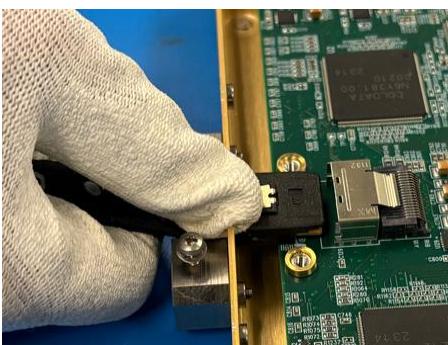
3. Disconnect the Power Cable



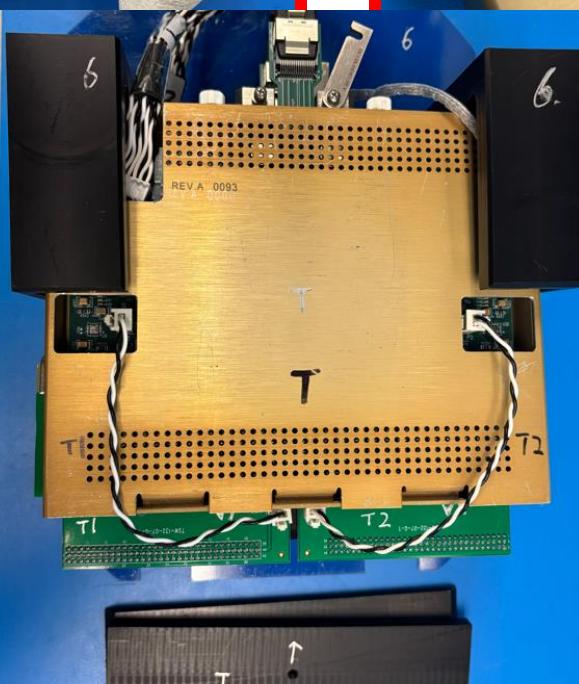
4. Remove the test cover



5. Remove the miniSAS cable



6. Place the back on FEMB  
CE box



7. Install the  
box cover



8. Pack FEMB in ESD Bag  
and Foam Box



# Disassembly: Bottom CE box (VD)

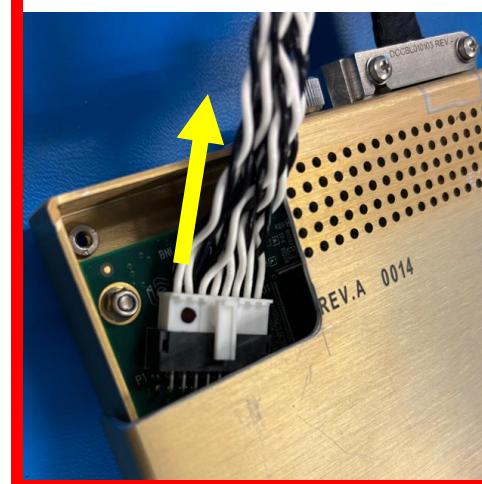
1. Remove the Bottom CE Box



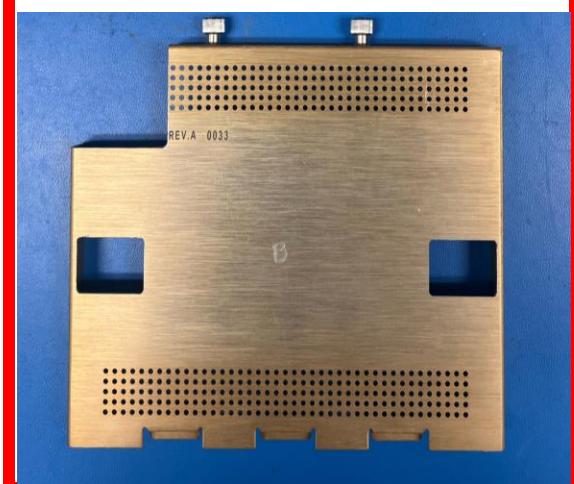
2. Remove Toy TPCs



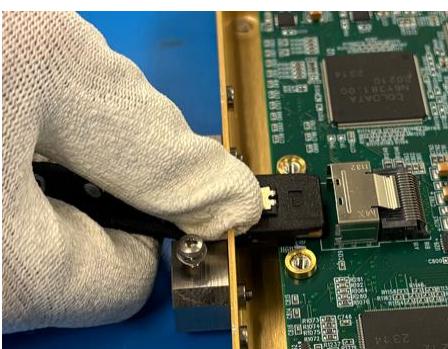
3. Disconnect the Power Cable



4. Remove the test cover



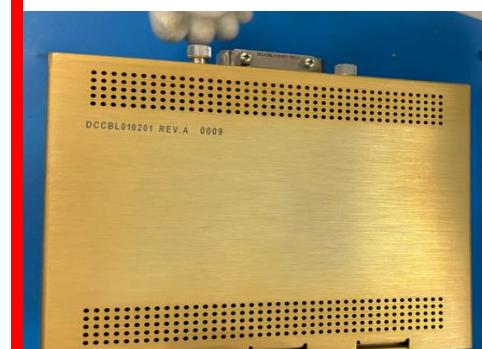
5. Remove the miniSAS cable



6. Place the connector clamp back on FEMB if it comes with CE box



7. Install the original CE box cover



8. Pack FEMB in ESD Bag and Foam Box

