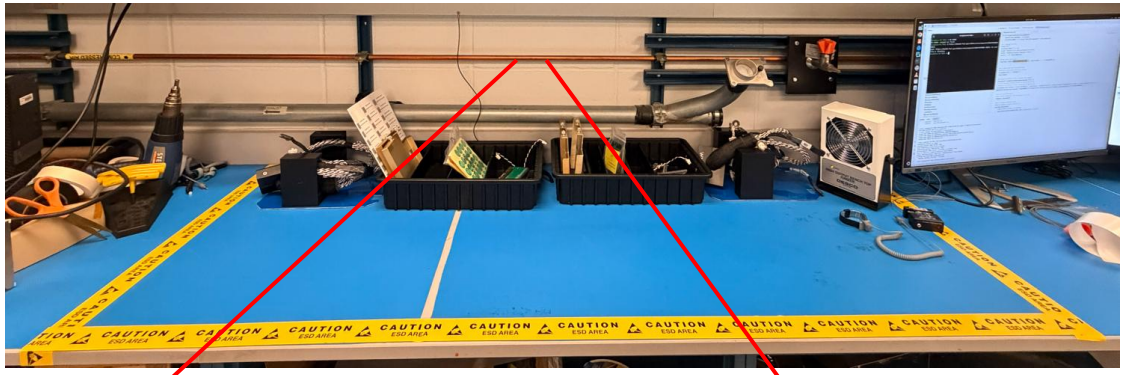
Pop-ups for FEMB QC Procedure

Karla Flores, Lingyun Ke

Discharge Yourself!



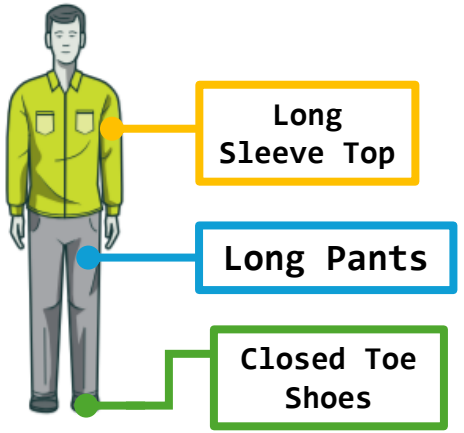
Both hands hold the bronze pipe firmly and softly for 3 seconds

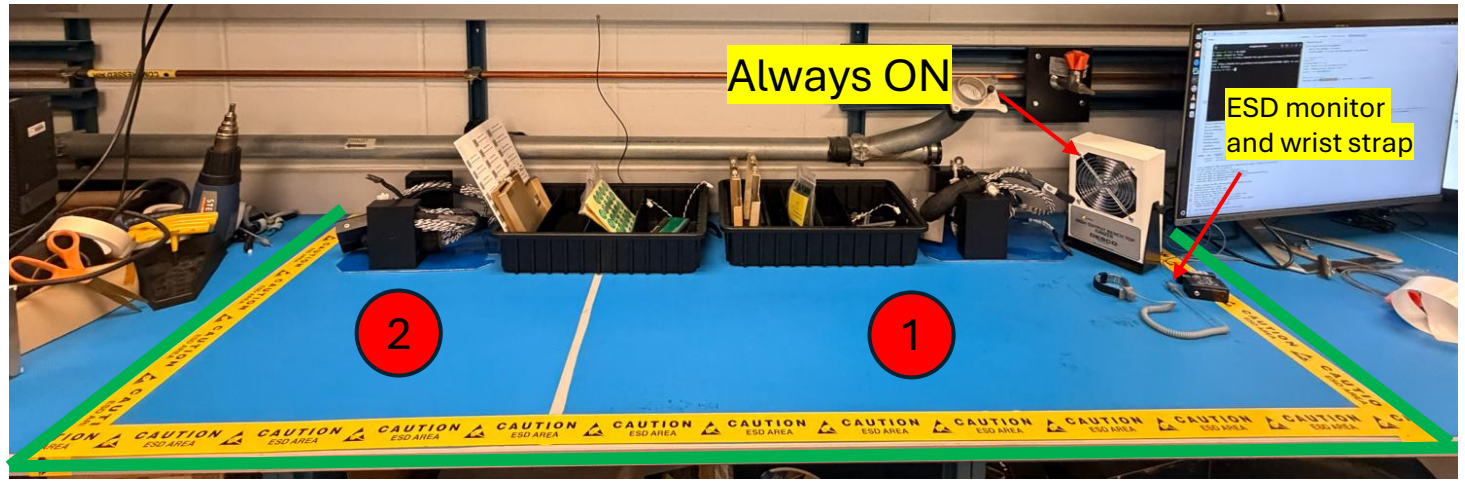
(When you are NOT wearing on the wrist strap or ESG gloves, you **MUST** discharge yourself before you touch anything in the assembly area)

Initial Checkout

Please contact Tech Coordinator if any accessory is missing!

Safety First!

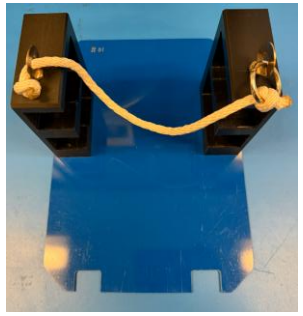




1: Assembly area

2: Place the assembled CE box support structure (to be tested in the next run)

Is the assembly area neat and clean?



2 CE box support structures

Cold cable bundle (2 sets)

2 accessory trays

Checklist for accessory tray # 1

Please contact Tech Coordinator if any accessory is missing!

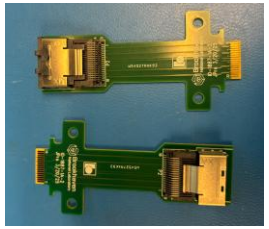
Item	Quantity
Screwdriver (PHILLIPS)	1
Allen wrench(3/16)	1
miniSAS cable clamp with 2 thumb nuts	1
Power cable clamp with 2 thumb nuts	1
Yellow Nylon Probe Pick Spudger	1
miniSAS cable clamp (VD)	2
M3x12 screws (VD)	>4
Thumb nut for miniSAS cable adapter (HD)	>4
miniSAS cable adapter	2
ToyTPC with cable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

screwdriver

miniSAS cable clamp

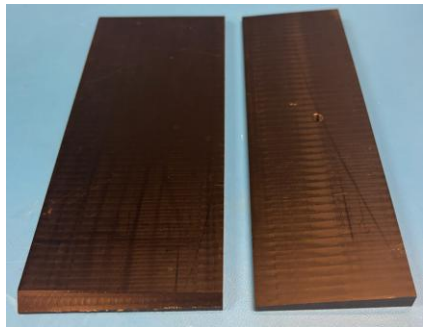
power cable clamp

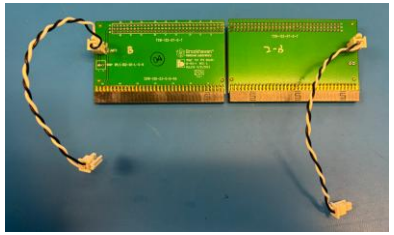
Spudger

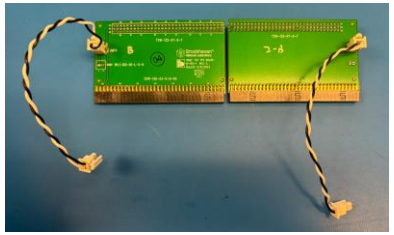

HD miniSAS cable adapter

3/16 Allen wrench

CE box fastener (B)


CE box fastener (T)


Toy TPCs (B)


Toy TPCs (T)

VD M3x12

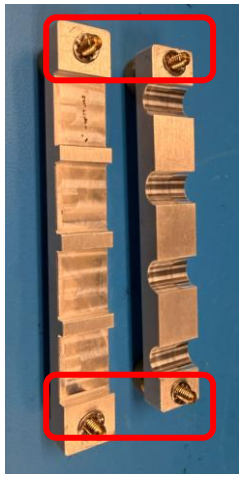
HD M3 thumb nuts

VD miniSAS cable clamp

Checklist for accessory tray # 2

Please contact Tech Coordinator if any accessory is missing!

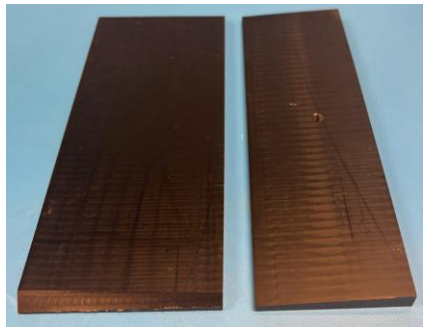
Item	Quantity
Screwdriver (PHILLIPS)	0
Allen wrench(3/16)	0
miniSAS cable clamp with 2 thumb nuts	0
Power cable clamp with 2 thumb nuts	0
Yellow Nylon Probe Pick Spudger	0
miniSAS cable clamp (VD)	2
M3x12 screws (VD)	>4
Thumb nut for miniSAS cable adapter (HD)	>4
miniSAS cable adapter	2
ToyTPC with cable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



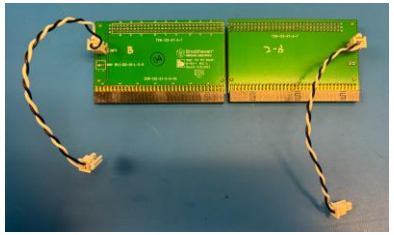
In Tray#1

Check if teeth washers hold the thumb screws?

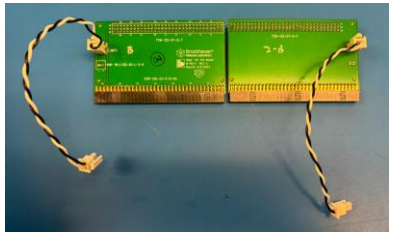
CE box fastener (B)



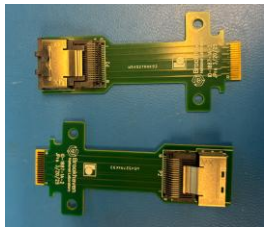
CE box fastener (T)



Toy TPCs (B)



Toy TPCs (T)



HD miniSAS cable adapter

VD M3x12

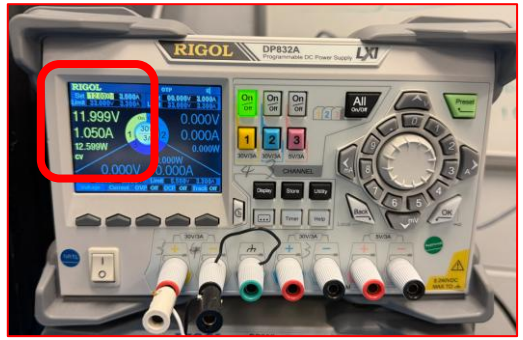
HD M3 thumb nuts

VD miniSAS cable clamp

CTS Initial Checkout

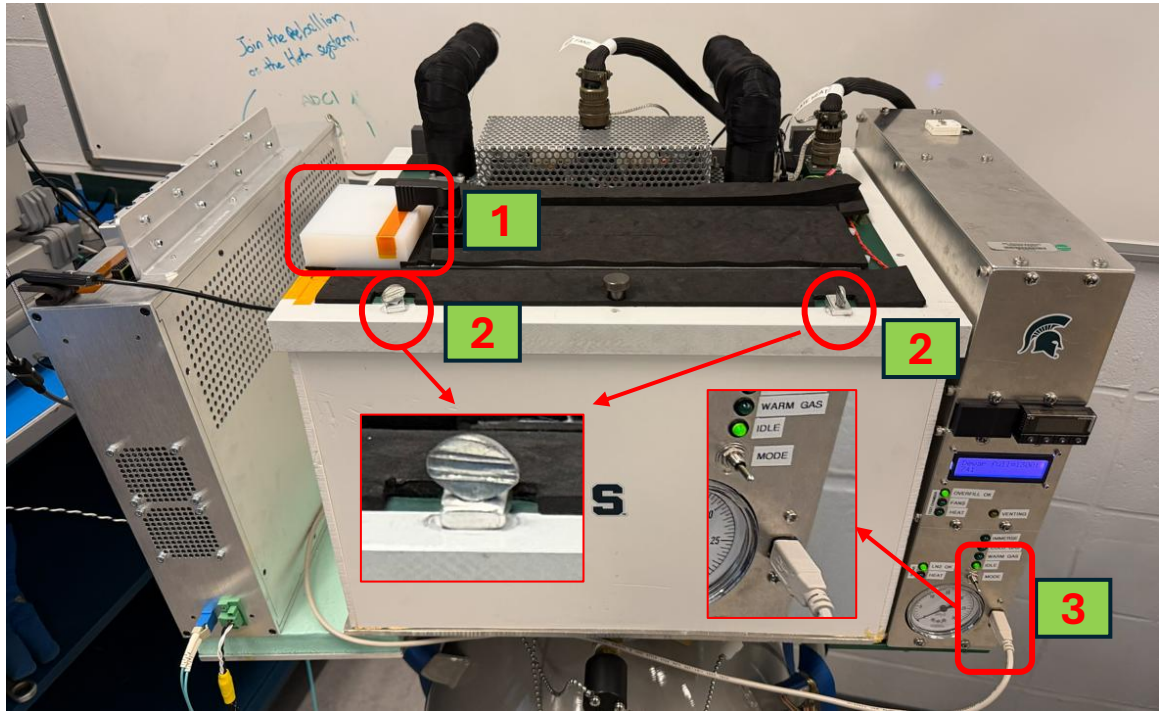
12V for CTS is ON.

Is current between 0.5A and 2A?

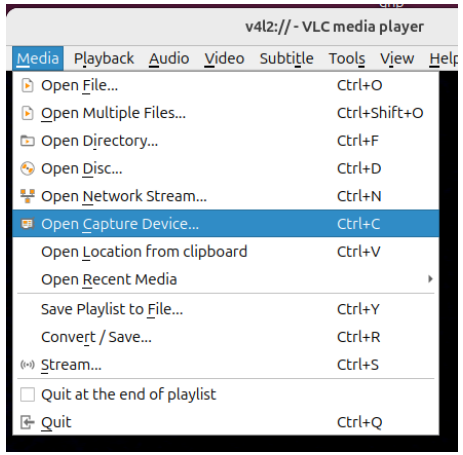


Is CTS chamber top close?

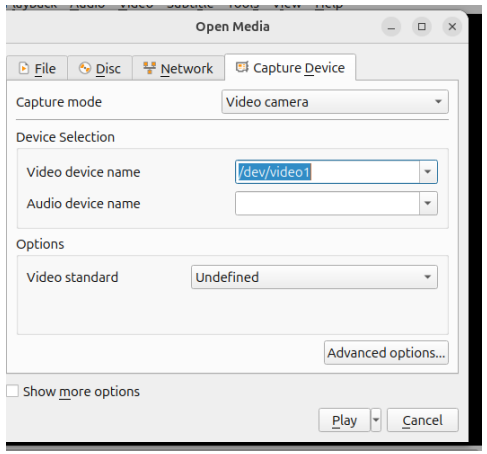
1. Is white block in position?
2. Is top locked?
3. LED 'IDLE' ON and USB connected?



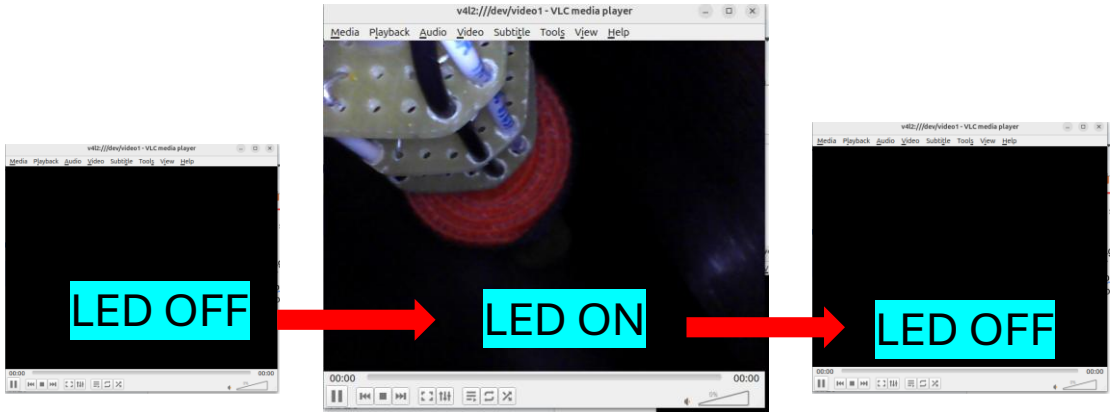
Is camera alive? (VLC player)
Turn on LED, check video and turn it off.



App VLC player
Open Capture Device...



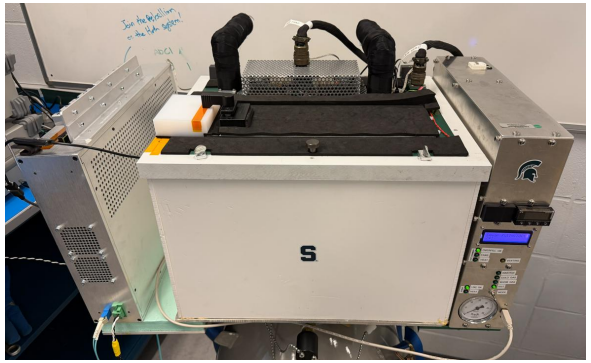
Select video device



Computer to identify CTS device
Check LN2 level

LN2 Filling (STOP if you are NOT trained)

Follow these steps to fill the CTS dewar with LN2:

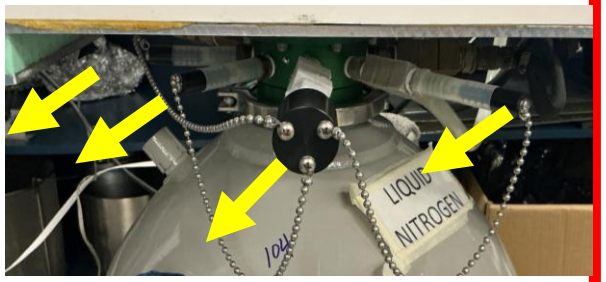


The top MUST be sealed!

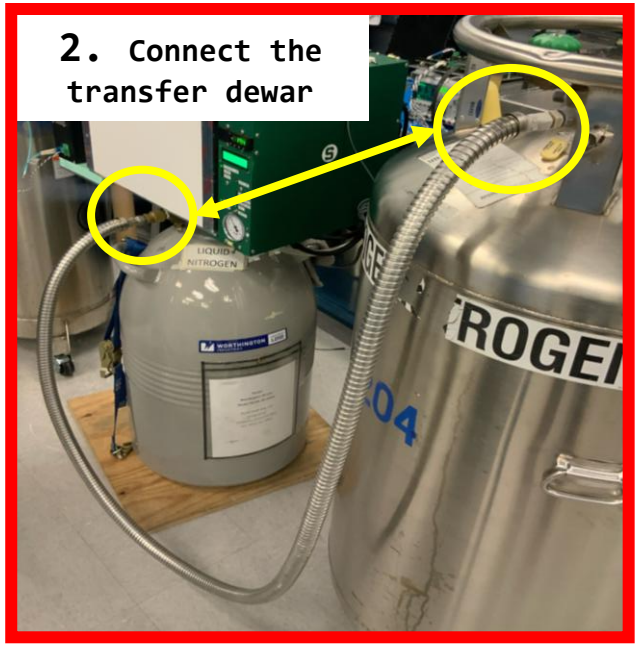
Power On!

1. Remove the LN2 Dewar plugs

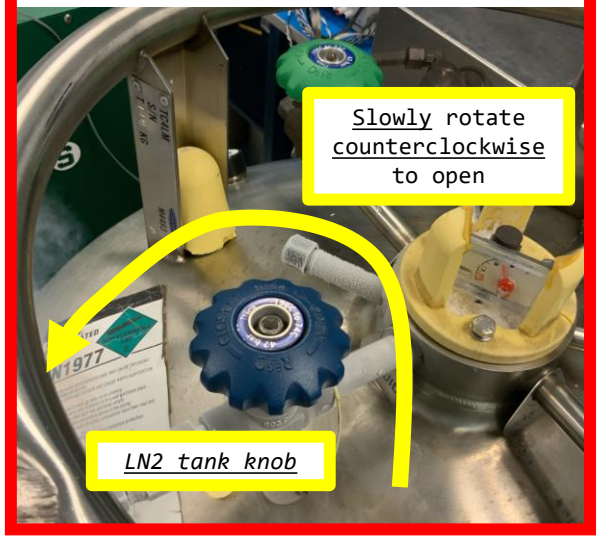
Keep CTS cover close



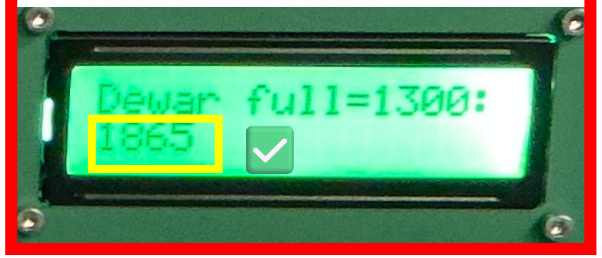
2. Connect the transfer dewar



3. Start the filling process

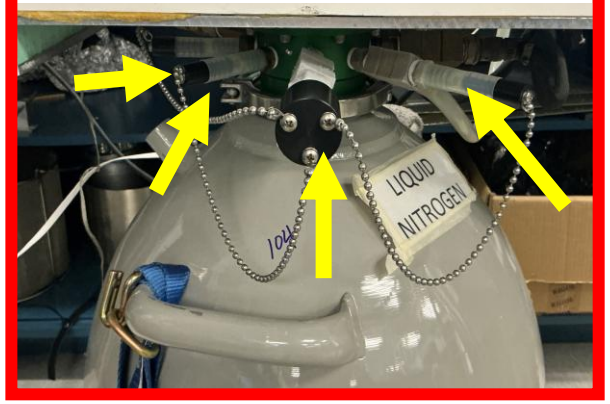


4. Monitor until "Dewar Full" > 1800



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

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



6. (1)CTS controlled by PC

Confirmed in the terminal. The chamber will be in warm mode for 20 minutes and switch to IDLE mode automatically.

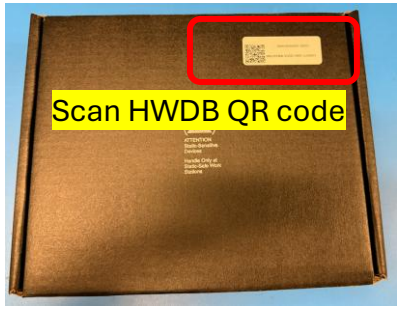
(2) Manual operation

Set chamber in warm mode for 20 minutes and then switch to IDLE mode

Note: you may continue CE box assembly during this warm-up period.

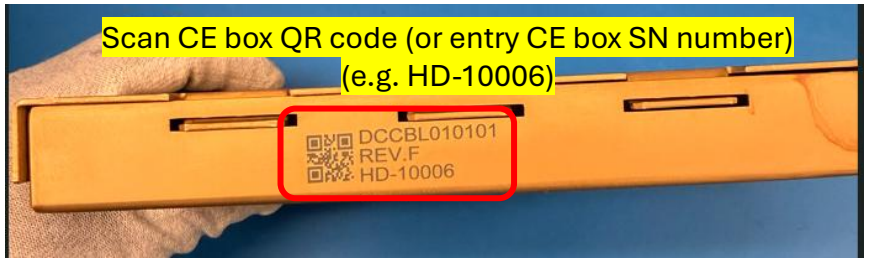
CE Box Visual Inspection

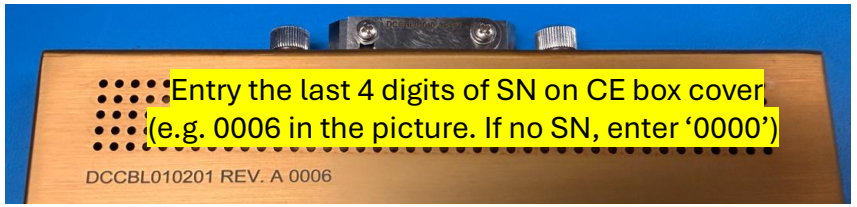
Please contact Tech Coordinator if abnormality is observed!



Is foam box broken?

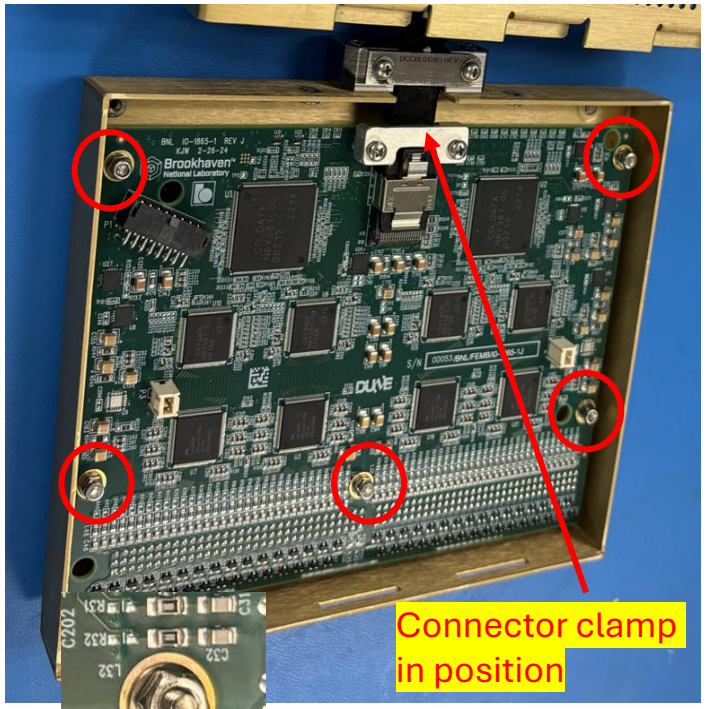
Is CE box enclosed in the ESD bag?

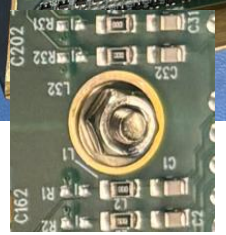




Put the CE box cover and anti-static bag back into the foam box after the SN of cover is recorded!

VD CE box (1865)

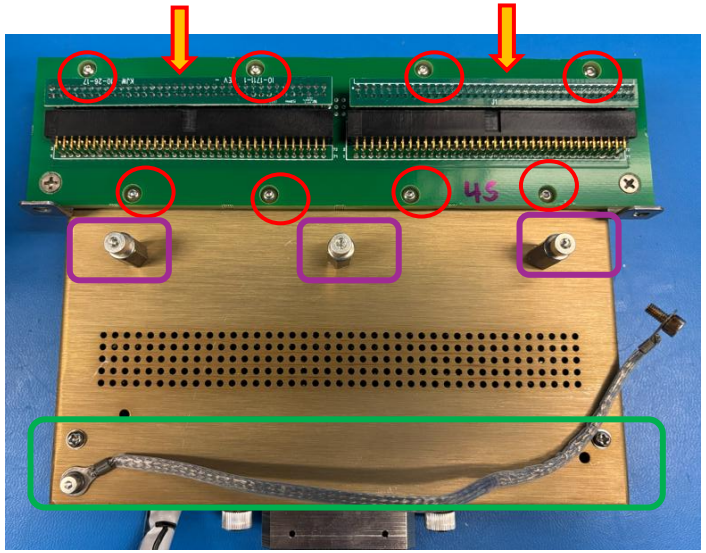




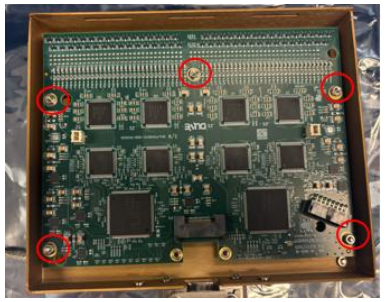
5 nuts fastened with washers?

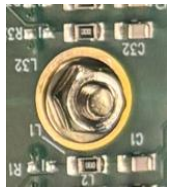
4 screws and 4 washer attached on the cover?

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?





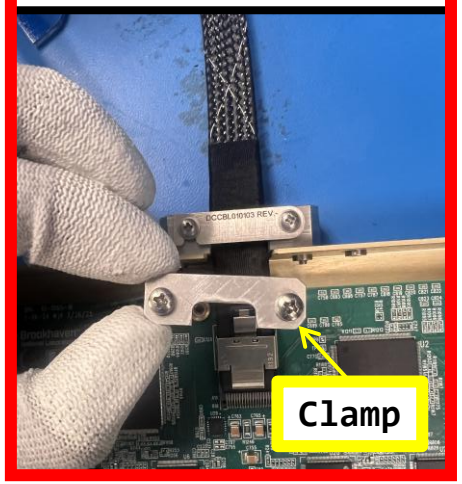
5 nuts fastened with washers?

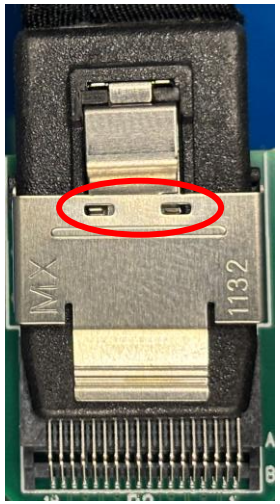
Bottom CE Box (VD) Assembly

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

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

1. Install miniSAS Cable + Clamp

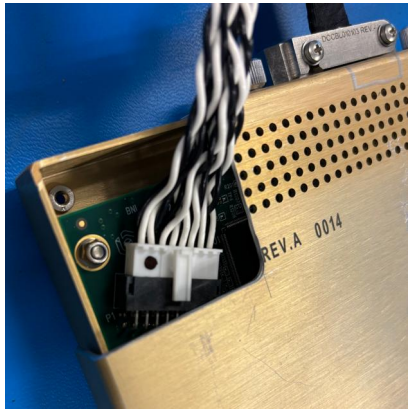




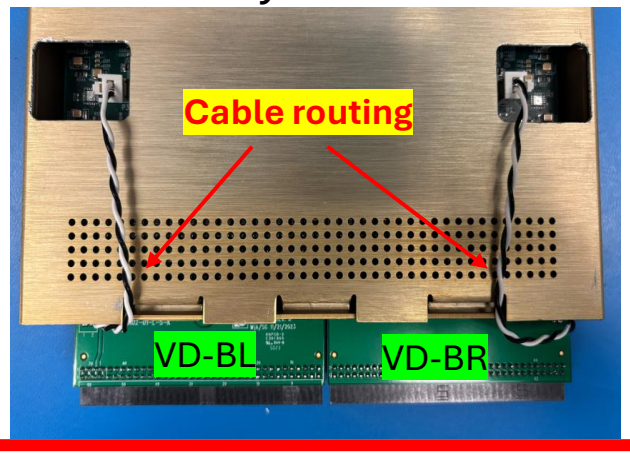
Locks in position

2. Install Test Cover

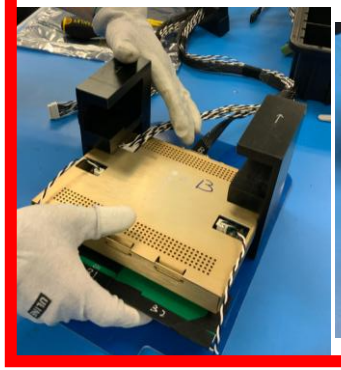
3. Install power cable

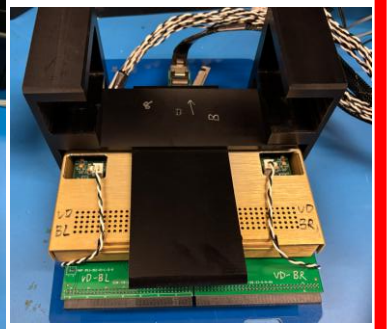


4. Install Toy TPCs



5. Insert into Bottom Slot



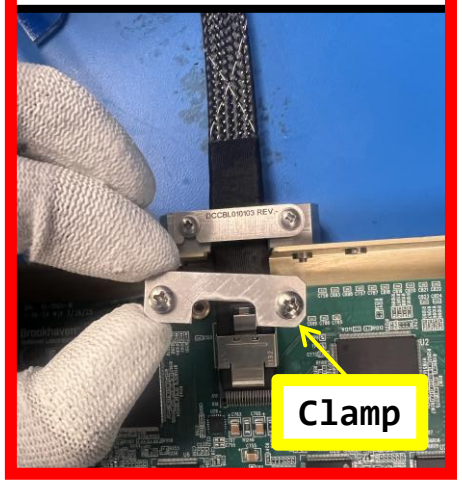


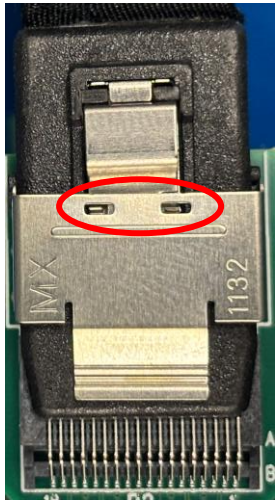
Top CE Box (VD) Assembly

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

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

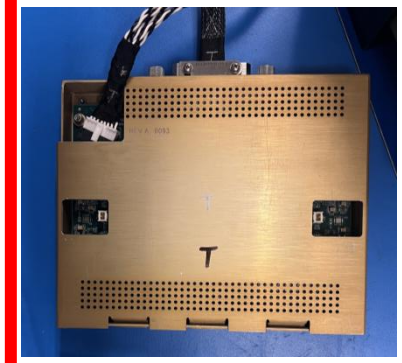
1. Install miniSAS Cable + Clamp



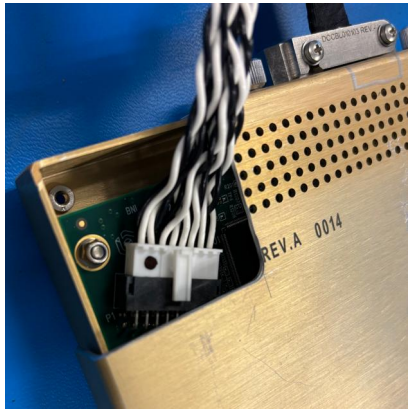


Locks in position

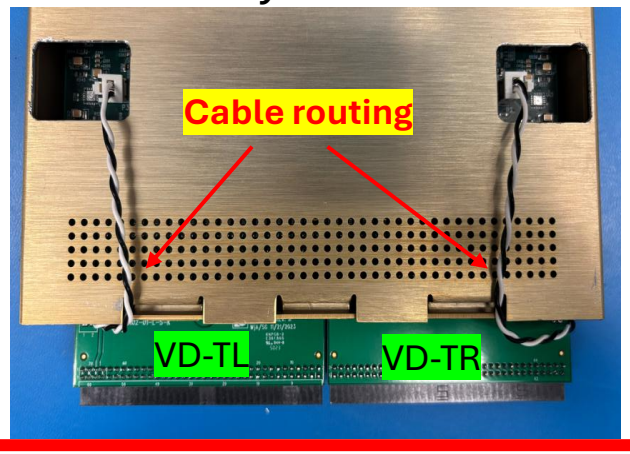
2. Install Test Cover



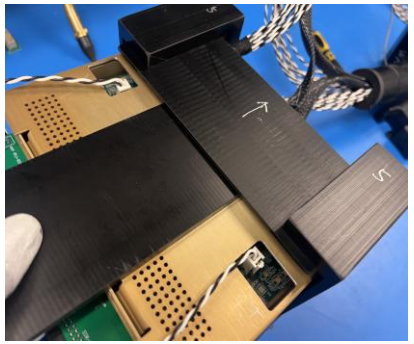
3. Install power cable

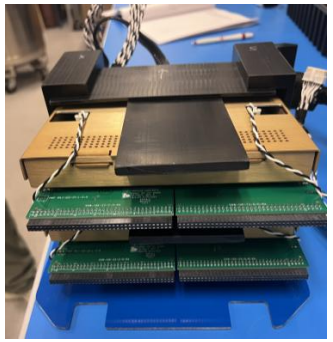


4. Install Toy TPCs



5. Insert into top Slot



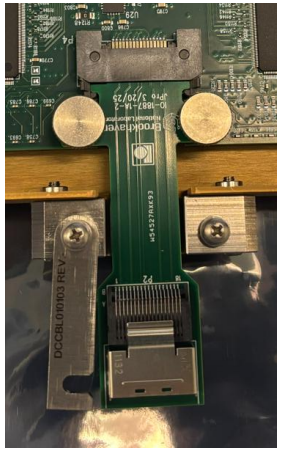


Bottom CE Box (HD) Assembly

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

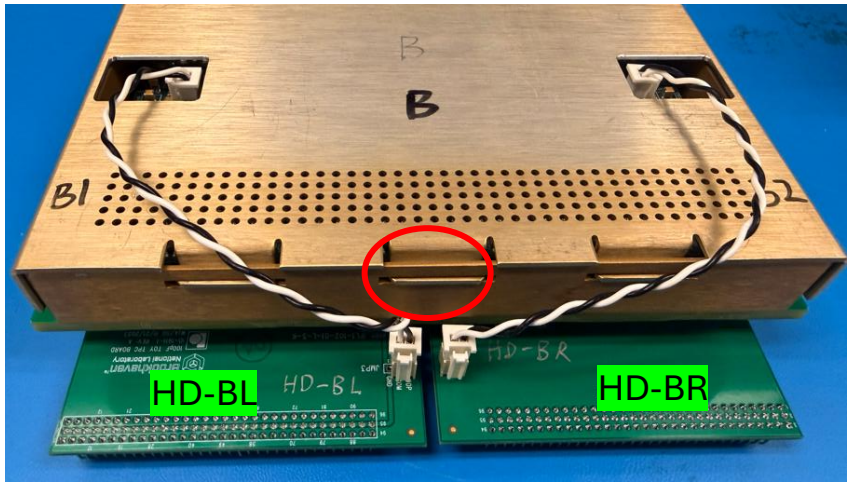
Make sure you are wearing ESD-safe gloves and a ESD monitor!

1. Install Adapter and test cover

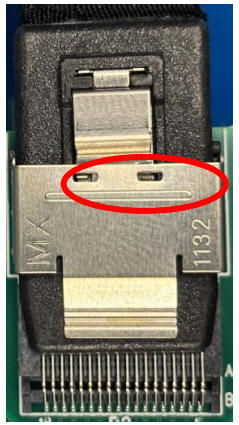


Change later

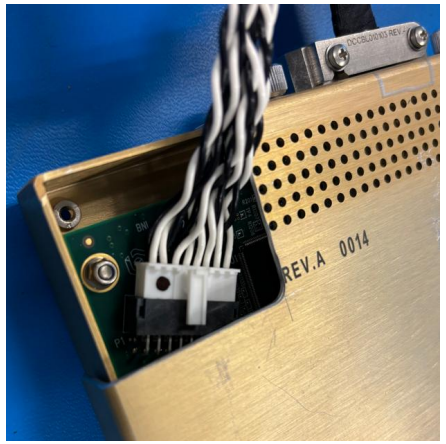
2. Remove FE terminators, install Toy TPCs



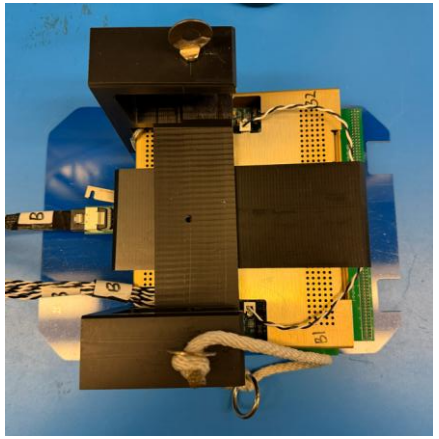
3. Install cables



Locks in position



4. Insert into Bottom Slot and fasten CE box

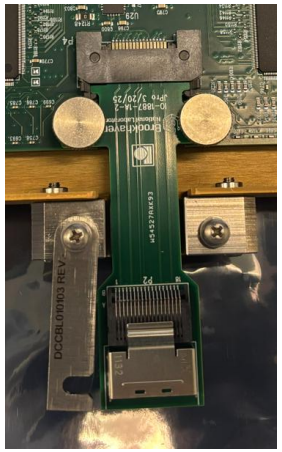


Top CE Box (HD) Assembly

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

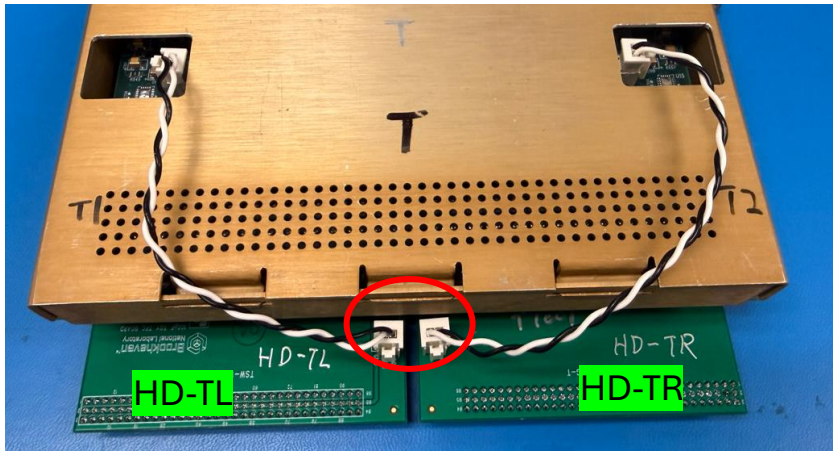
Make sure you are wearing ESD-safe gloves and a ESD monitor!

1. Install Adapter and test cover



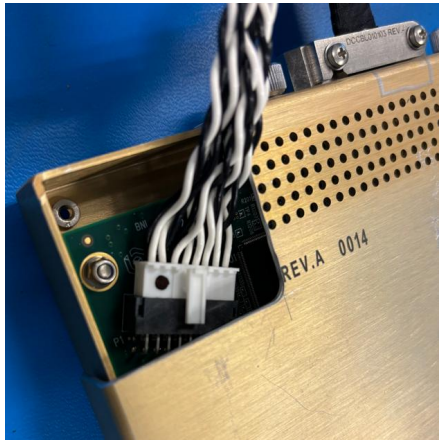
Change later

2. Remove FE terminators, install Toy TPCs

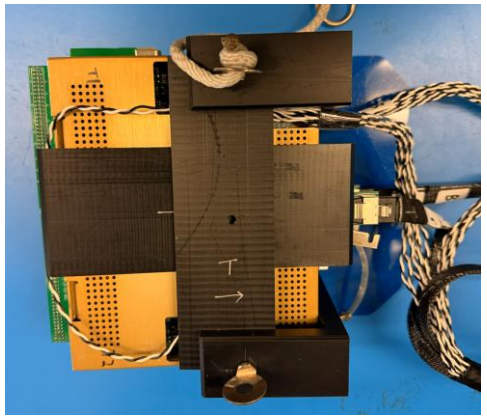


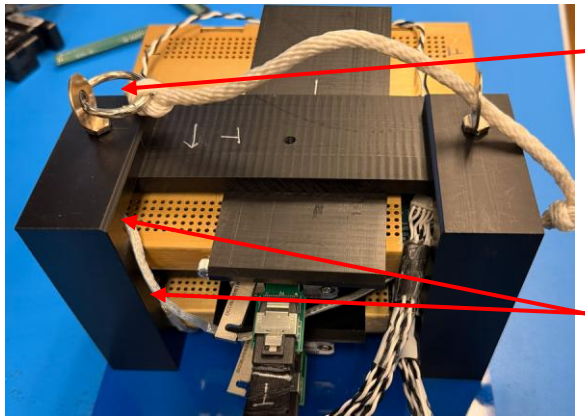
3. Install cables

Locks in position



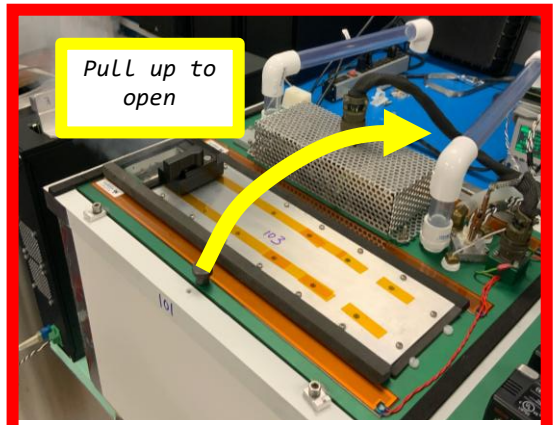
4. Insert into top Slot and fasten CE box





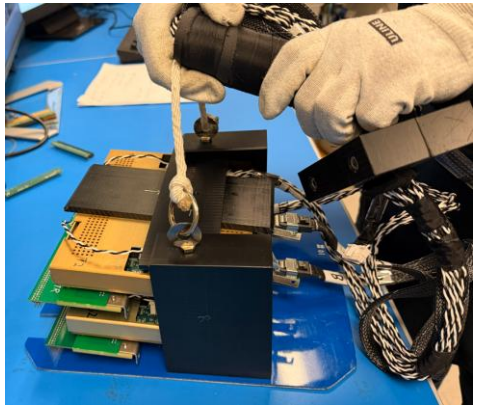
Place CE Boxes into CTS Chamber

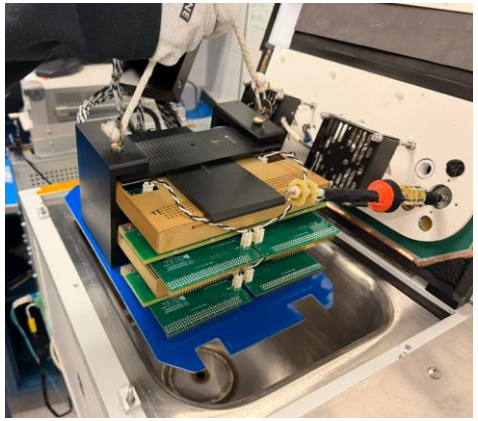
Follow these steps to install the FEMBs in the CTS:

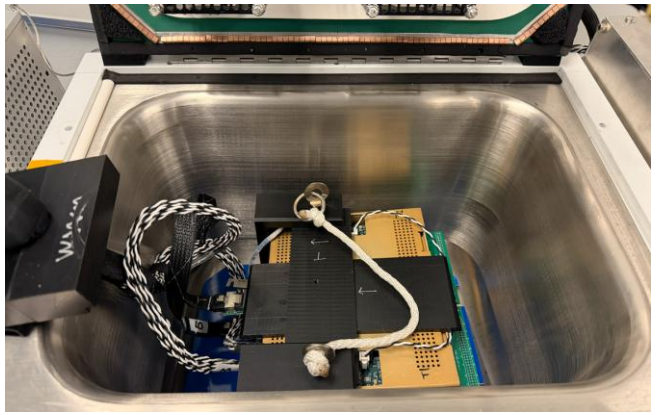


1. Open the CTS cover

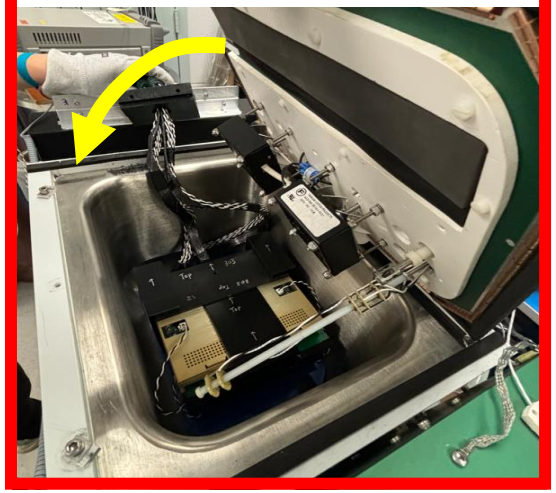
2. Place CE boxes inside the CTS chamber



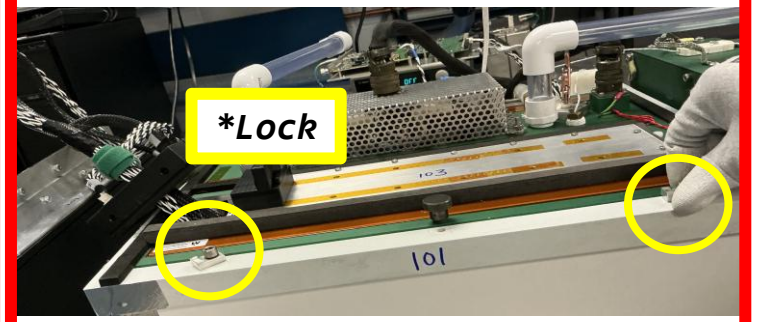




3. Carefully close the CTS cover



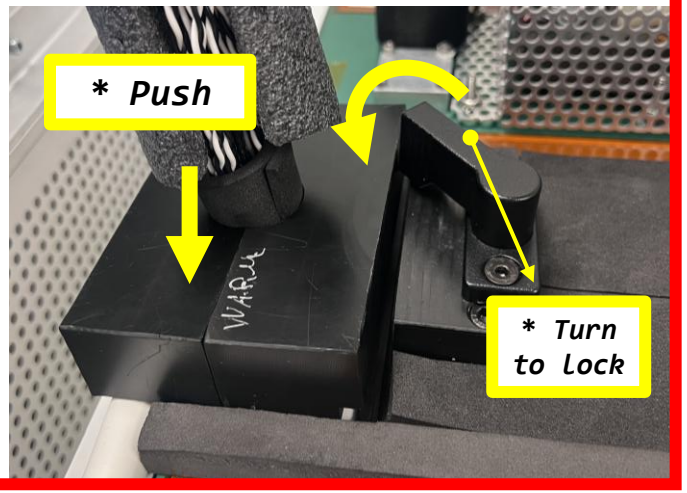
4. Lock the CTS chamber



unlocked

Locked & tighten

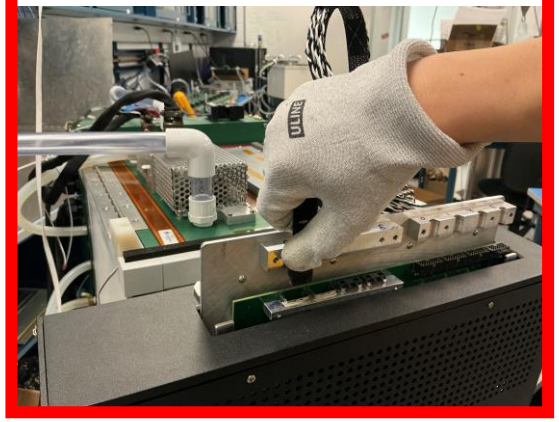
5. secure the block



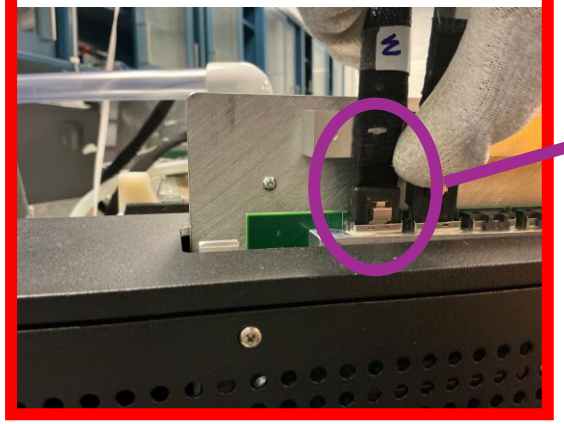
Cable Connection at WIB side

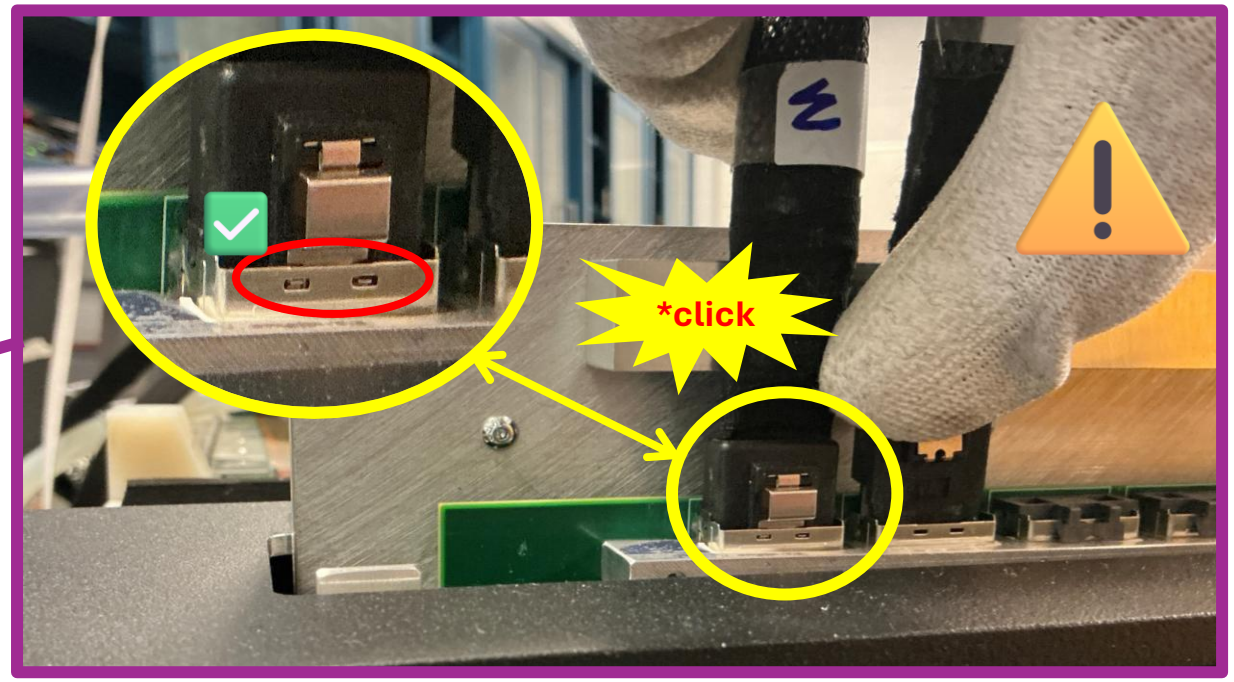
Follow these steps to connect the FEMBs to the WIB

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

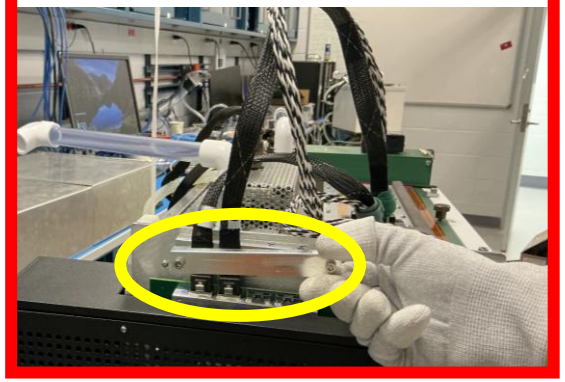


2. Place the Top Data Cable (T) in Slot *T*

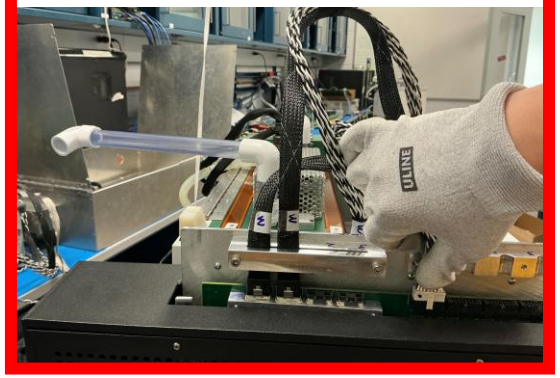




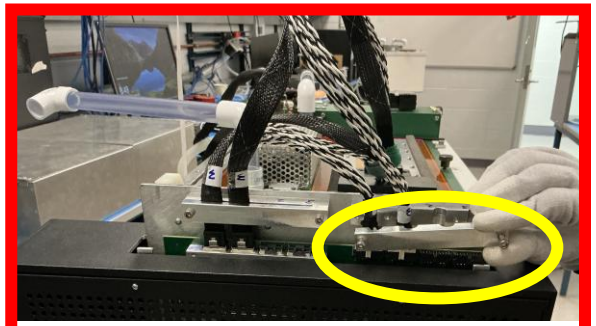
3. Install the Strain Relief Clamp



4. Install the Bottom Power Cable in Slot *B*

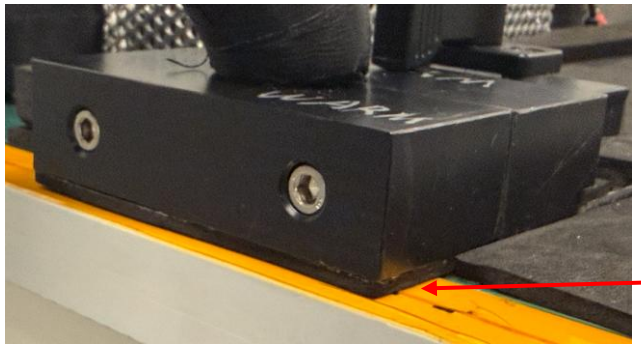


5. Install the Top Power Cable in Slot *T*



6. Install the Strain Relief Clamp (optional)

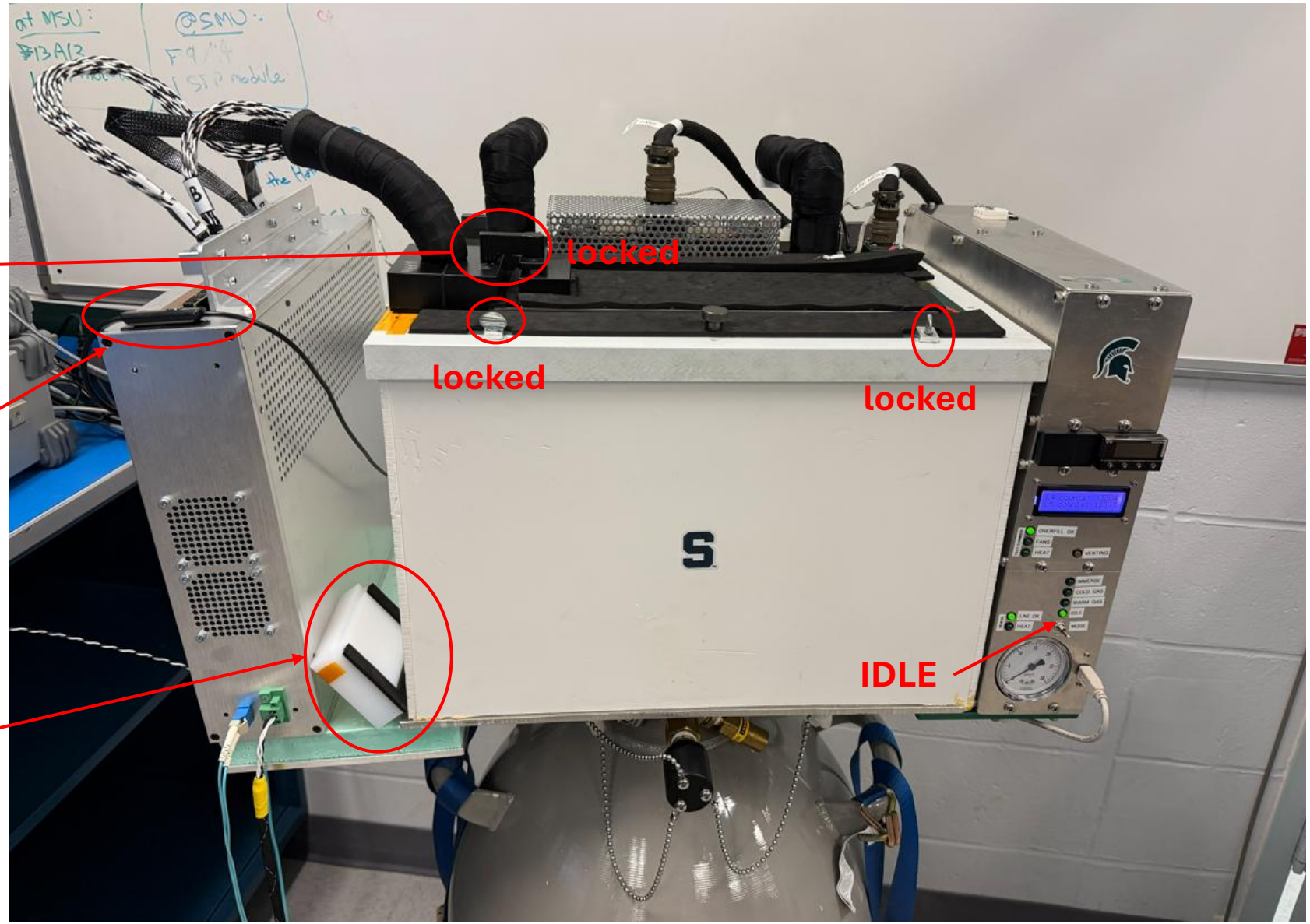
Make sure CTS is closed, locked and ready to use



No visible air gap!

Camera LED switcher

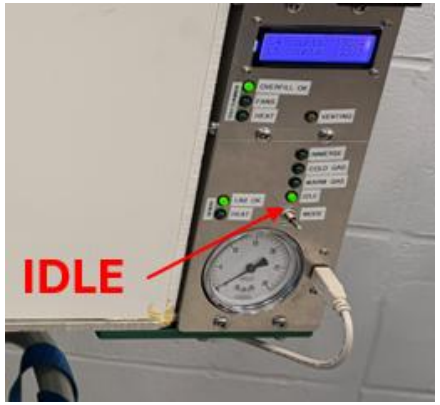
When the cold cable bundle is removed, this block should seal the cover all the time!



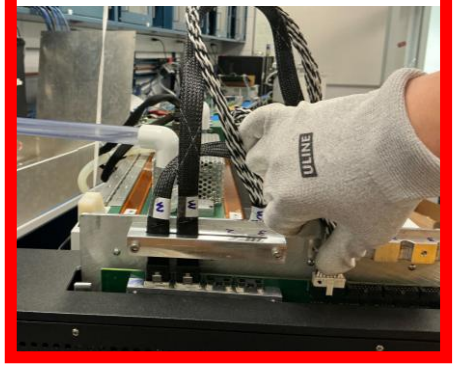
Take CE boxes out of the Chamber

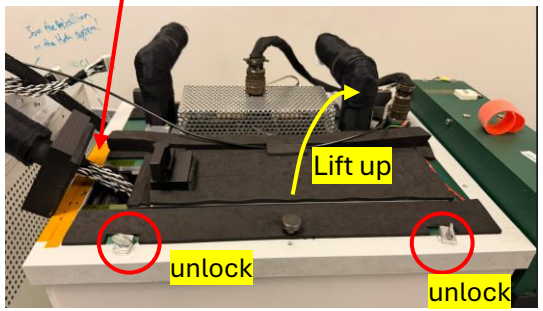
Remember to wear ESD-safe gloves and a ESD monitor!

1. CTS in IDLE mode



2. Disconnect the Data and Power cables from the WIB

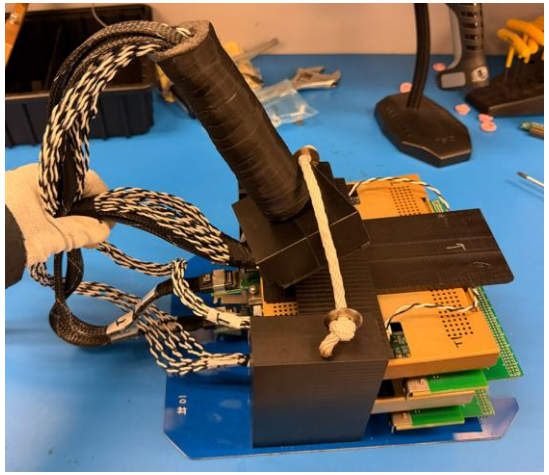




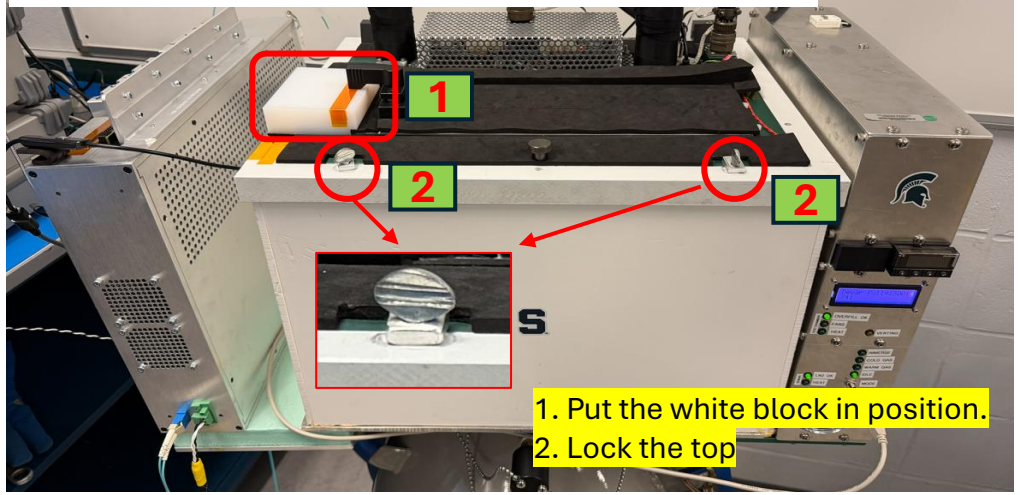
3. Open the CTS cover

4. Hold the cable bundle, carefully lift up the CE boxes

5. Place it on the assembly area

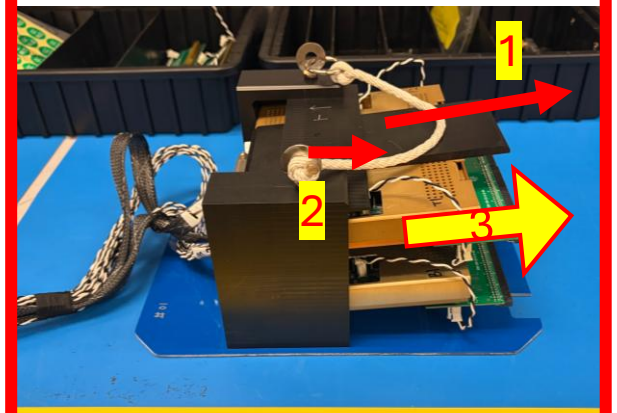


6. Close CTS chamber top



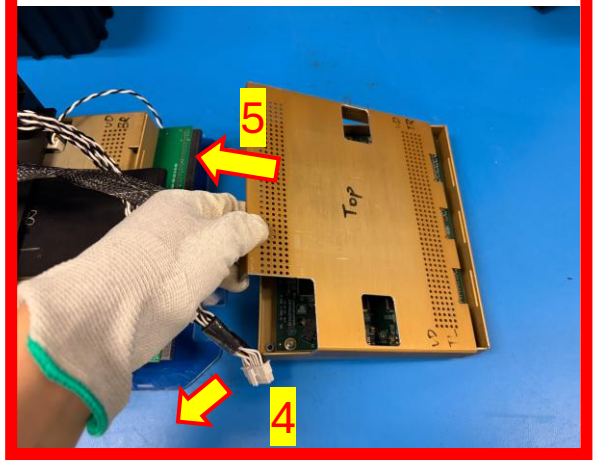
Disassembly 01: Top CE box (VD)

1. Wear ESD component
2. Remove the CE Box from the support structure

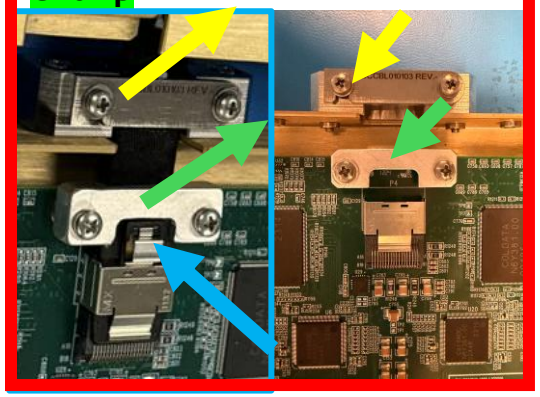


3. Remove The Toy_TPC

4. Remove Power Cable
5. Remove The Test Cover



6. Remove The miniSAS Cable
7. Secure connector clamp and cable relief clamp



8. Scan CE box ID and original CE Box Cover ID

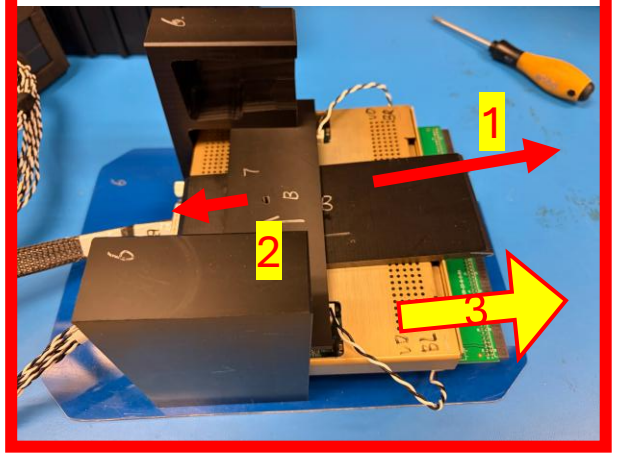
9. Install original cover, also check result at bottom

10. Scan Foam Box ID and package the CE Box

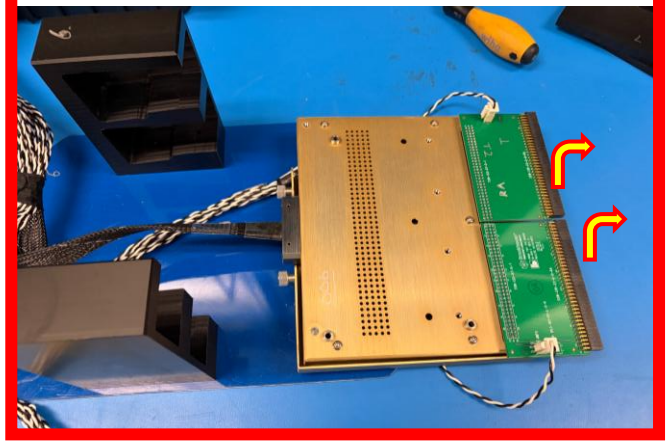
"PASS" or "NG"

Disassembly 02: Bottom CE box (VD)

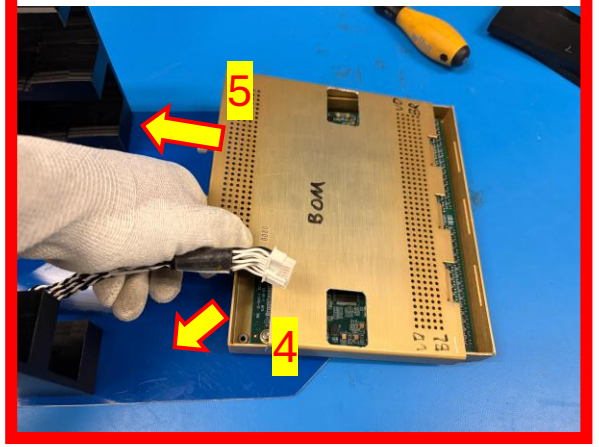
1. Wear ESD component
2. Remove the CE Box from the support structure



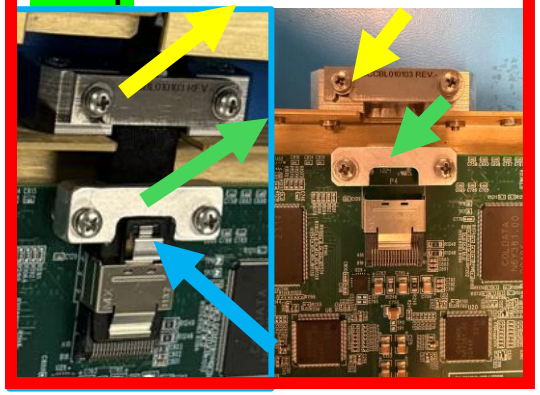
3. Remove The Toy_TPC



4. Remove Power Cable
5. Remove The Test Cover



6. Remove The miniSAS Cable
7. Secure connector clamp and cable relief clamp



8. Scan CE box ID and original CE Box Cover ID

9. Install original cover, also check result at bottom

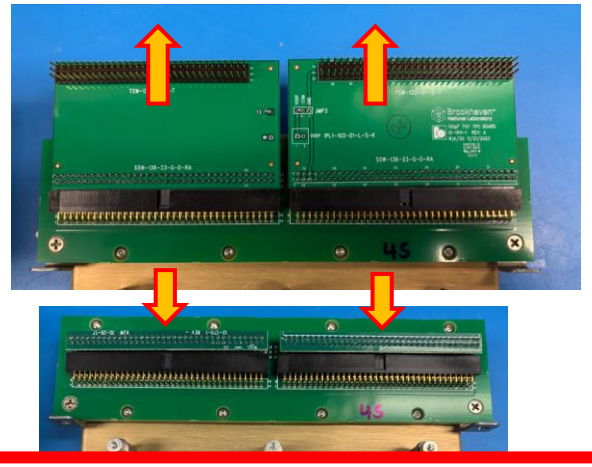
10. Scan Foam Box ID and package the CE Box

QC PASS "PASS" or "NG" NG

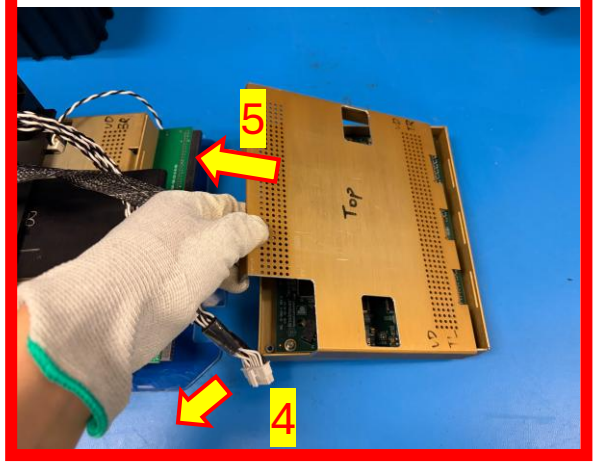
Disassembly 01: Top CE box (HD)

1. Wear ESD component
2. Remove the CE Box from the support structure

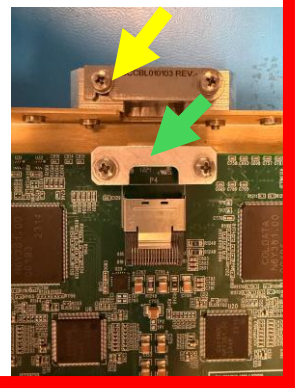
3. Remove The Toy_TPC



4. Remove Power Cable
5. Remove The Test Cover



6. Remove The miniSAS Cable
7. Secure connector clamp and cable relief clamp



8. Scan CE box ID and original CE Box Cover ID

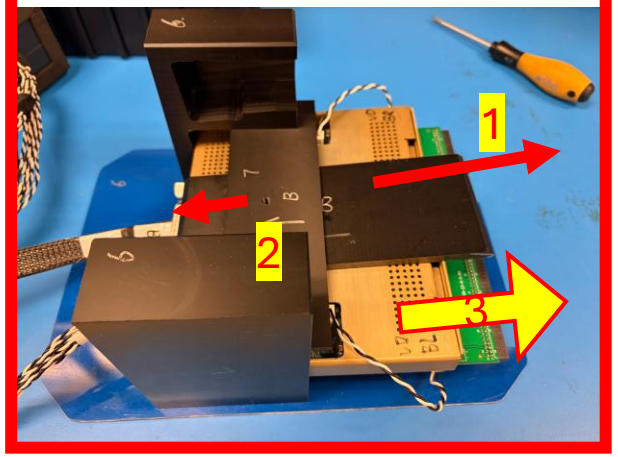
9. Install original cover, also check result at bottom

10. Scan Foam Box ID and package the CE Box

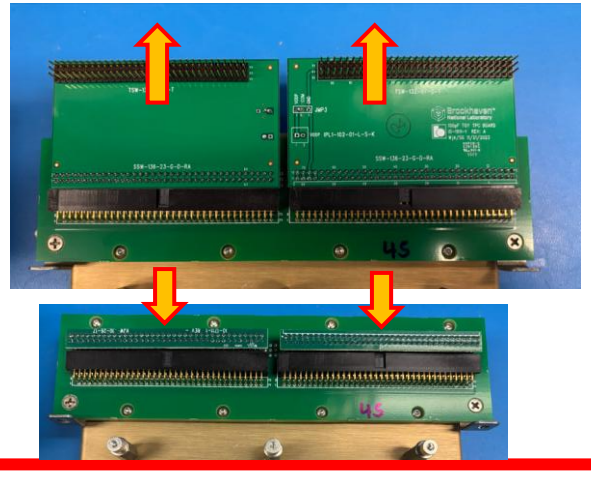
QC PASS "PASS" or "NG" NG

Disassembly 02: Bottom CE box (VD)

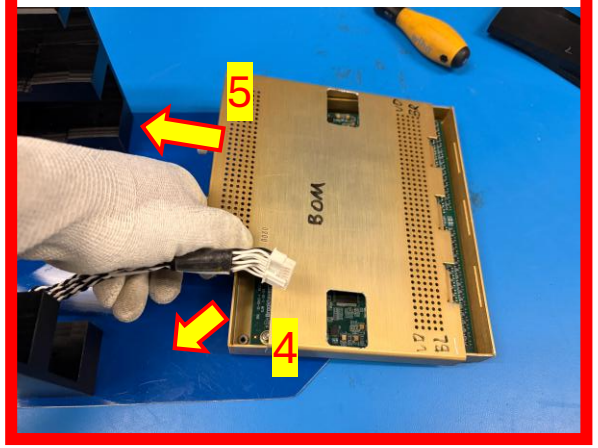
1. Wear ESD component
2. Remove the CE Box from the support structure



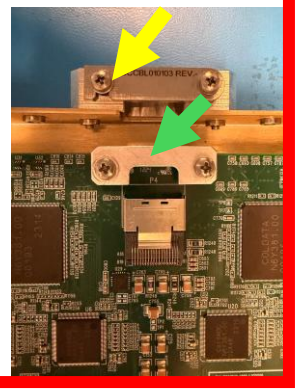
3. Remove The Toy_TPC



4. Remove Power Cable
5. Remove The Test Cover



6. Remove The miniSAS Cable
7. Secure connector clamp and cable relief clamp



8. Scan CE box ID and original CE Box Cover ID

9. Install original cover, also check result at bottom

10. Scan Foam Box ID and package the CE Box

QC PASS “PASS” or “NG” NG

Put Accessories back to original positions

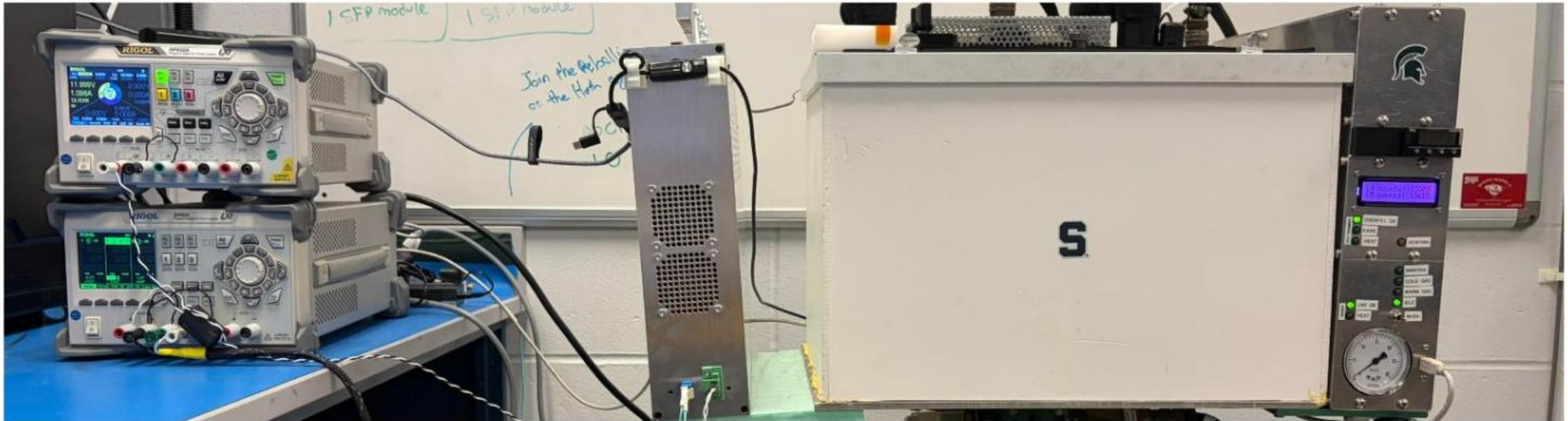
Put accessories back to tray!

Maintain the assembly area neat and clean!

1: Assembly area

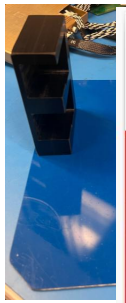
2: Place the assembled CE box support structure (to be tested in the next run

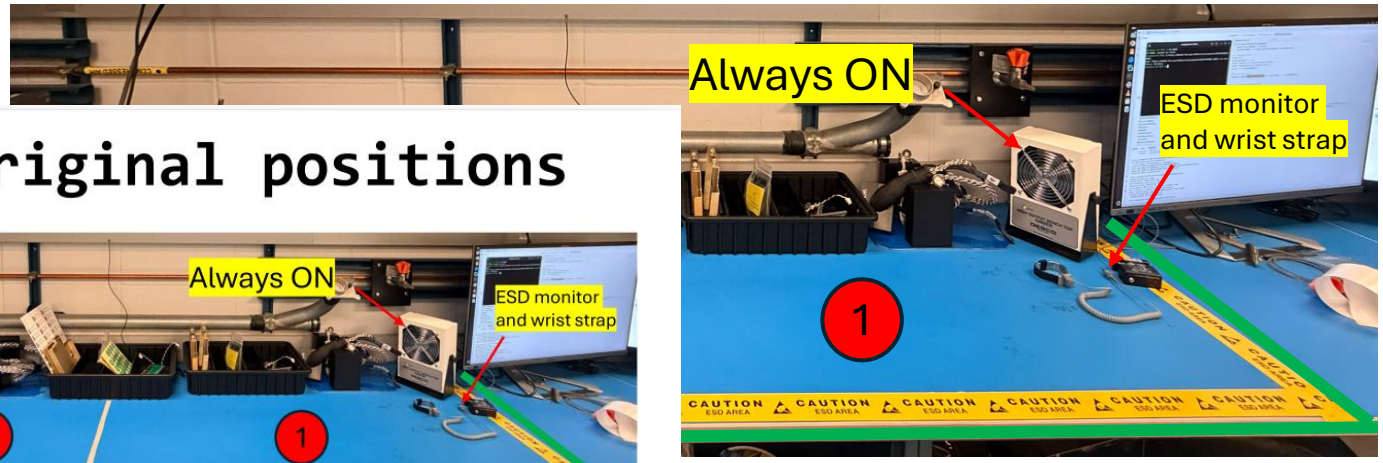
Is the assembly area neat and clean? Confirm the CTS back to normal



Put Accessories back to original positions

Put accessories back to tray!

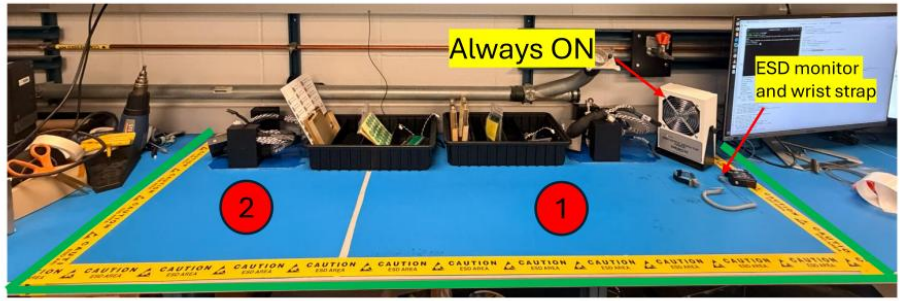




Put Accessories back to original positions

Put accessories back to tray!

Maintain the assembly area neat and clean!

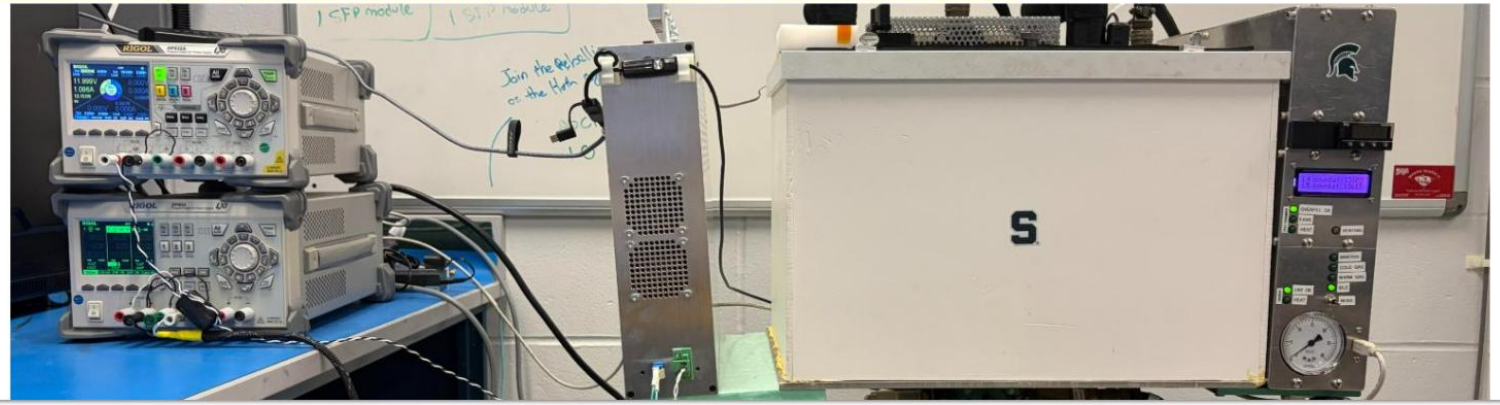


1: Assembly area

2: Place the assembled CE box support structure (to be tested in the next run)

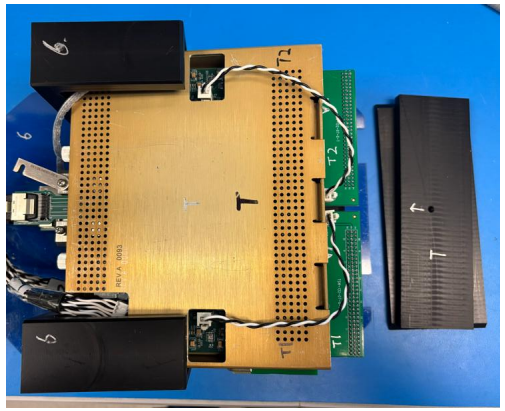
ort structure (to be tested in the next run)

Is the assembly area neat and clean? Confirm the CTS back to normal

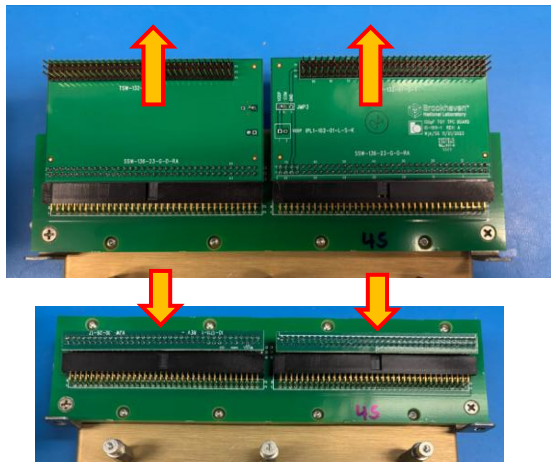


Disassembly: CE box (HD)

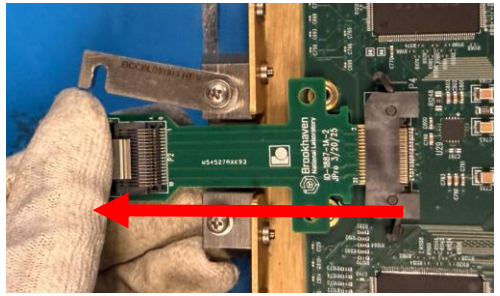
1. Remove the CE Box from the support structure
2. Remove Power Cable
3. Remove the test cover



4. Remove Toy TPCs and install FE terminators back



5. unscrew, Slide out the miniSAS adapter board
6. Secure cable relief clamp



7. Install the original CE box cover.
Scan CE box QR code.
Entry CE box cover SN last 4 digits.

8. Pack CE box in ESD Bag and Foam Box

Scan HWDB QR code!

"PASS" or "NG"

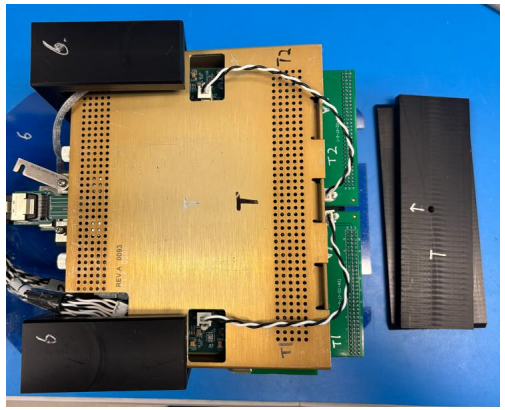
Store it!

10. Put accessories back to tray!

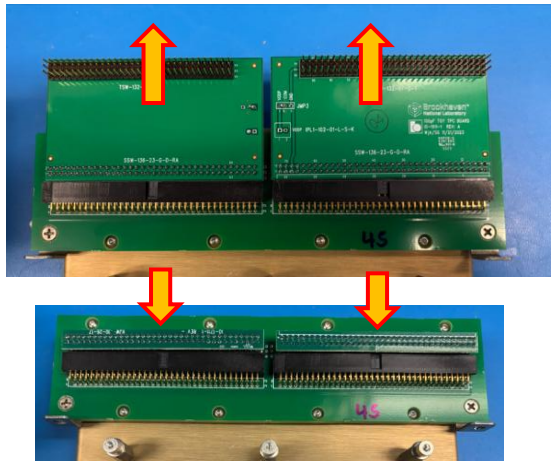
Maintain the assembly area neat and clean!

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/1LLRxvgbRMVB5utvIPry4vlhtx9JX7j-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

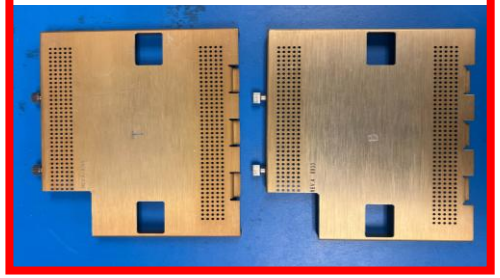
ESD-safe Gloves

Cryogenic Gloves

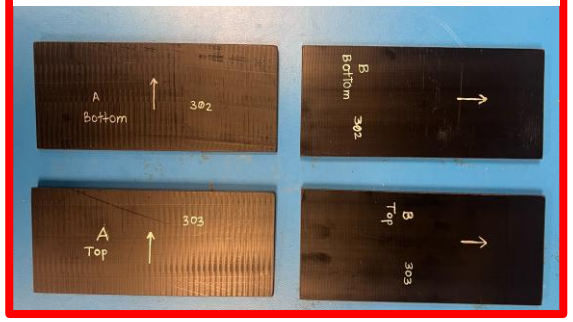
Anti-static Wrist Strap

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

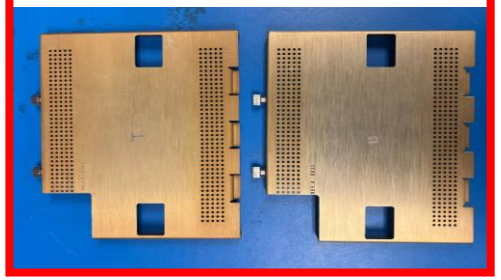
ESD-safe Gloves

Cryogenic Gloves

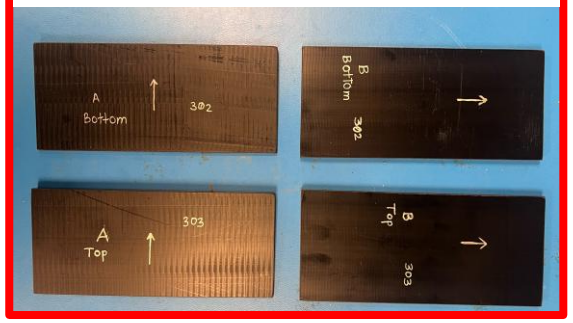
Anti-static Wrist Strap

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

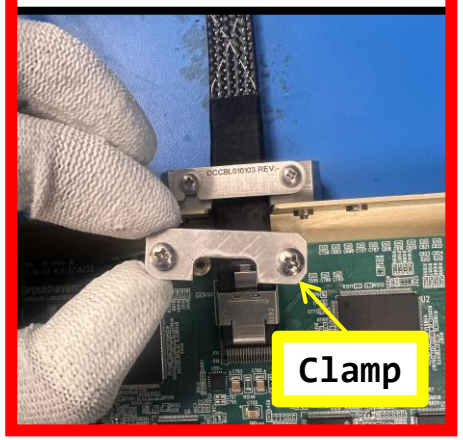
Lingyun: Replace with new picture

Bottom CE Box (VD) Assembly

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

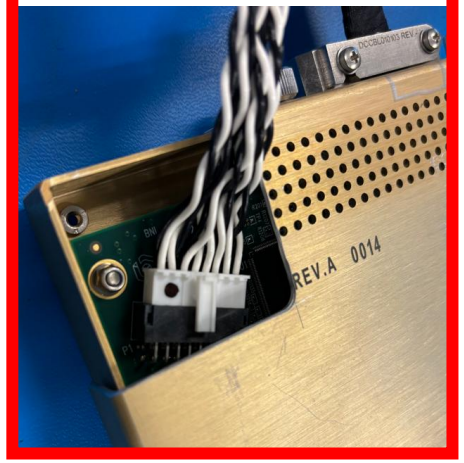
⚠️ Make sure you are wearing ESD-safe gloves and a wrist monitor!

1. Install the Signal Cable + Clamp

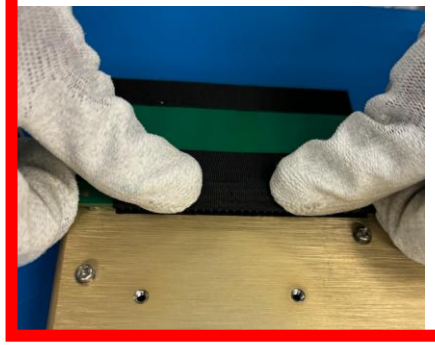


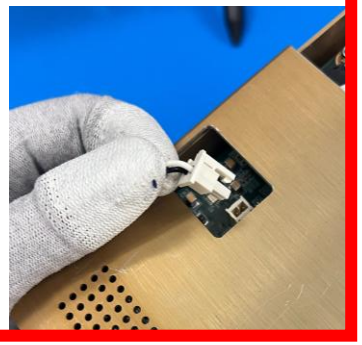
2. Install Test Cover

3. Install Power Cable

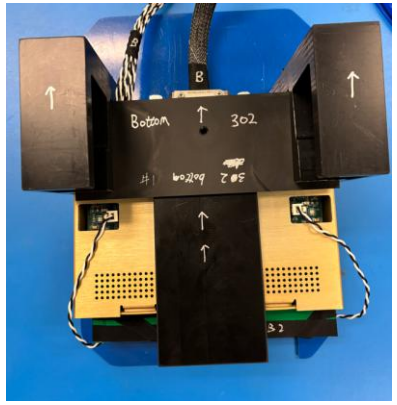


4. Connect Toy TPCs





5. Insert into Bottom Slot



✅ **Done**

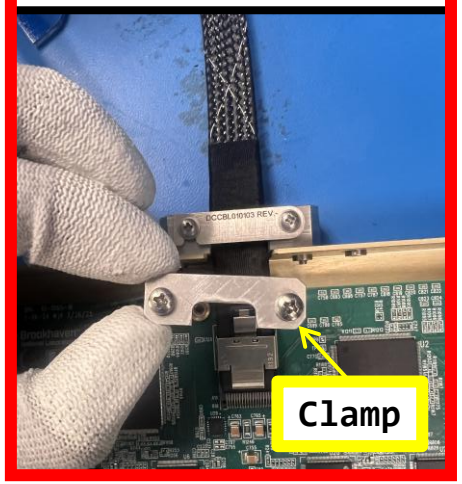
@Lingyun, Provide the routing of cables between ToyTPCs and FEMB?

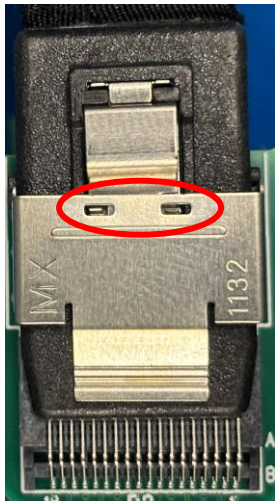
Bottom CE Box (VD) Assembly

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

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

1. Install miniSAS Cable + Clamp

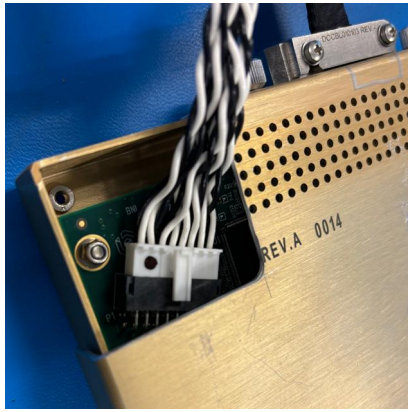




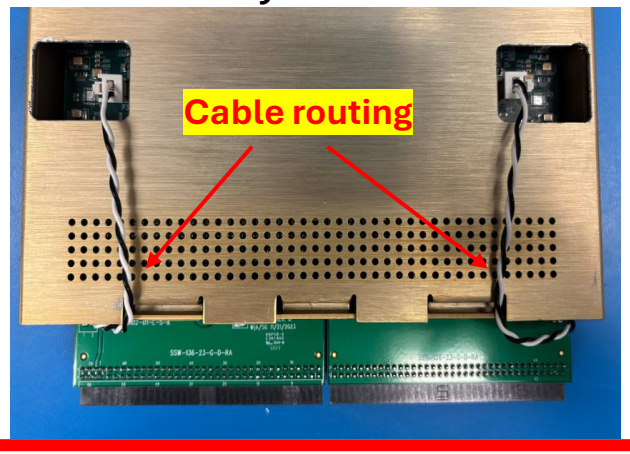
Locks in position

2. Install Test Cover

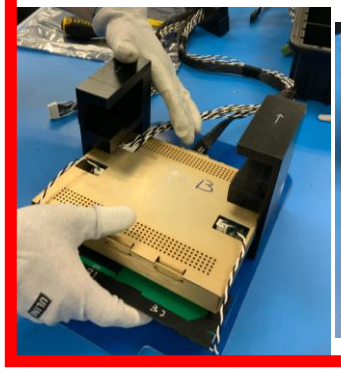
2. Install power cable

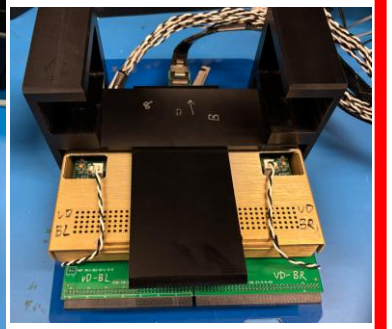


4. Install Toy TPCs



5. Insert into Bottom Slot

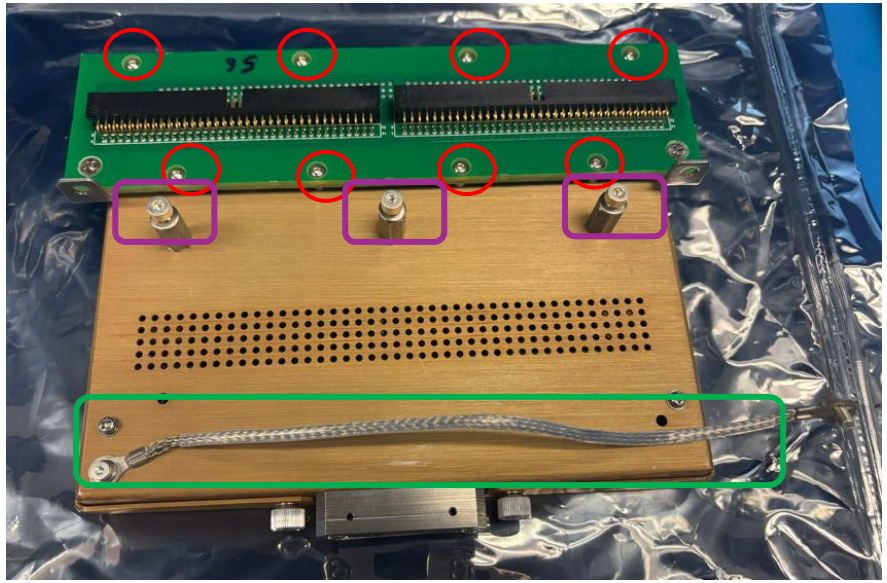




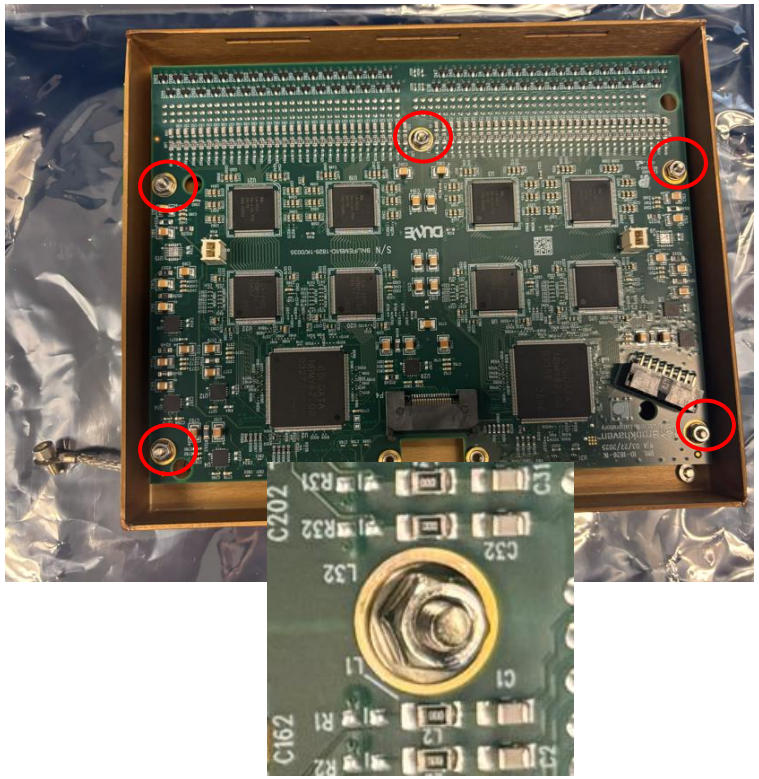
Bottom CE Box (HD) Visual Inspection

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?



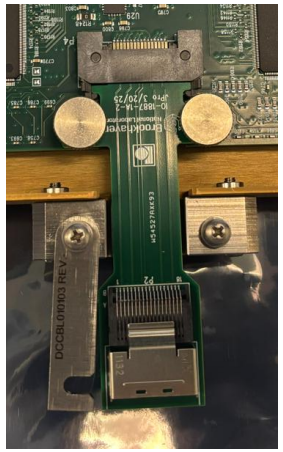
Are these 5 nuts fastened with washers?

Bottom CE Box (HD) Assembly

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

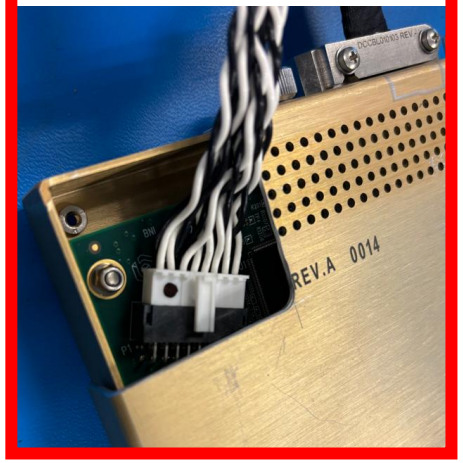
⚠️ Make sure you are wearing ESD-safe gloves and a wrist monitor!

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?

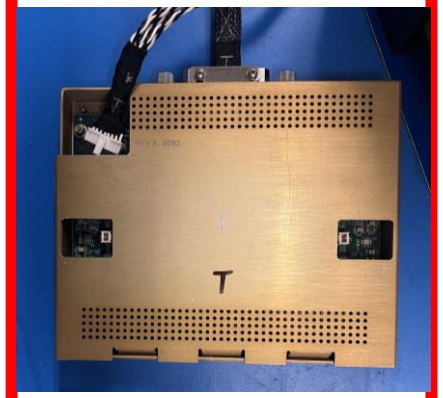
Top CE Box (VD) Assembly

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

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

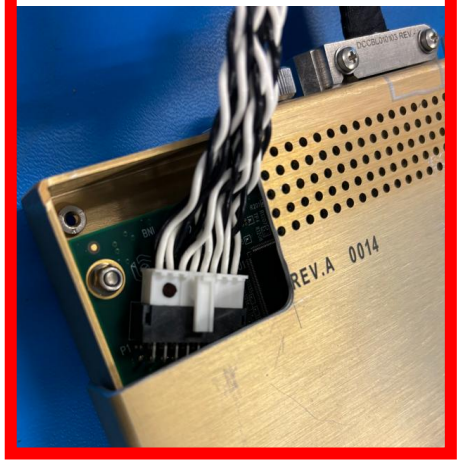
1. Install the Signal Cable + Clamp

2. Install Test Cover

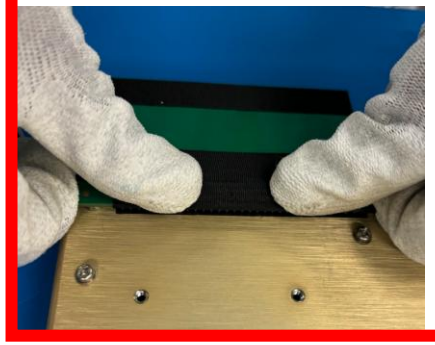


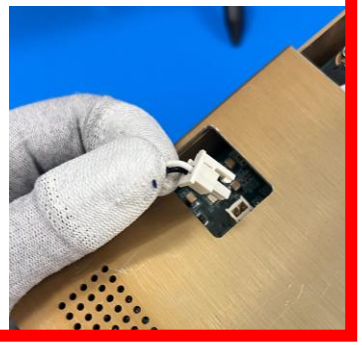
Lingyun: Replace the picture

3. Install Power Cable

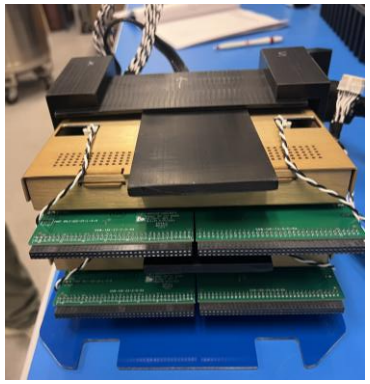


4. Connect Toy TPCs





5. Insert into Bottom Slot



✅ **Done**

Top CE Box (HD) Assembly

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

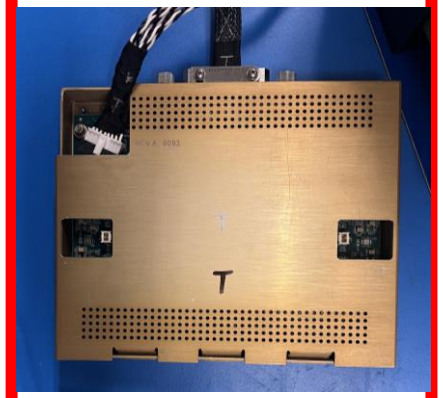
⚠️ Make sure you are wearing ESD-safe gloves and a wrist monitor!

1. Install the Signal Cable + Clamp

Update for HD

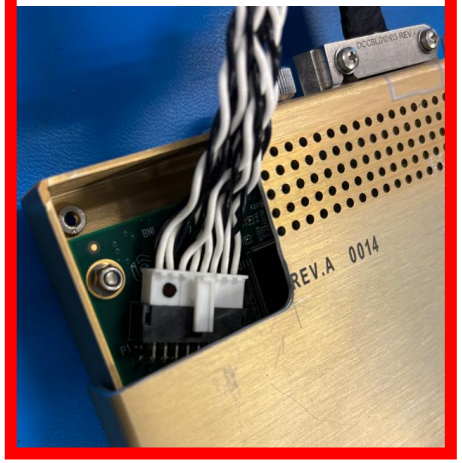
Clamp

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

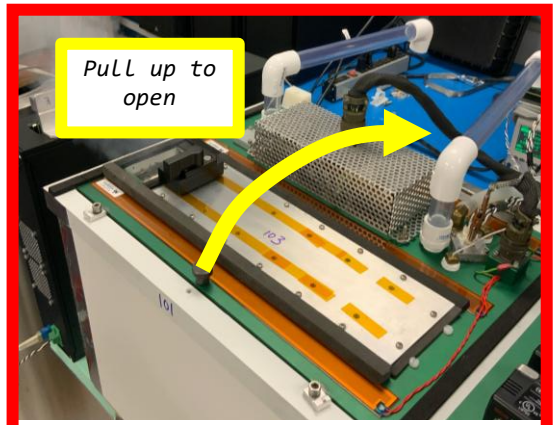
Update for HD

✅

Done

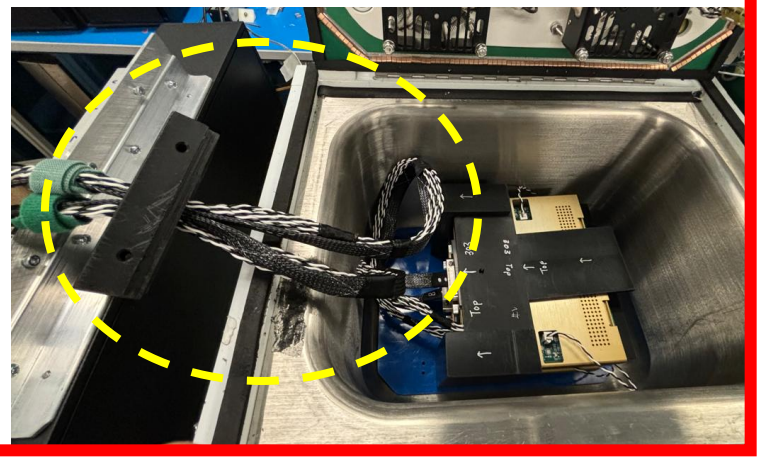
Place CE Boxes into CTS Chamber

Follow these steps to install the FEMBs in the CTS:

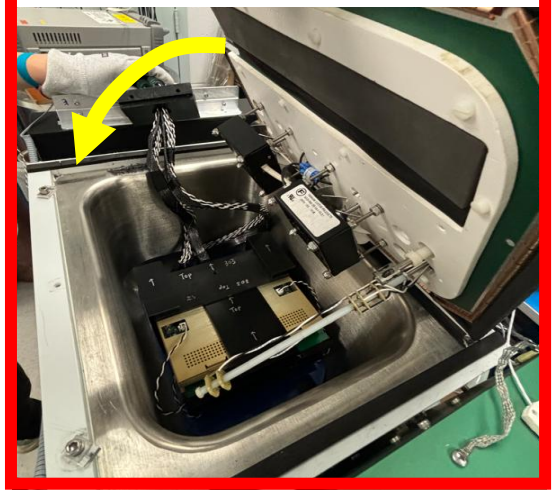


1. Open the CTS cover

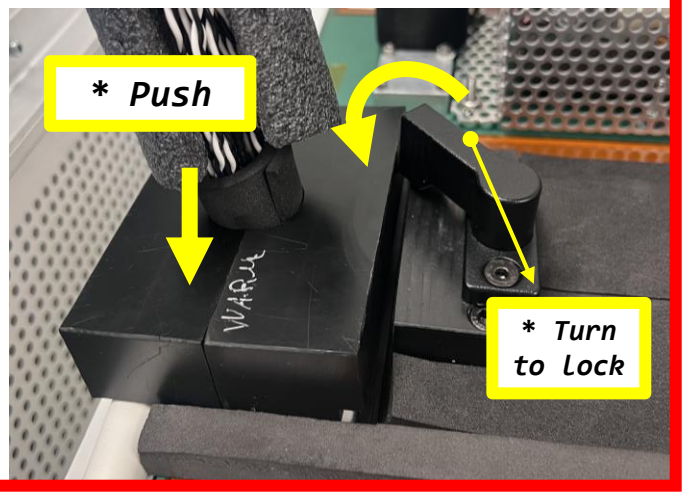
2. Place the CE Box Structure inside the CTS chamber



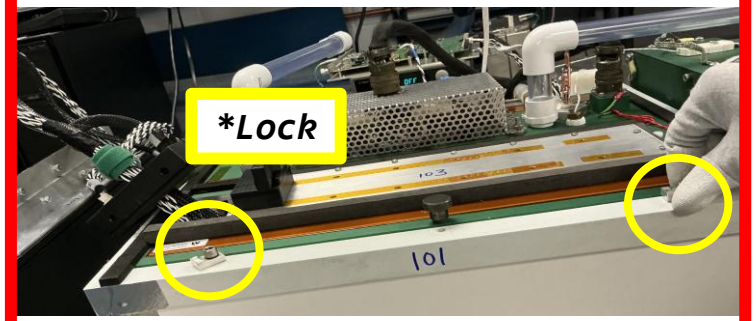
3. Carefully close the CTS cover



4. Set up cable bundle



5. Lock the CTS chamber



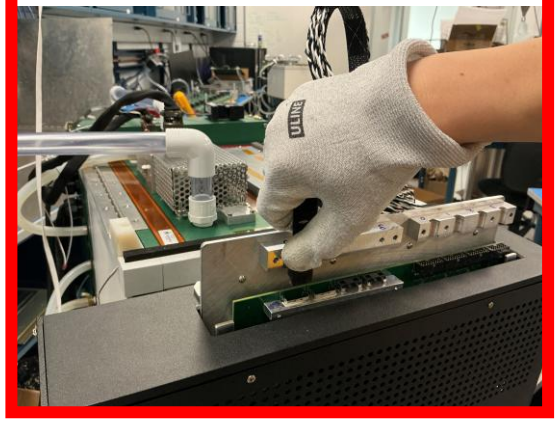
unlocked

locked

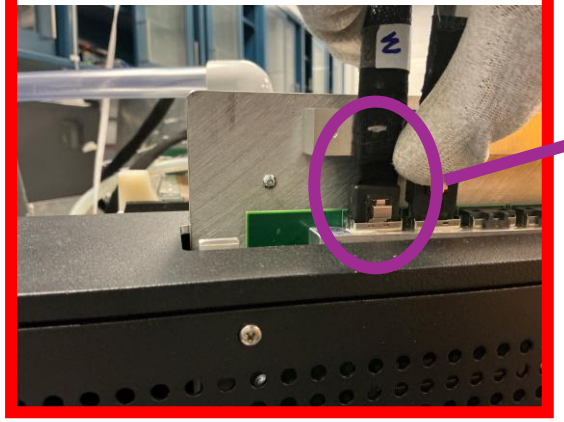
WIB Cable Connection

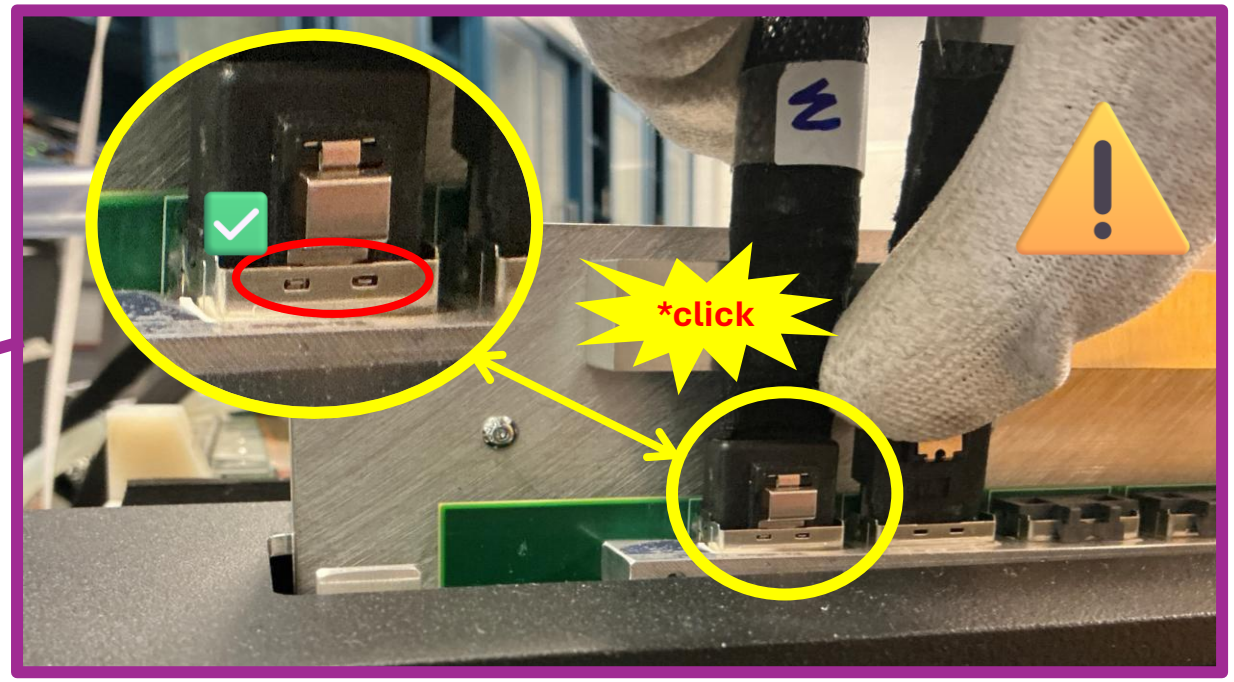
Follow these steps to connect the FEMBs to the WIB

1. Place the Bottom Data Cable in Slot B

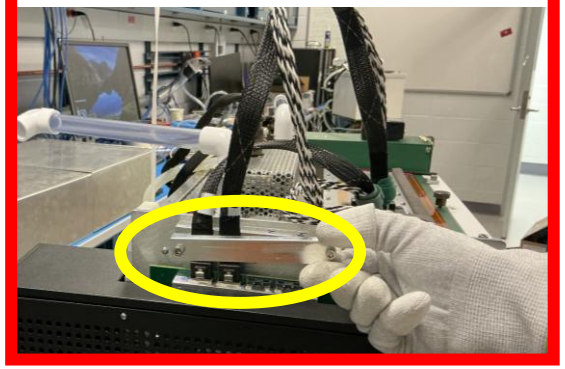


2. Place the Top Data Cable in Slot *T*

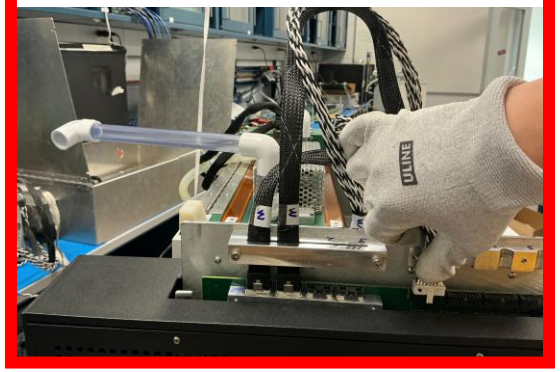




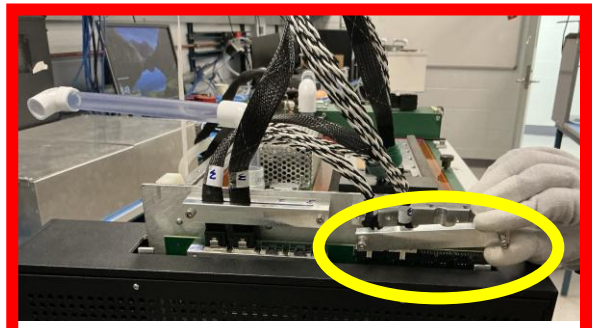
3. Install the Strain Relief Clamp



4. Install the Bottom Power Cable in Slot *B*



5. Install the Top Power Cable in Slot *T*



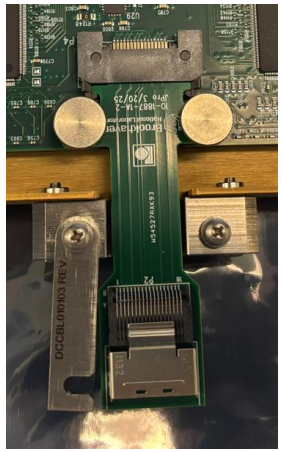
6. Install the Strain Relief Clamp

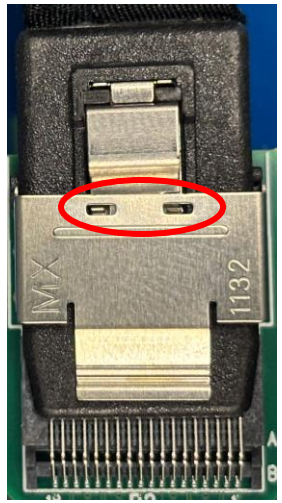
Top CE Box (HD) Assembly

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

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

1. Install Adapter + miniSAS Cable

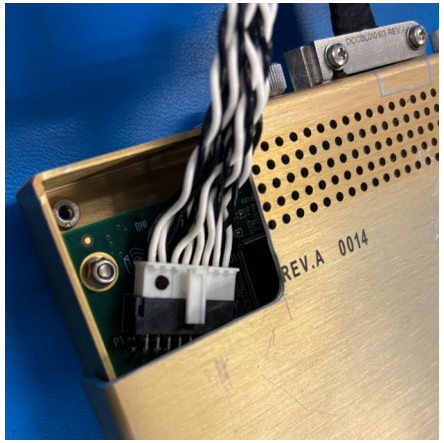




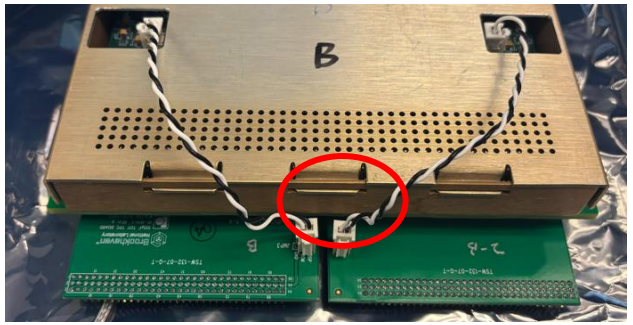
Locks in position

2. Install Test Cover

3. Install Power Cable

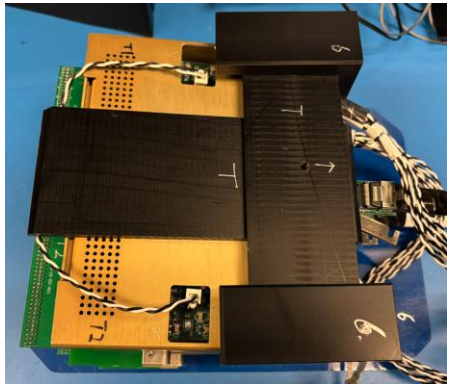


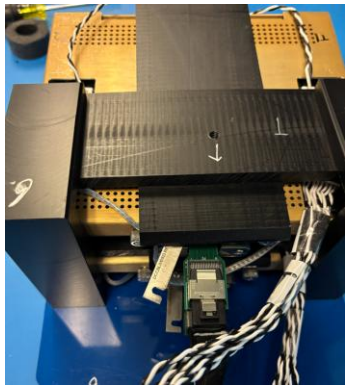
3. Remove FE terminators and install Toy TPCs



4. Insert into top Slot and fasten CE box

(secure ground strips)

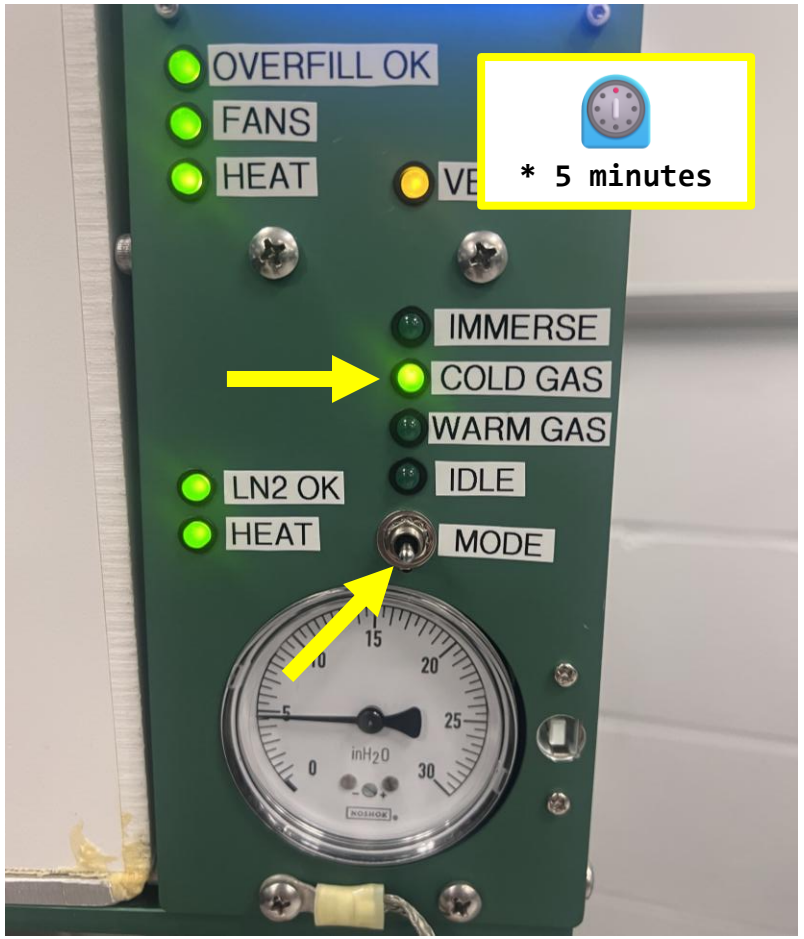




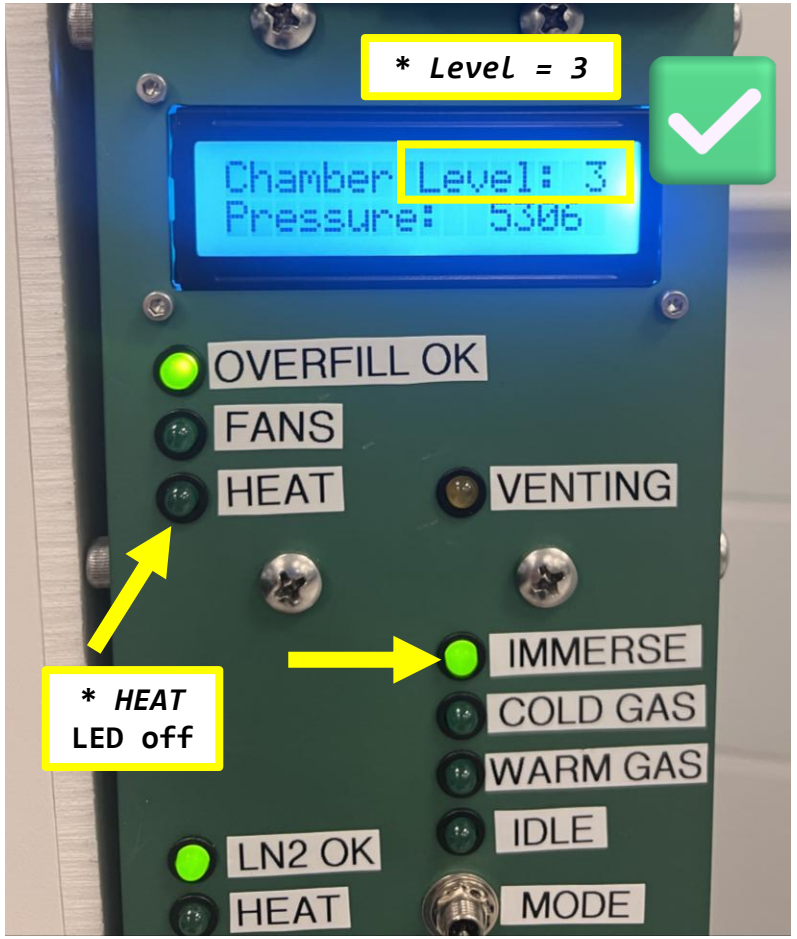
Make sure CTS is closed, locked and ready to use

Preparation for Cold QC: CTS Cooldown

1. Switch to *COLD GAS* for 5 minutes

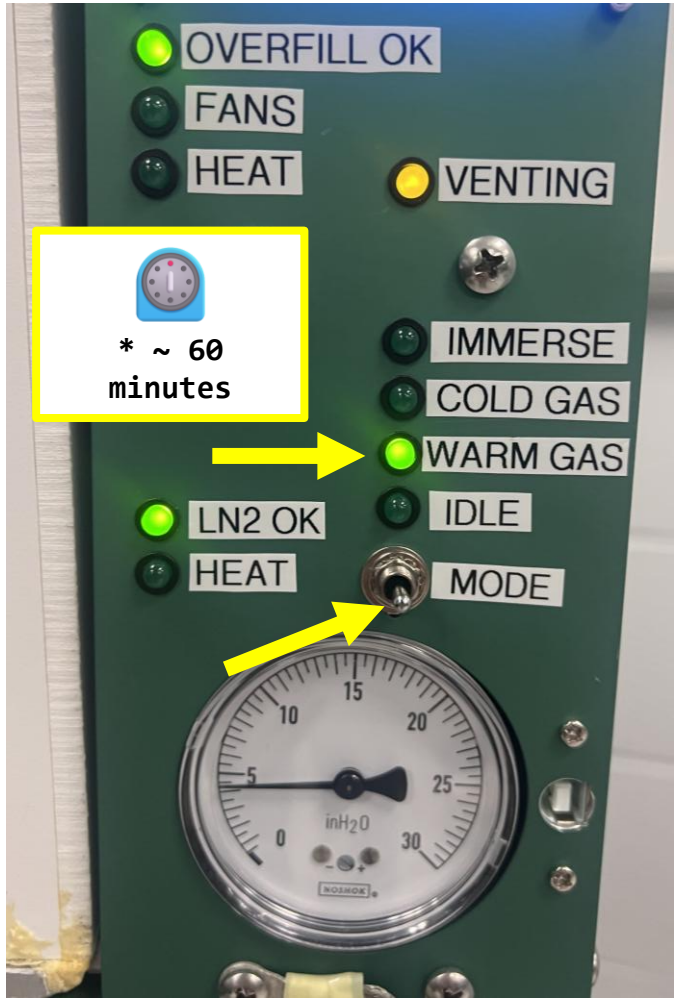


2. Switch to *IMMERSE* and wait for *Level 3* + Heat LED Off



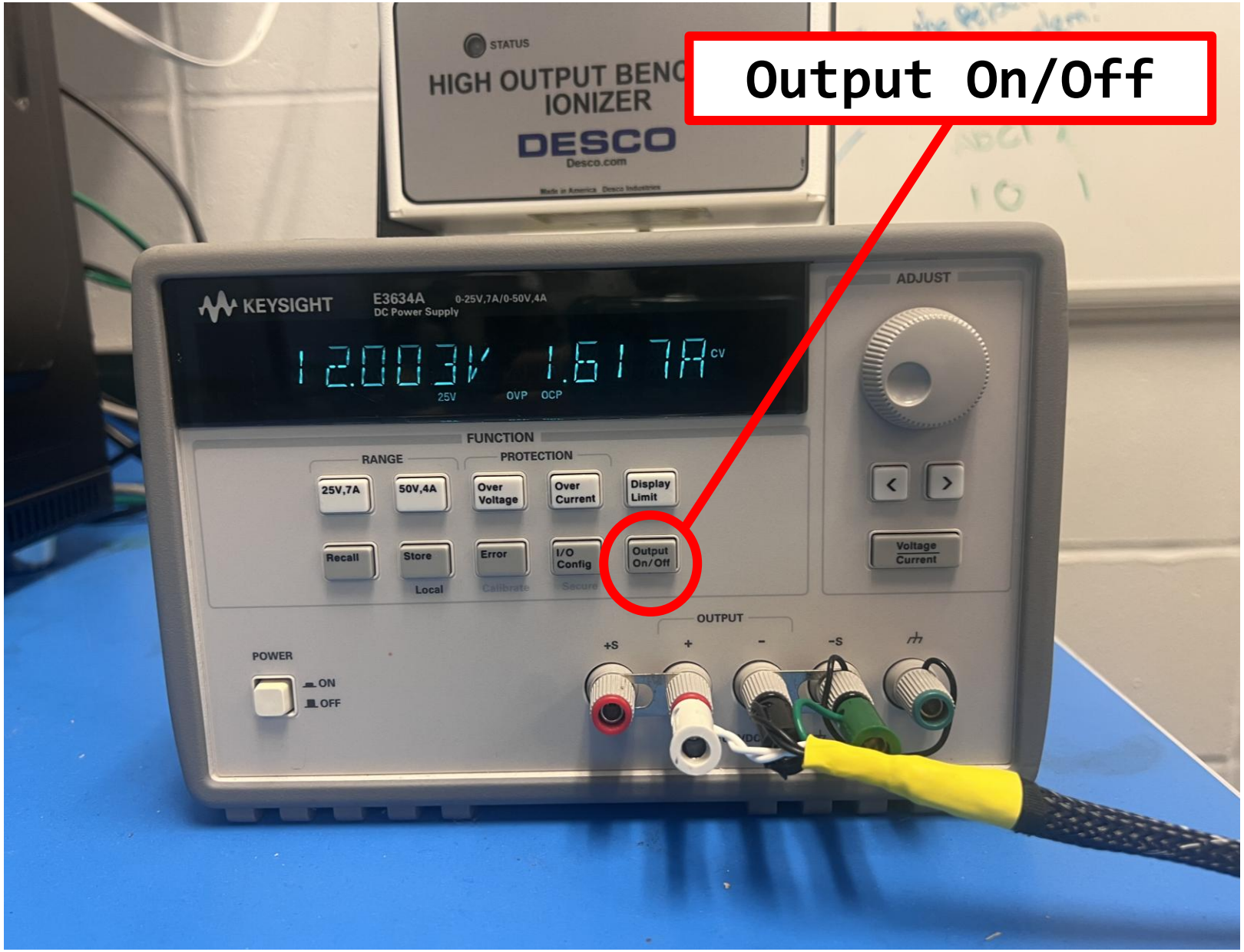
Post-Cold QC: Switch CTS to *WARM*

Switch to *WARM GAS* and wait 60 minutes

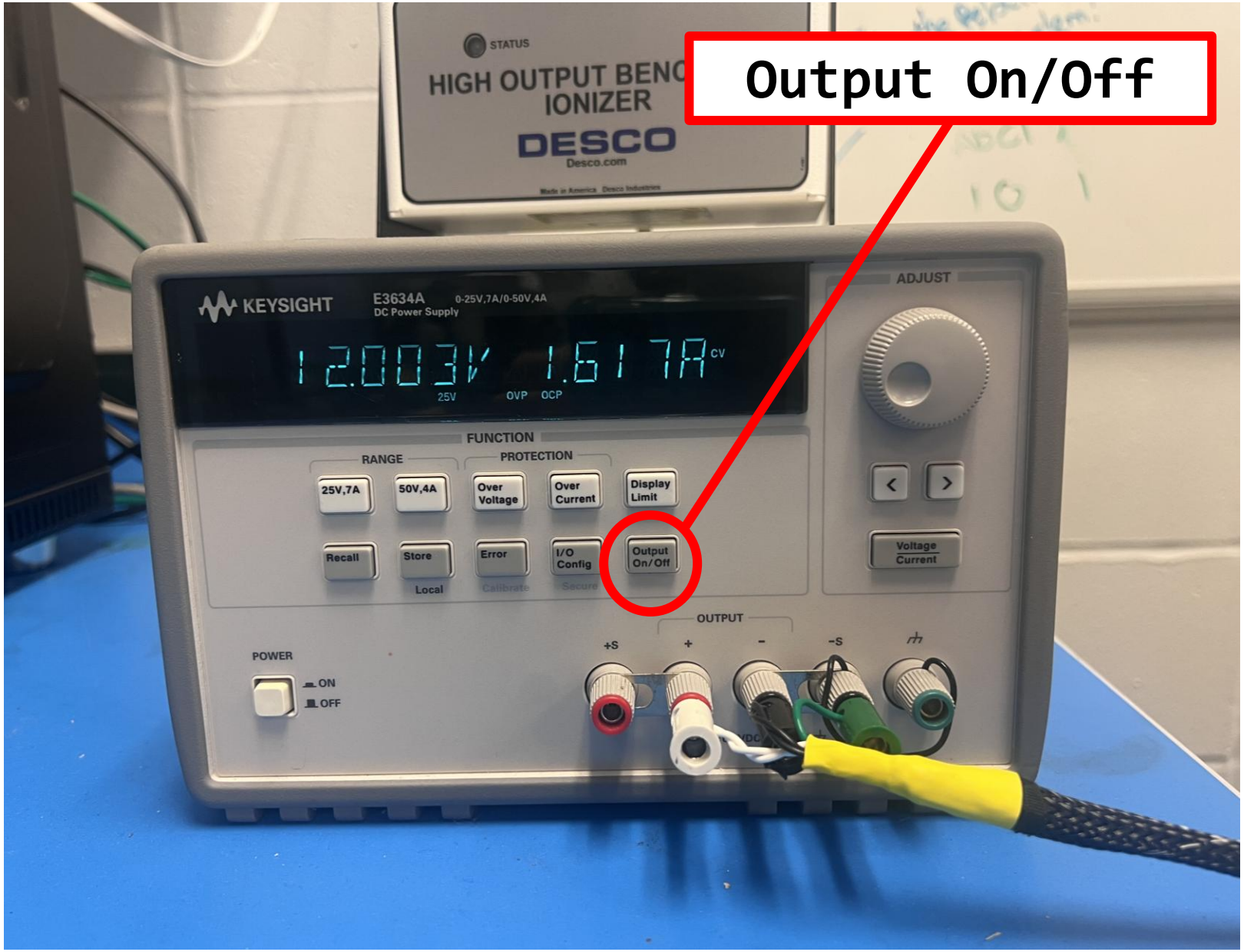


Lingyun: Rigol power supply will be in use, so that computer can control 12V ON/OFF for WIB.
The pop-windows related to power supply should be removed.

Warm QC: Power On WIB

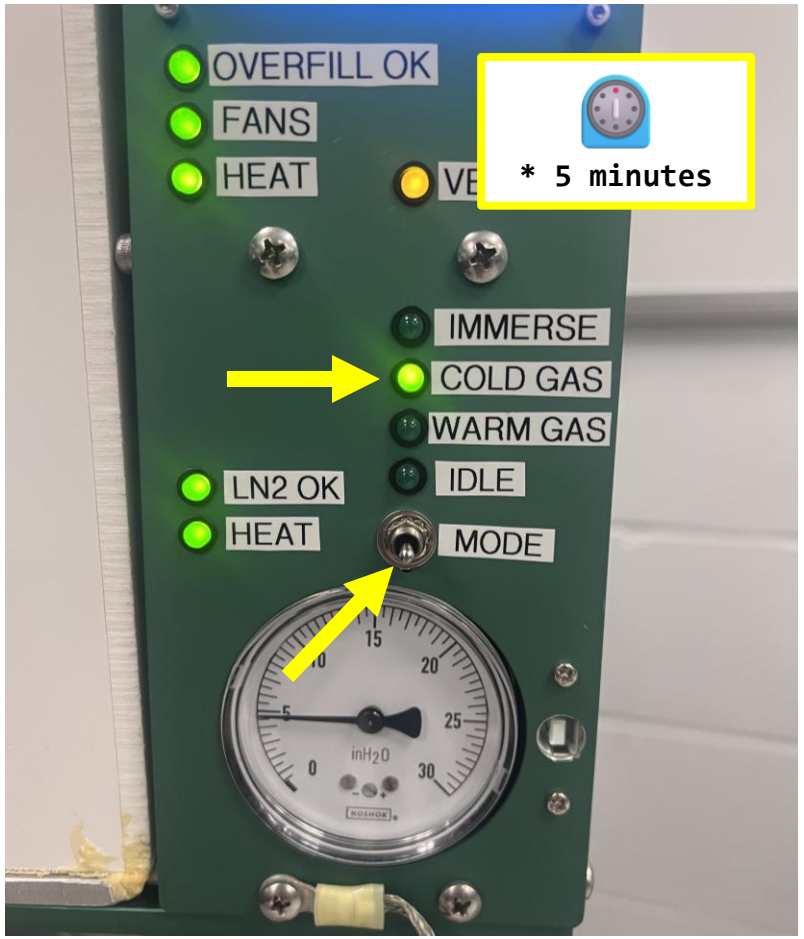


Warm QC is Done! Power Off WIB

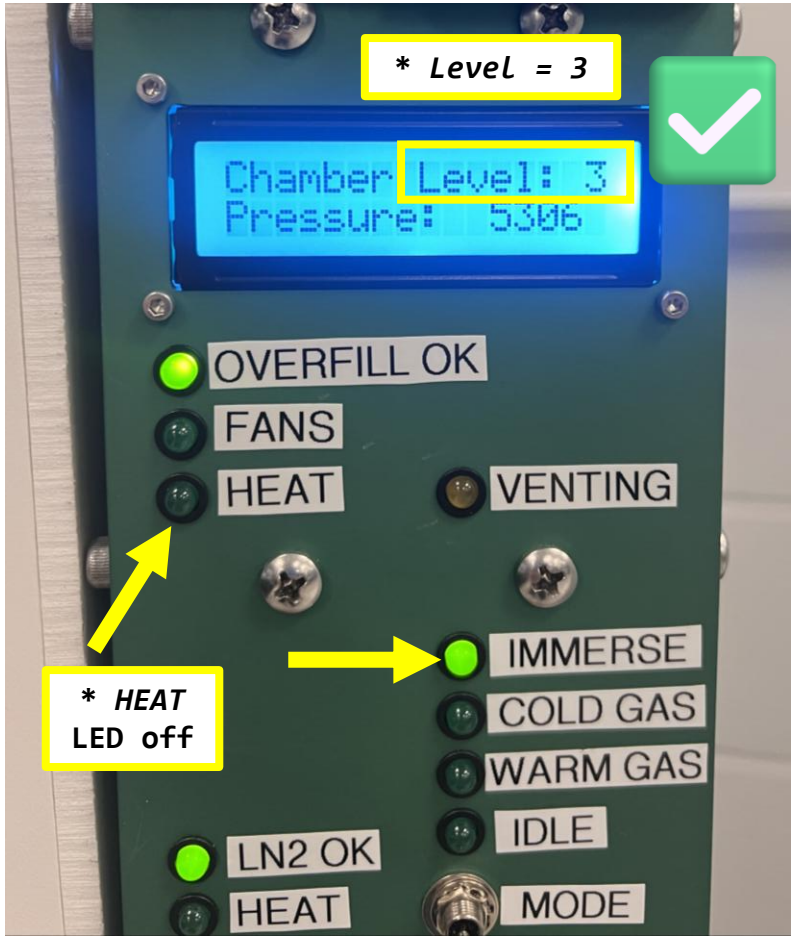


Preparation for Cold QC: CTS Cooldown

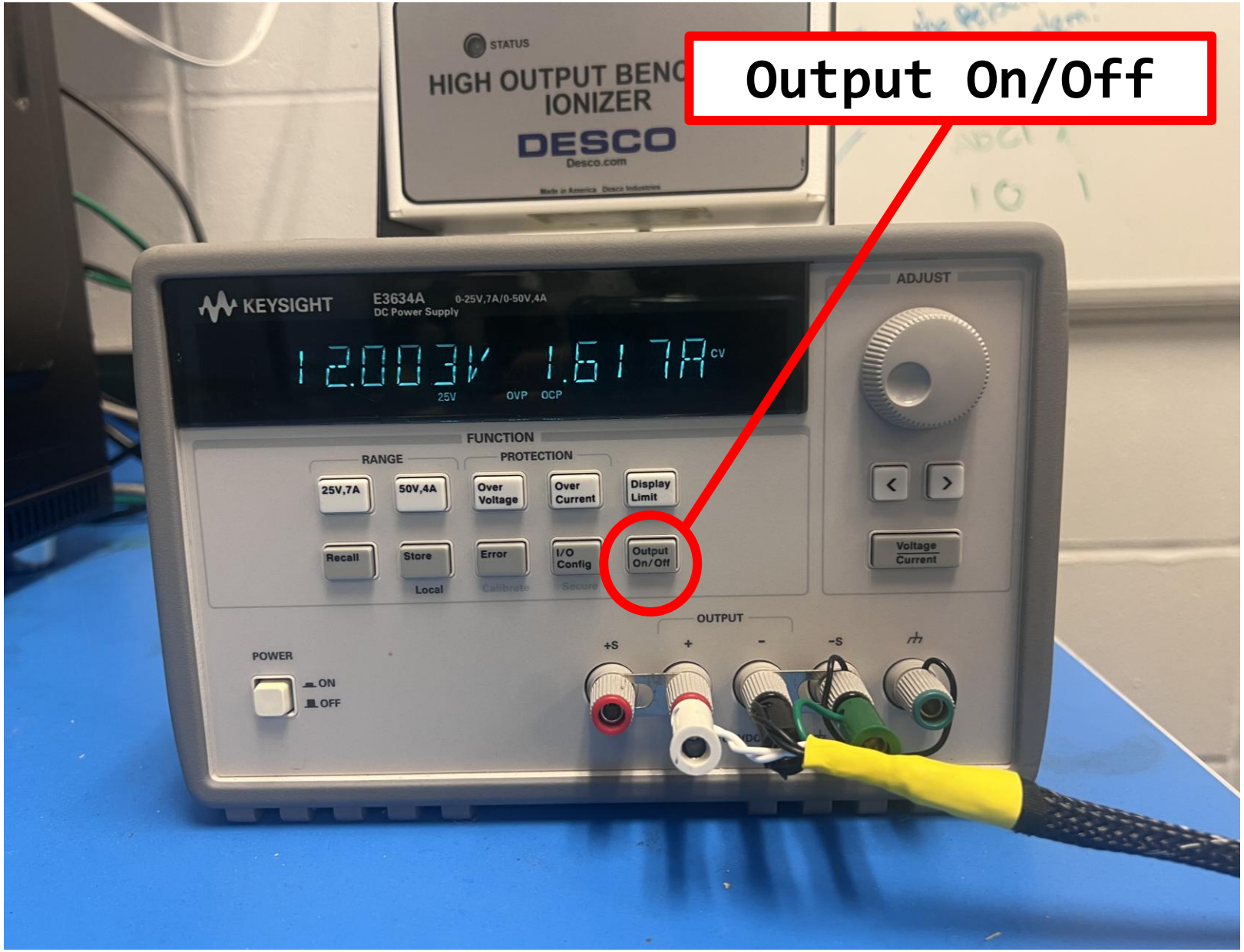
1. Switch to *COLD GAS* for 5 minutes



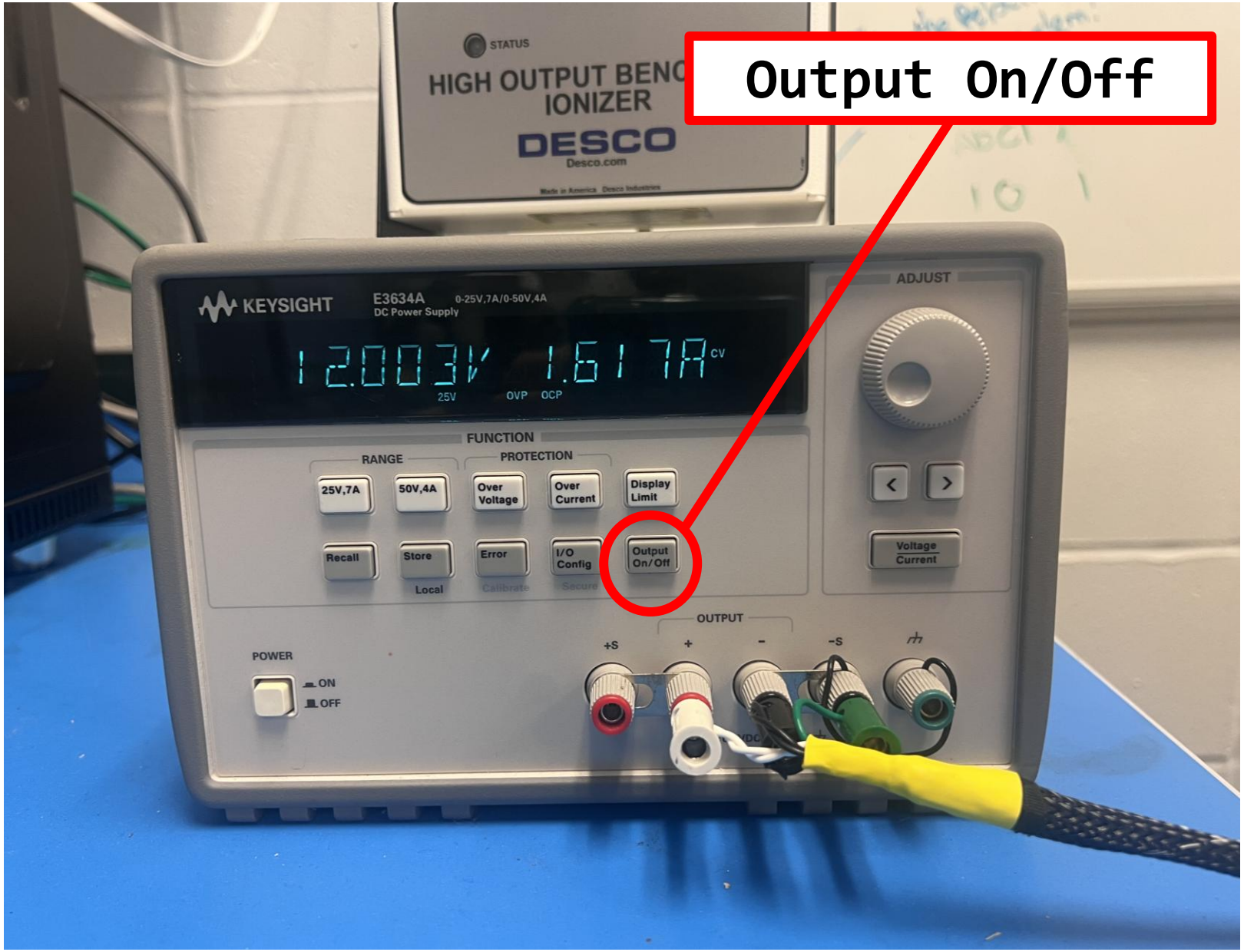
2. Switch to *IMMERSE* and wait for *Level 3* + Heat LED Off



Cold QC: Power On WIB

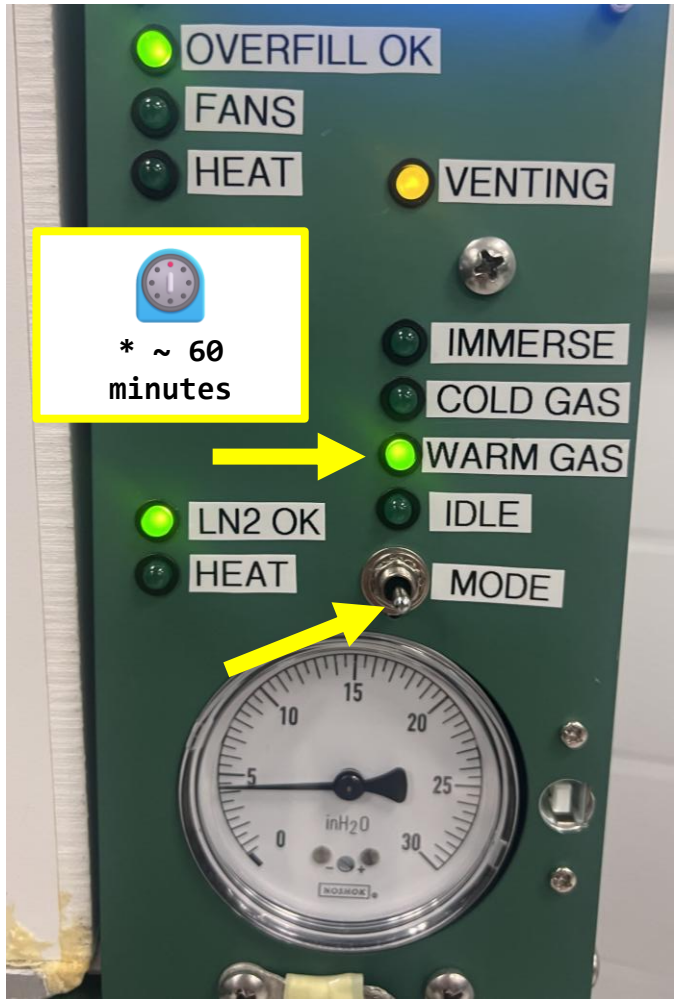


Cold QC is Done! Power Off WIB



Post-Cold QC: Switch CTS to *WARM*

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

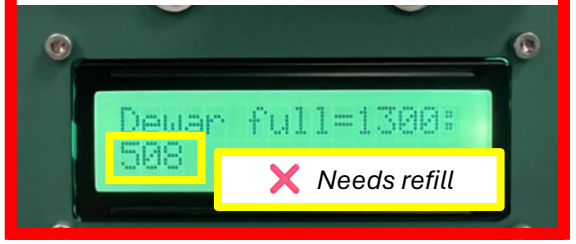


LN2 Filling (STOP if you are NOT trained)

Follow these steps to fill the CTS dewar with LN2:

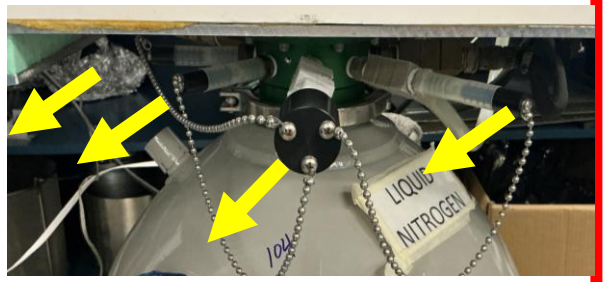
1. Turn On CTS Controller and set in IDLE

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

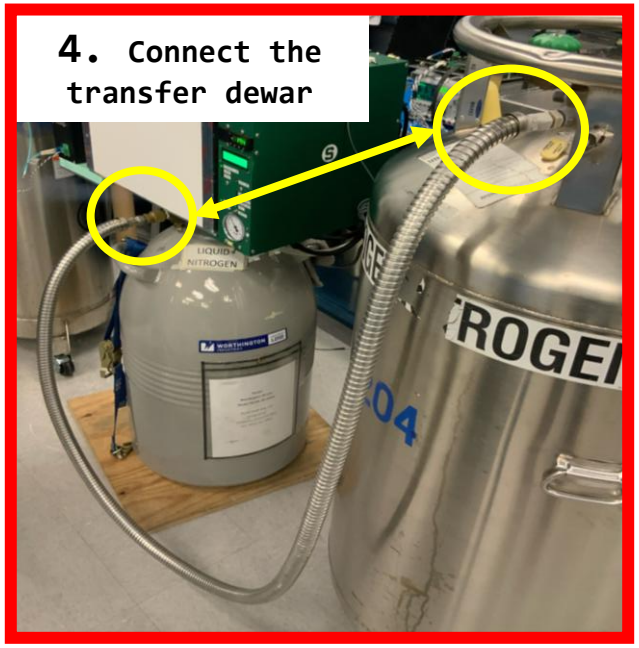


3. Remove the LN2 Dewar plugs

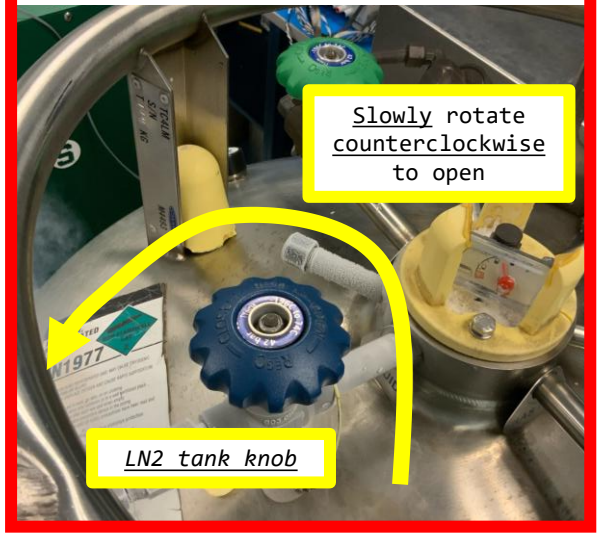
Keep CTS cover close



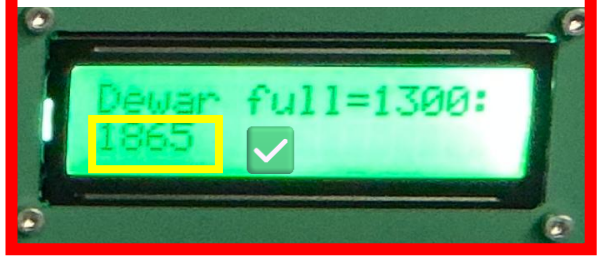
4. Connect the transfer dewar



5. Start the filling process

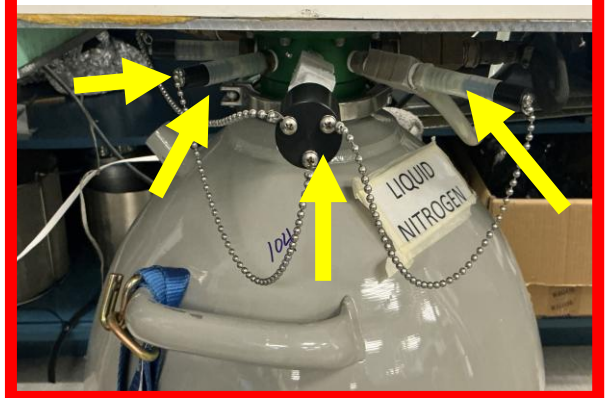


6. Monitor until "Dewar Full" > 1800

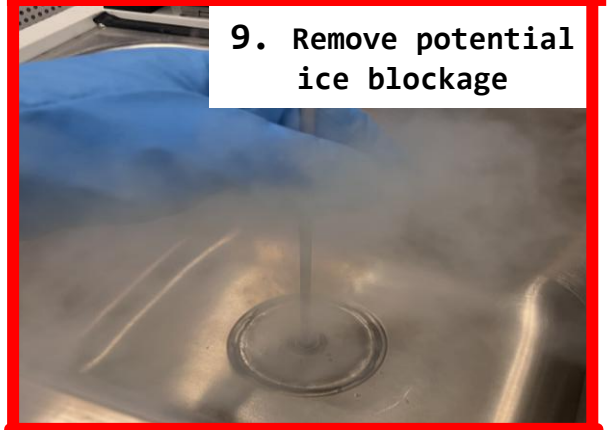


7. Stop the filling process (rotate LN2 tank knob clockwise)

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



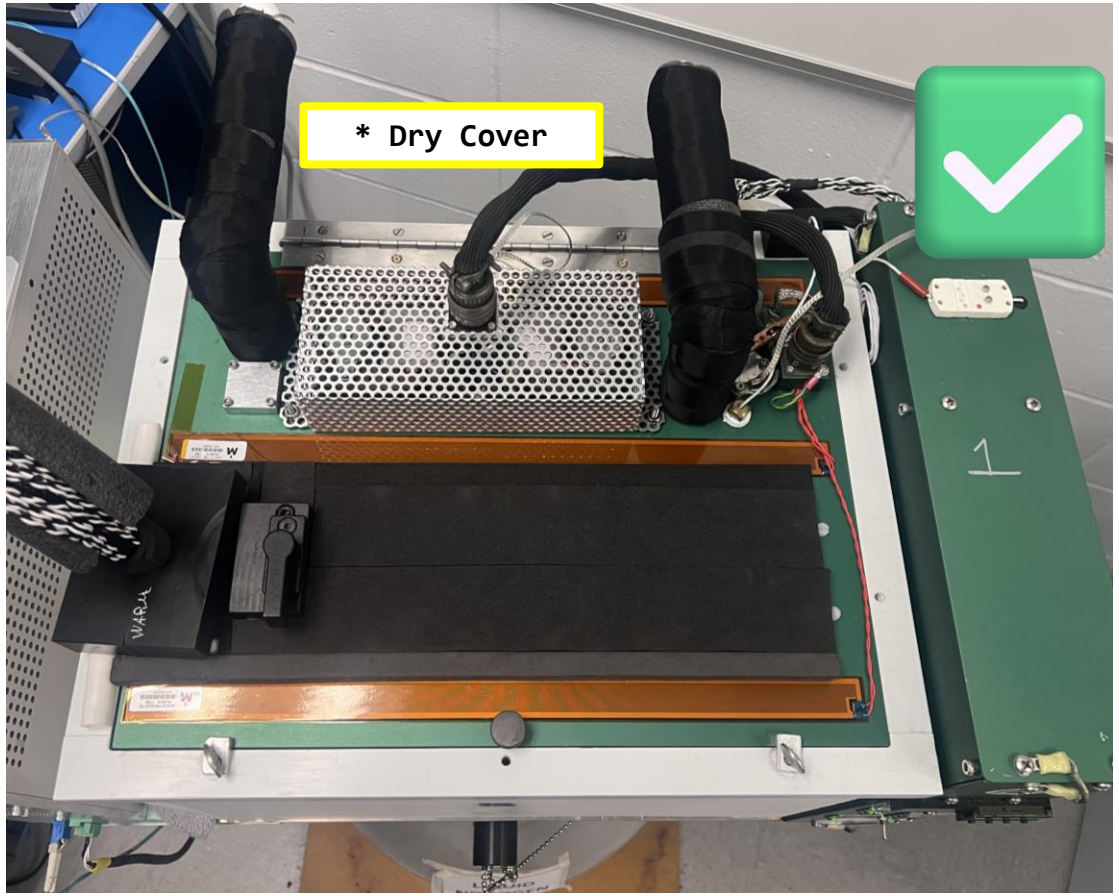
9. Remove potential ice blockage



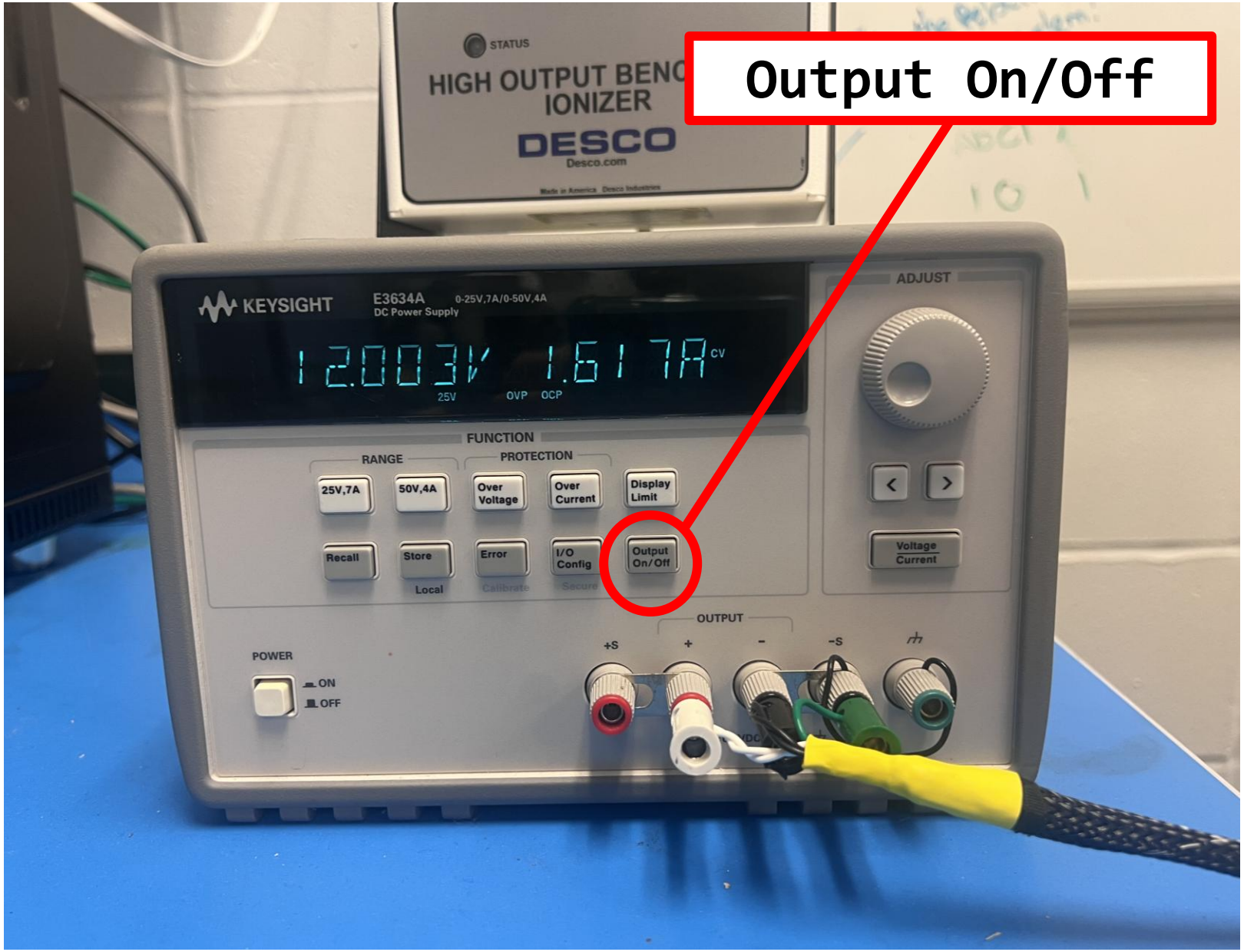
10. Set chamber in warm mode for 15 minutes and then turn CTS OFF.

Post-Warm Up Check

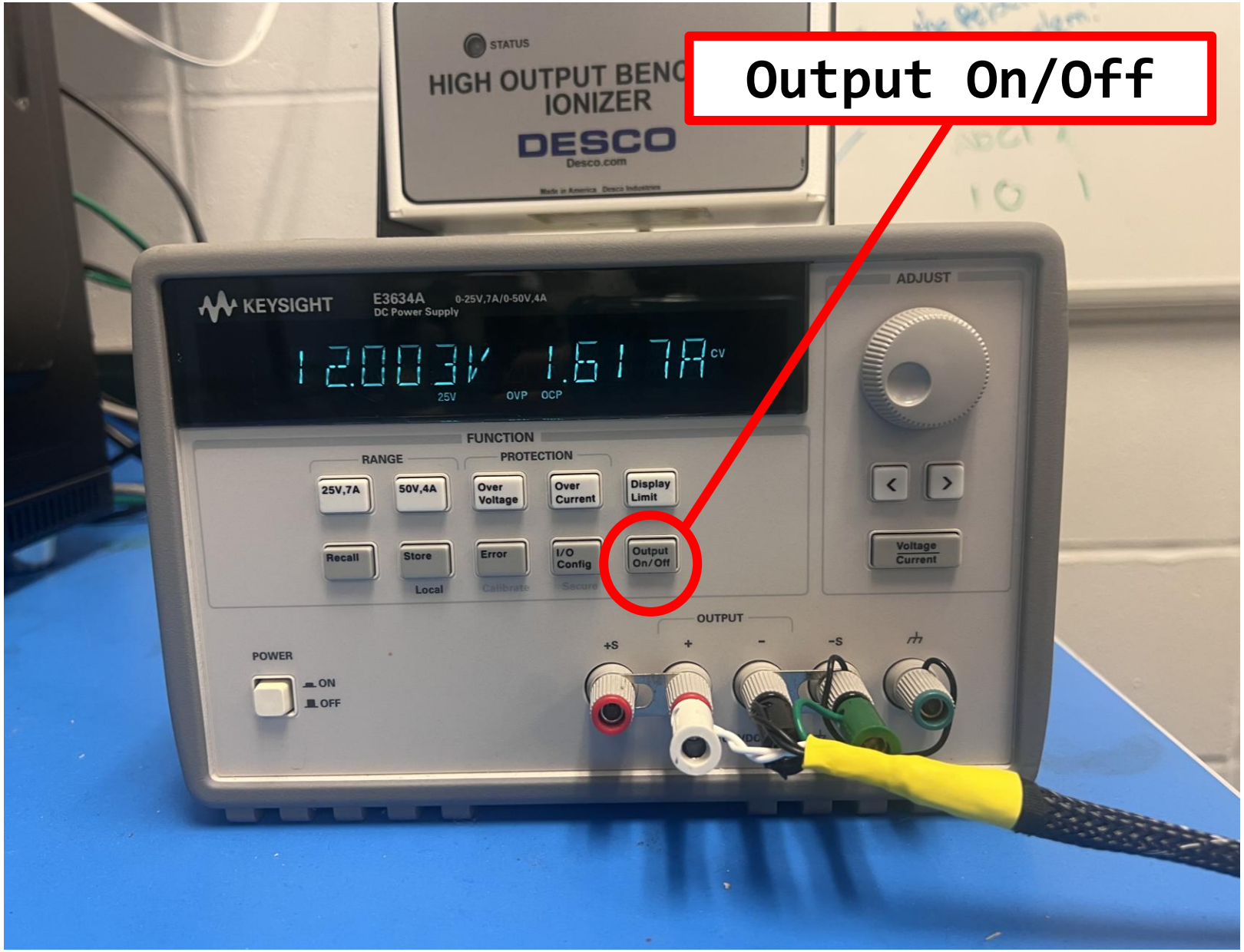
Make sure there is no water on the CTS cover. If there is, wipe it off.



Final Checkout: Turn On WIB

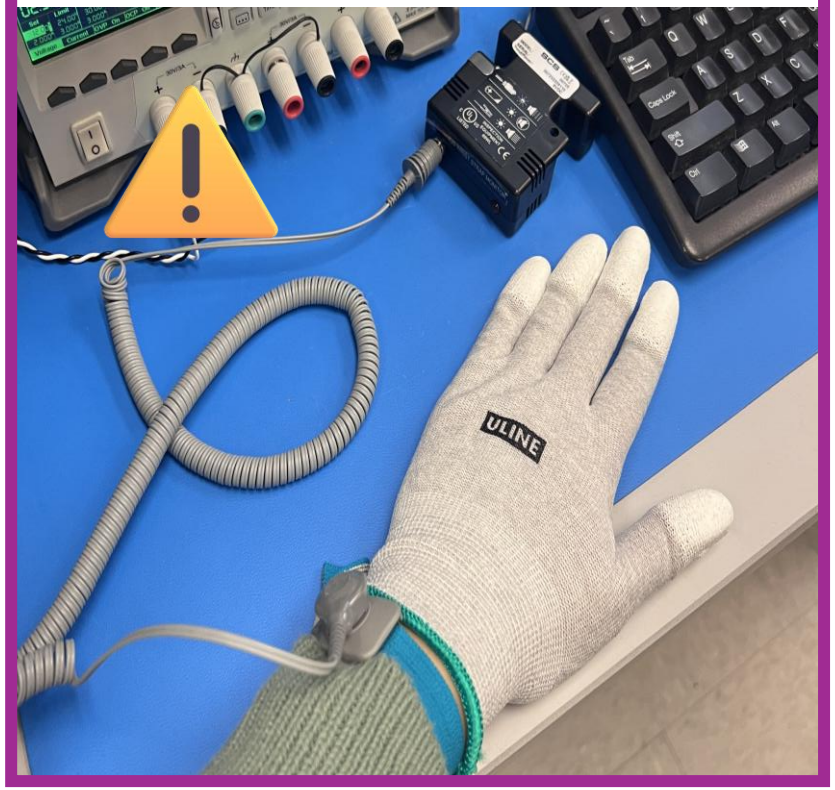


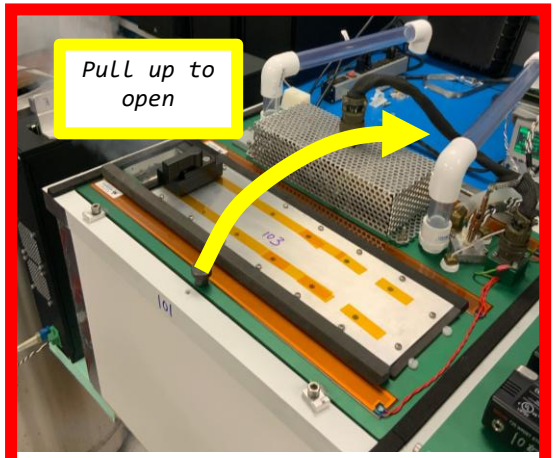
Final Checkout is done! Turn Off WIB



Take the FEMBs out of the CTS Chamber

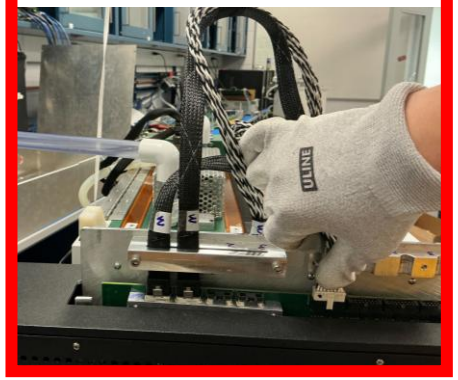
Remember to wear ESD-safe gloves and a wrist monitor!





1. Open the CTS cover

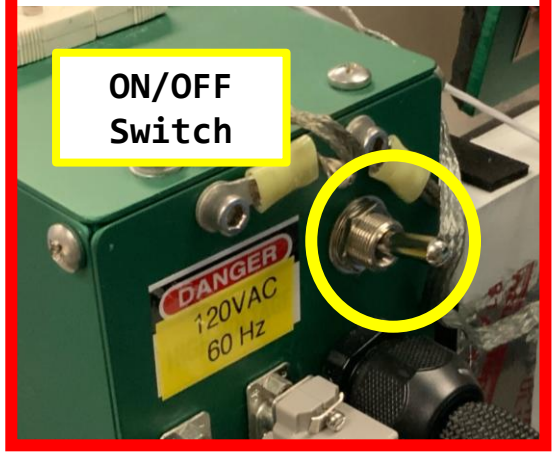
2. Disconnect the Data and Power cables from the WIB



3. Carefully, pick up the support structure with the FEMBs

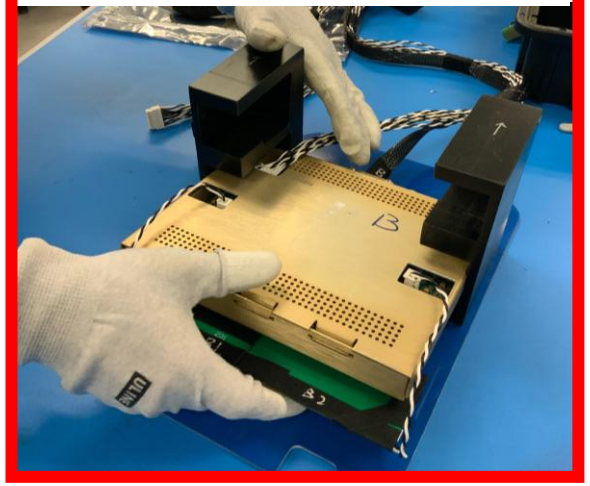
4. Place it on the desk

5. Turn CTS Off

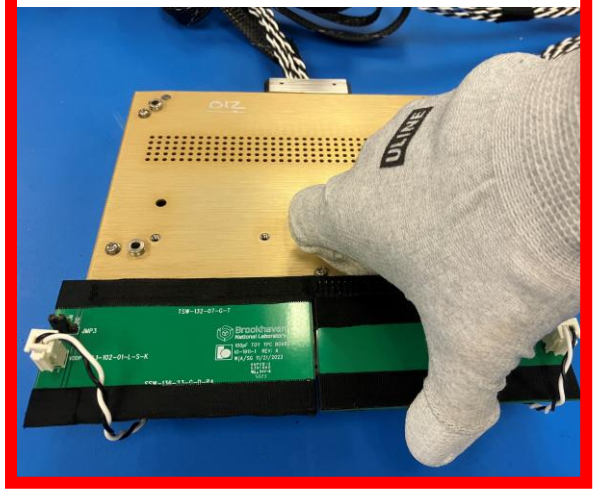


Disassembly: Top FEMB

1. Remove the Top CE Box

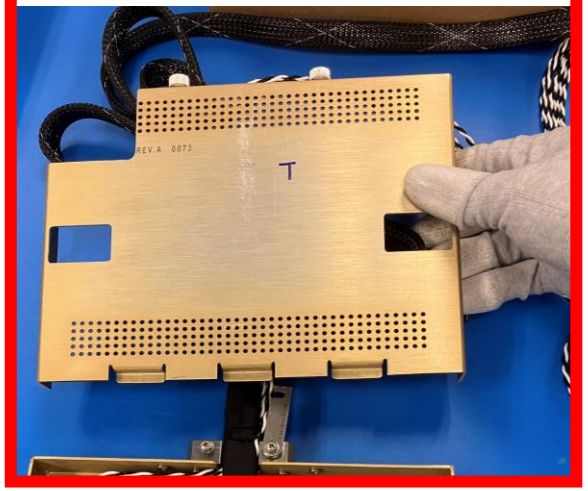


2. Remove Toy TPCs

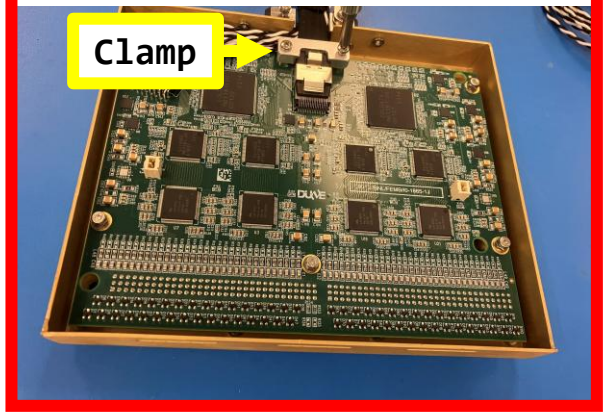


3. Disconnect the Power Cable

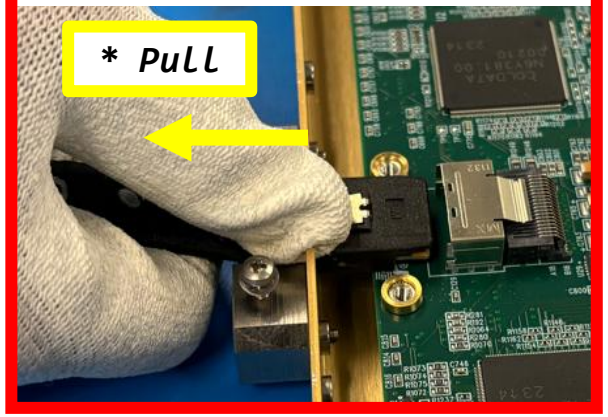
4. Remove the test cover



5. Remove the cable clamp



6. Disconnect the Data cable

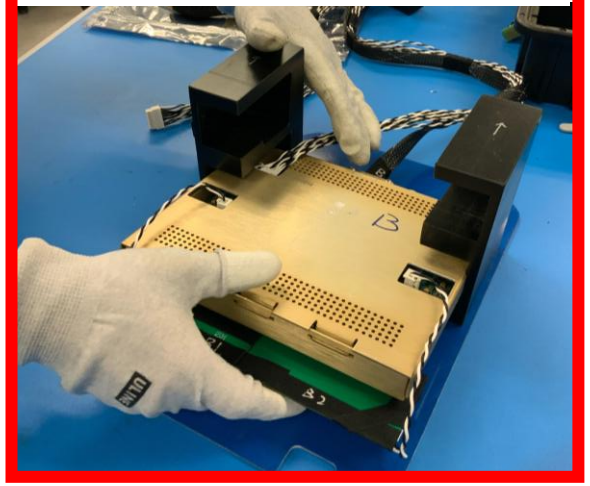


7. Install the original CE box cover

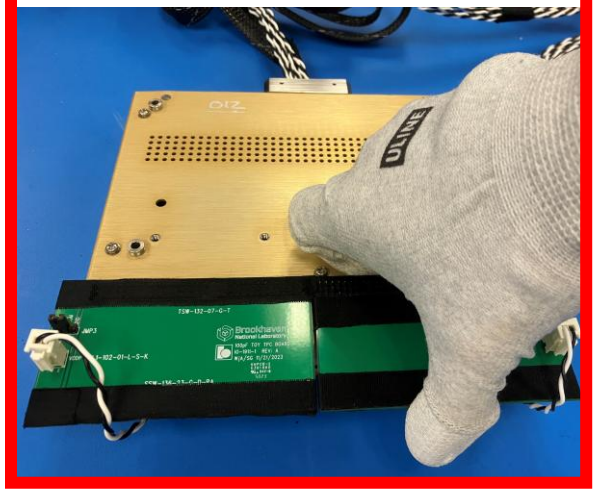
8. Pack FEMB in ESD Bag and Foam Box

Disassembly: Bottom FEMB

1. Remove the Bottom CE Box

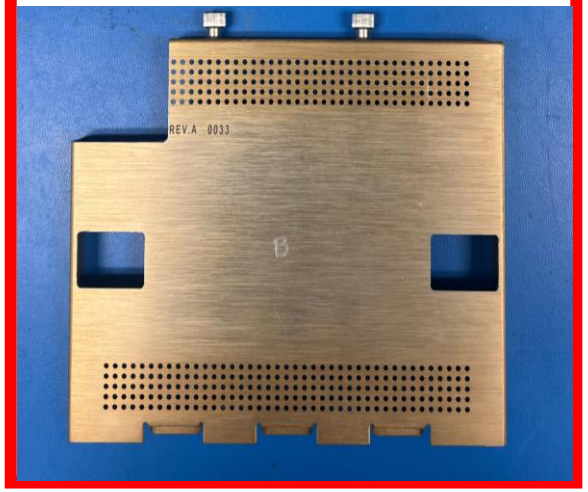


2. Remove Toy TPCs

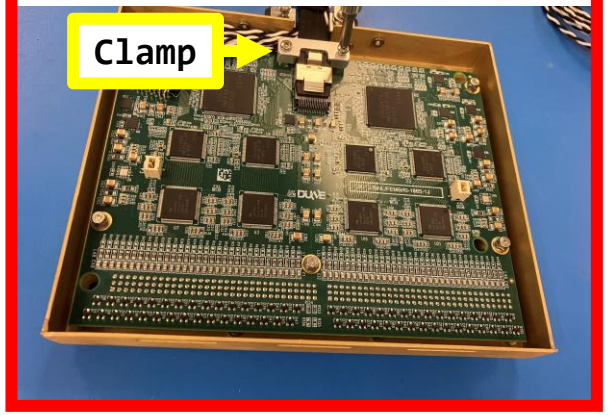


3. Disconnect the Power Cable

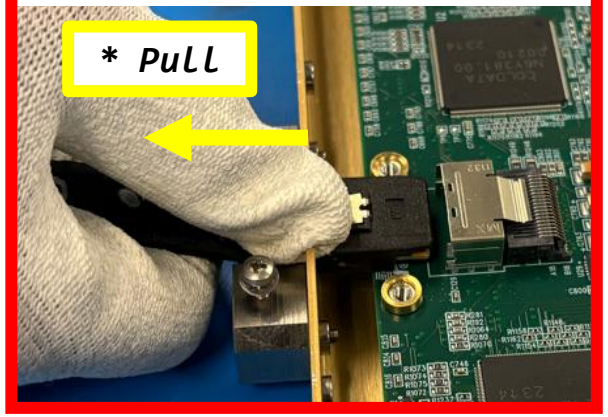
4. Remove the test cover



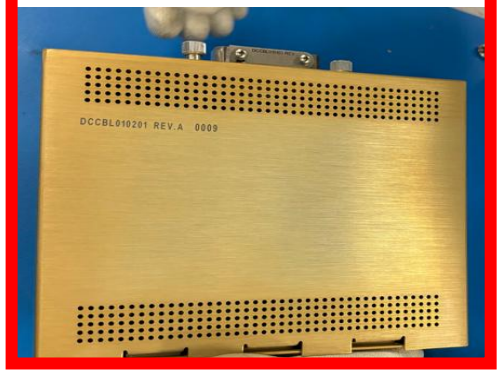
5. Remove the cable clamp



6. Disconnect the Data cable



7. Install the original CE box cover

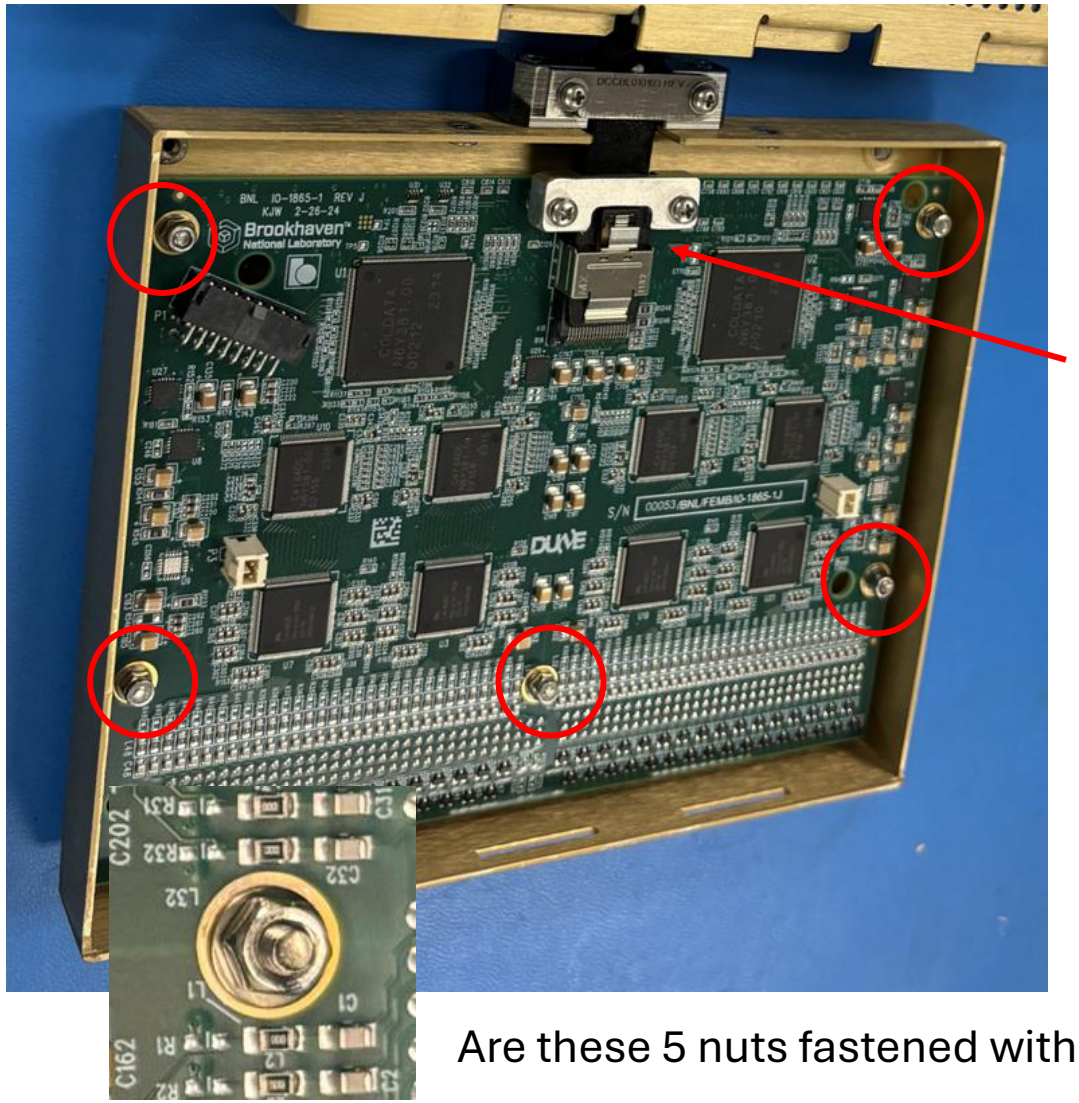


8. Pack FEMB in ESD Bag and Foam Box

CE Box Visual Inspection

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

CE box enclosed by ESD bag?

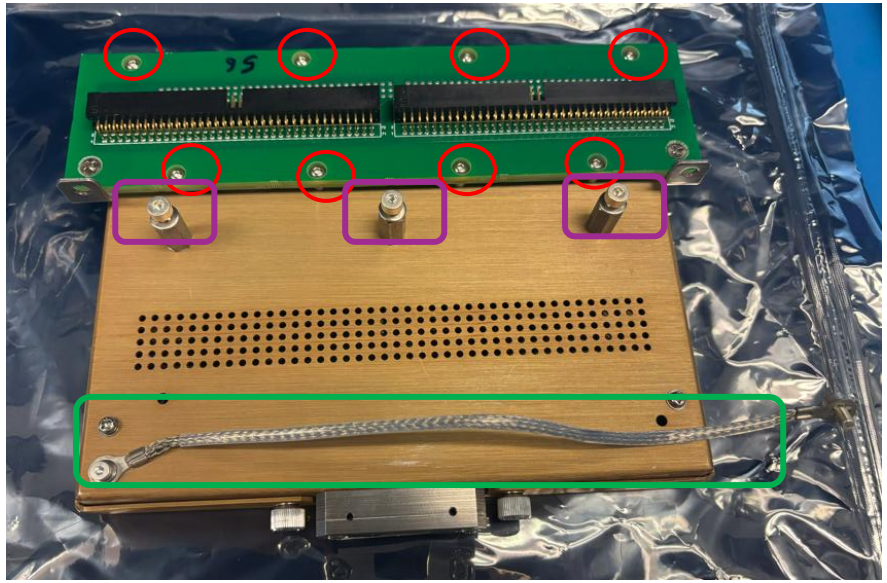


Connector clamp in position

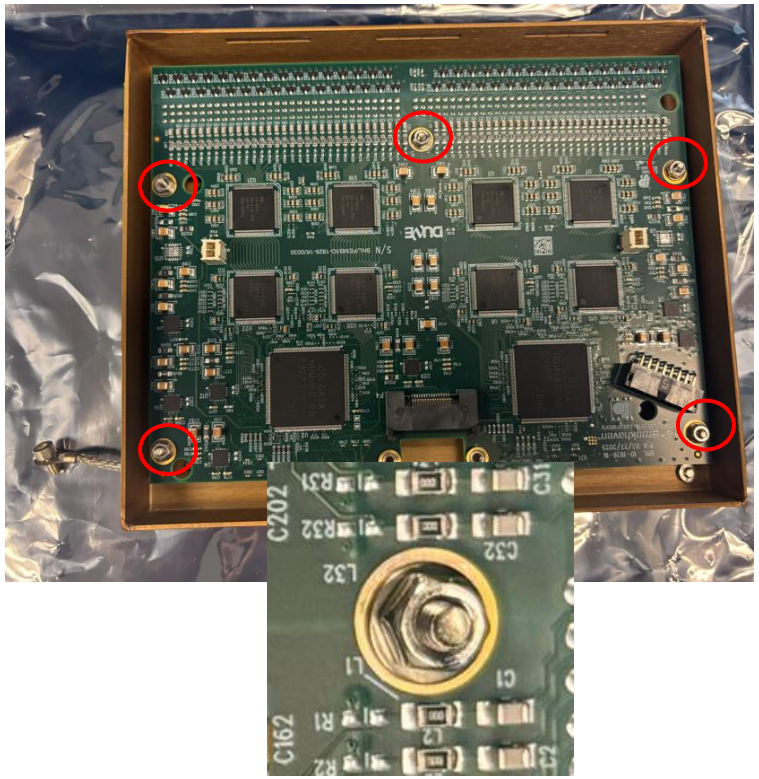
Are these 5 nuts fastened with washers?

Bottom CE Box (HD) Visual Inspection

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



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 positon

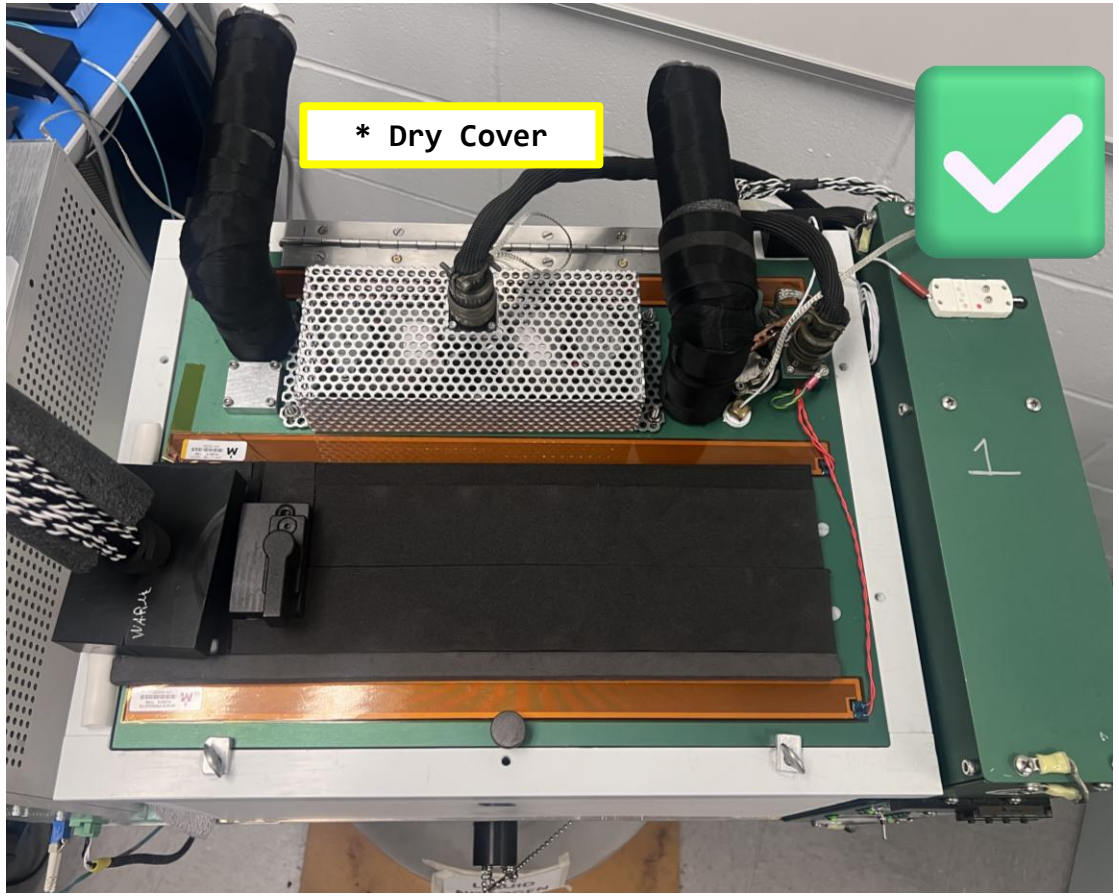


Are these 5 nuts fastened with washers?

CE box enclosed by ESD bag?

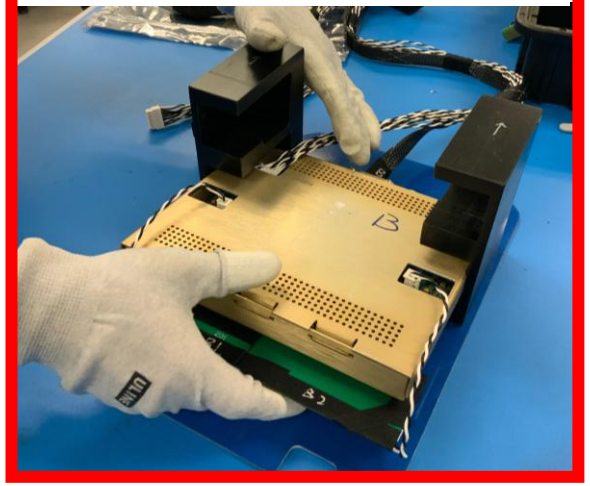
Post-Warm Up Check

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

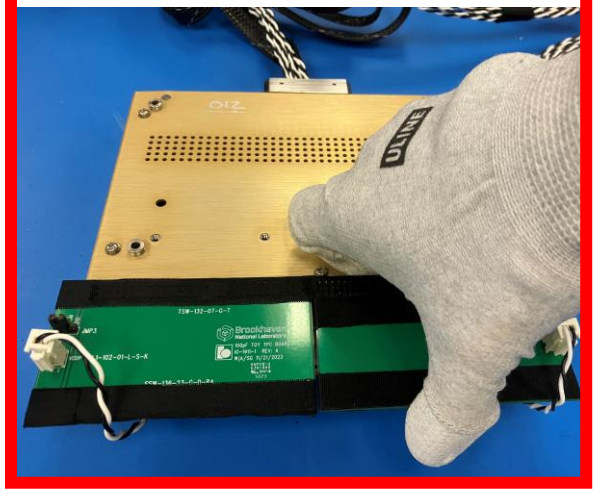


Disassembly: Bottom CE box (HD)

1. Remove the Bottom CE Box

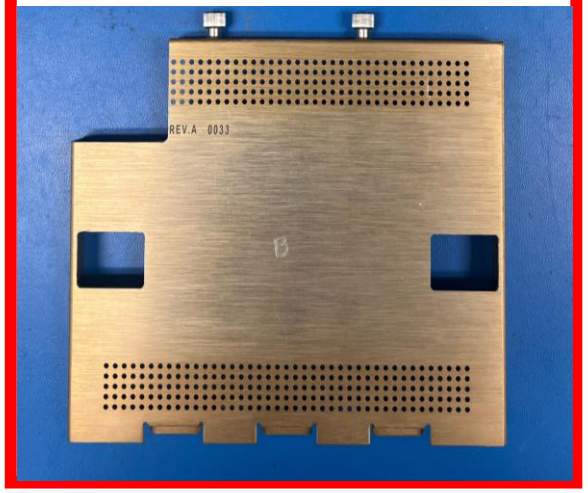


2. Remove Toy TPCs

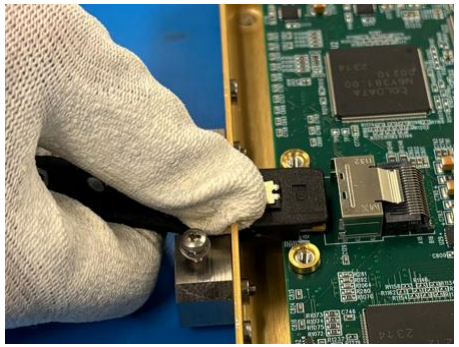


3. Disconnect the Power Cable

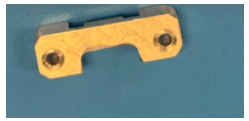
4. Remove the test cover



5. Remove the miniSAS cable



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

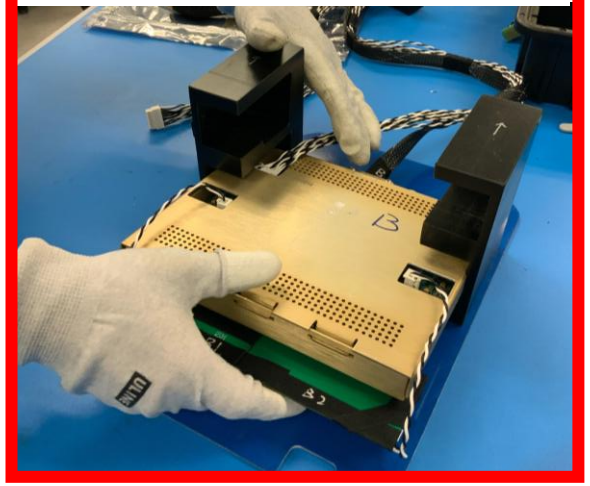


7. Install the original CE box cover

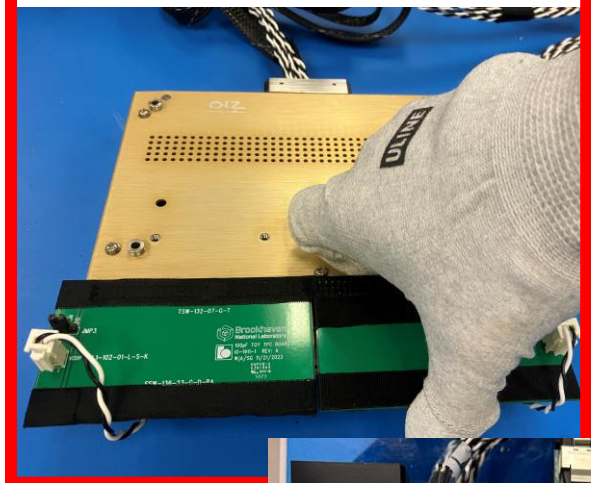
8. Pack FEMB in ESD Bag and Foam Box

Disassembly: Top CE box (VD)

1. Remove the Top CE Box

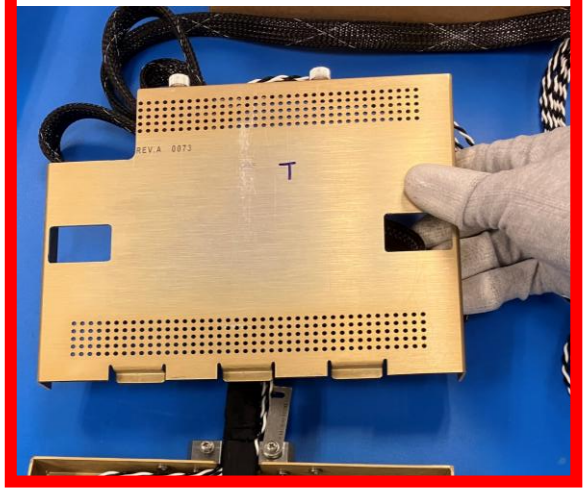


2. Remove Toy TPCs

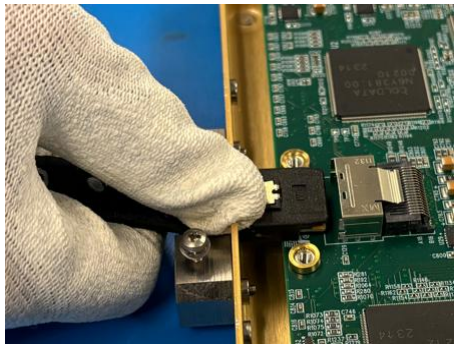


3. Disconnect the Power Cable

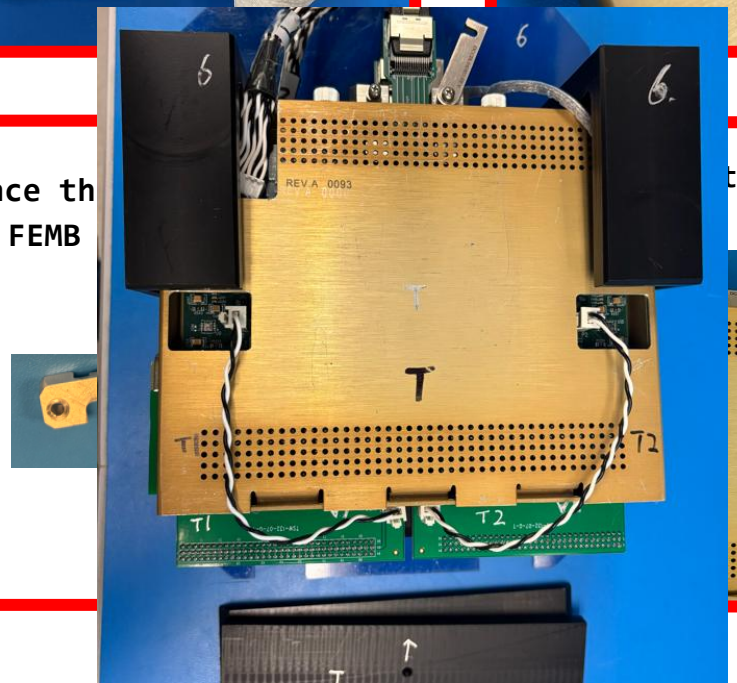
4. Remove the test cover



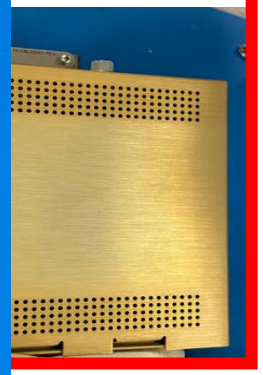
5. Remove the miniSAS cable



6. Place th
back on FEMB
CE box



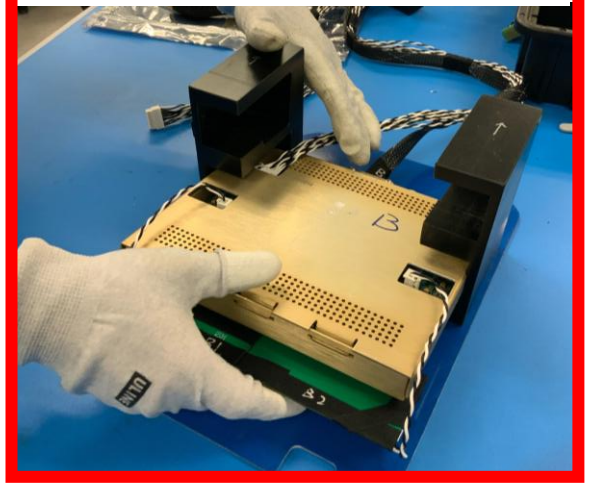
tall the
box cover



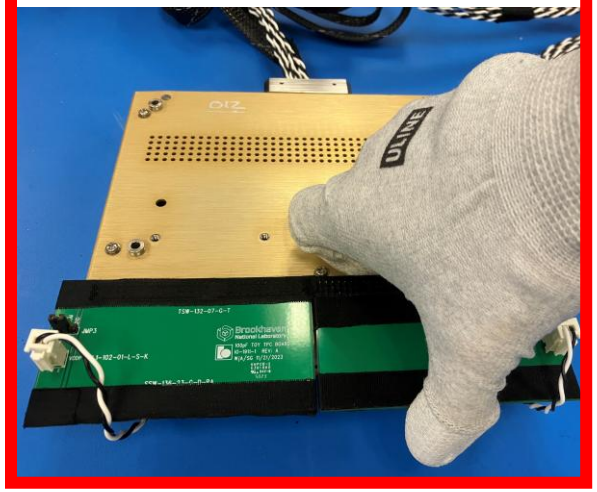
8. Pack FEMB in ESD Bag and Foam Box

Disassembly: Bottom CE box (VD)

1. Remove the Bottom CE Box

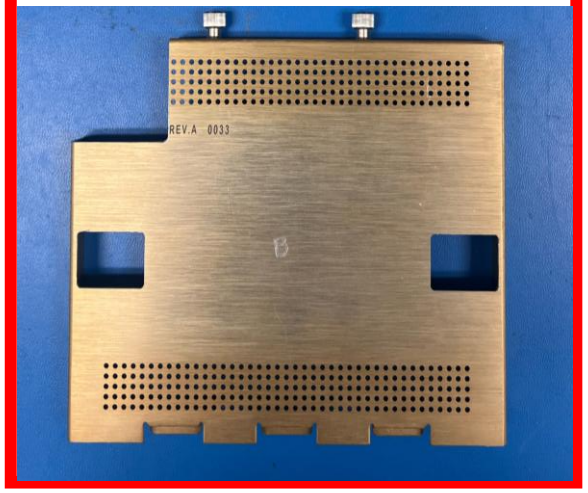


2. Remove Toy TPCs

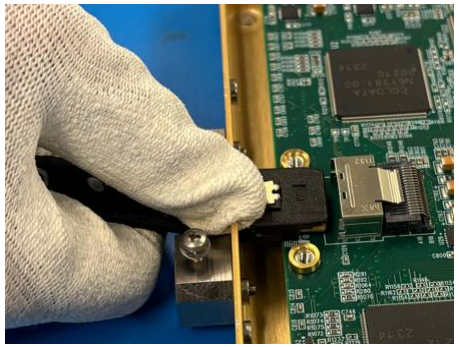


3. Disconnect the Power Cable

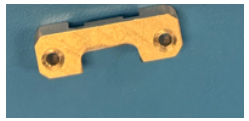
4. Remove the test cover



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

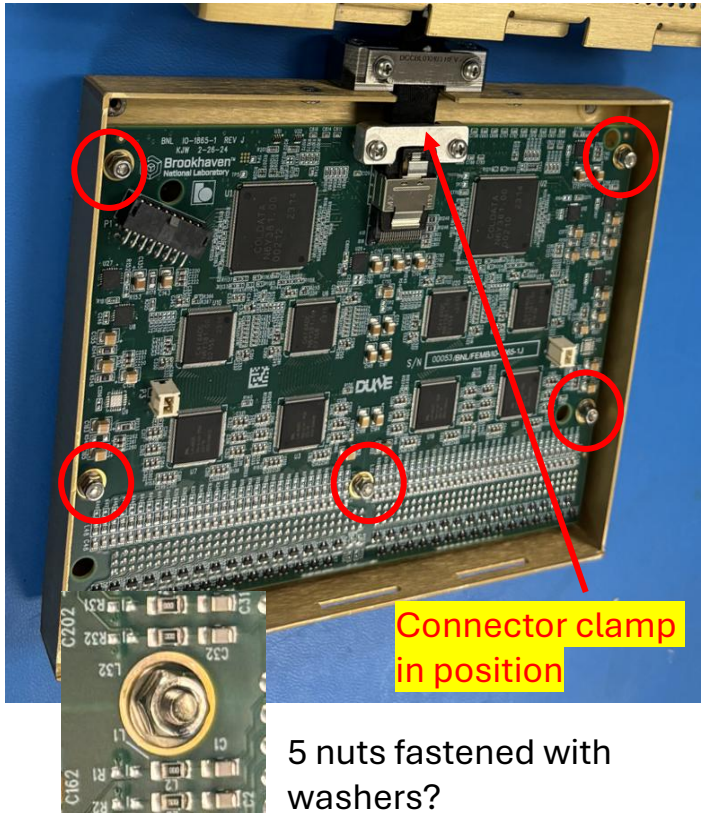
CE Box Visual Inspection

Please contact Tech Coordinator if abnormality is observed!

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

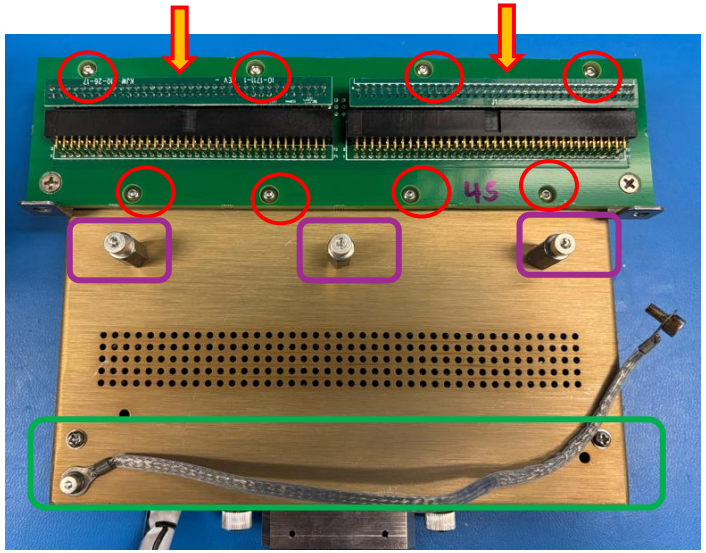
CE box enclosed by ESD bag?

VD CE box (1865)

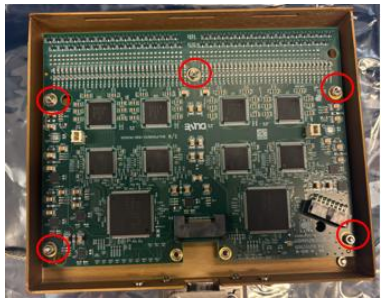


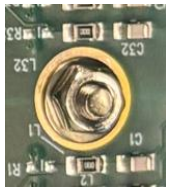
5 nuts fastened with washers?

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?