



Global Engineering, Repair & Logistics

Zebra TC70/TC75 Disassembly - Assembly Repair Guide



Title: Zebra TC70/TC75 Disassembly-Assembly Repair Guide	CTDI
Author: Pratik Pasalkar Rev: 2.0	
Date: 01-22-2020	



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Initial Inspection / Fault Analysis

A.) Paperwork check

Check and compare details on unit label with details in the Job Sheet and physical condition of the unit. In case of discrepancy find incorrect detail and perform corrective action (rewriting of product configuration on unit label and Job Sheet, printing a new label for the unit, etc.). If serial number does not match pass the unit on to the Team Leader.

B.) Accessories check

Compare records in Repair system and Job Sheet with physical accessories of the unit. In case of discrepancy pass the unit on to the Team Leader

C.) Visual inspection

Inspect the unit for physical and water damage. In case of this kind of damage follow process for CID (Customer induced damage)

D.) Fault identification

If possible power up the unit (in case of customer application load SW) and test the unit using a quick test.

Focus on Problem code, given by customer as an error description.

Before repair check if all required engineering changes have been implemented (List of engineering changes).

Specify an error or an engineering change that needs to be implemented and start unit repair.



Engineering Changes

ECN number	ECN description	Severity
DCN-00036	UPDATED WLAN ID FILES FOR TC7XXK FALCON	
DCN-00052	UPDATED SMART ETMS FOR TC7XXK FALCON	
DCN-00107	TC7XXK Falcon Battery Encryption KEY Error Issue	
DCN-00118	TC7XXH/TC7XXK Pollux and Falcon Side Key Buttons	
DCN-00129	TC7XXK FALCON BOTTOM CHARGE TEST	
DCN-00160	TC7xxK Falcon Bottom Charge Connector	
DCN00917	TC70 GAx and TC75 – IPx7 Testing and Repair Strategy	
DCN01108	TC75 - Scanner Failure Flex Modification	

Severity:

	Repair only upon failure
	Repair for all returns
	Follow „Recall“ process
	For information only



Product Configuration

CONFIG	TC7?XX-XXXXXX	Hardware	TC7XXX-XXX?XX
0 =	WLAN Only	2 =	Hex-Core; 4.7" display w/capacitive touch panel, 1 micro SD, e-Compass, Handstrap
5 =	WWAN + WLAN	3 =	Hex-Core; 4.7" display w/capacitive touch panel, no SD, e-Compass, Handstrap
WAN	TC7X?X-XXXXXX	5 =	Hex-Core; 4.7" display w/capacitive touch panel, 1 uSD, IrDA, e-Compass, Handstrap. (US ONLY)
E =	Multi-Operator, HSPA+/LTE/CDMA, (US ONLY) QC 8x56	Memory	TC7XXX-XXXX?X
F =	Multi-Operator, HSPA+ /LTE, (EA / APAC) QC 8x56	2 =	2GB RAM/ 16GB FLASH pSLC
G =	Multi-Operator, HSPA+/LTE (America's excluding US) QC 8x56	4 =	4GB RAM/ 32GB FLASH pSLC
Local Radios/Family	TC7XX?-XXXXXX	NFC	TC7XXX-XXXXXX?X
J =	HULK (QC 8x92)	A =	Secure
L =	Falcon (QC 8X56)	B =	Basic
SIM/SAM/Nano slots	TC7XXX-?XXXXX	Carrier	TC7XXX-XXXXXX?
0 =	none (LAN BASE SKU only)	0 =	None (LAN ONLY)
2 =	2 Nano SIM/ 1 SAM	A =	AT&T
4 =	3 Nano SIM (QC8x92)	B =	Multi Operator (AT&T/Verizon/T-Mobile)
5 =	2 Nano SIM (no SAM)	C =	Verizon
6 =	1 SAM/ No SIM (LAN ONLY QC 8056)	D =	Operator Generic
OS Key	TC7XXX-X?XXXX	E =	Telstra
W =	Windows 10 Mobile	F =	Sprint
M =	Android GMS	Suffix	TC7XXX-XXXXXXX-??
2=	Android AOSP	US =	US Only
Data Capture	TC7XXX-XX?XXX	A3 =	FCC: US (QC 8x92)
B =	SE4750 SR + + 1.3MP front/ 13MP Rear Cam (QC 8x56)	A4 =	FIPS (US)
C =	SE4750 SR MPI + 1.3MP front/ 8MP Rear Cam (QC 8x92)	FT =	TAA & FIPS (US)
D =	SE4710 SR MPI + MPI + NO Front CAM/ 13MP Rear Cam (QC 8x56)	A6 =	ROW: (required for both WAN and LAN)
E =	SE4710 SR MPI + MPI + NO Front CAM/ No Rear Cam (QC 8x56)	CN =	China
F =	SE4750 SR + 13MP Rear Cam (QC 8x56)	TW =	Taiwan FCC compliance + NS (WAN Only)
		BR =	Brazil
		IA =	India
		ID =	Indonesia
		TN =	Tunisia



ESD Protection Instructions

- Make sure your hand are grounded to ESD mat.
- The first thing to think about with ESD is eliminating risks associated with electrostatic discharge. That means taking care of insulators and conductors.
- It's important to use static shielded bag before you touch any device on repair beach. Even if it's just from one desk to another, anytime you are touching circuits and aren't grounded they should be in static shielding.
- Make sure you use Static shielding bags, usually silver in color, and they always have printing identifying them as static shielding.
- They also prevent static build up, but they also will shield anything inside of them from ESD. They are made of multiple layers of materials that act as mini Faraday cages.



Equipment, Tools, Consumable Material and Torque Specification

1. Equipment.

Qty	Equipment	Parameters
1/line	Zebra GX430t thermal transfer printer	GX43-102420-000

2. Tools.

Qty	Tools	Parameters
1	ELECTRIC SCREWDRIVER	CL4000
	SCREWDRIVER FLAT	N/A
1	SCREWDRIVER TORX T6	N/A
	SCREWDRIVER TORX T8	N/A
1	SCREWDRIVER PHILLIPS HEAD	N/A
1	PLIERS (CUTTING)	N/A
	COMBINATION PLIERS	N/A
1	MAGNIFYING GLASS	N/A
	SCISSORS	N/A
1	PLASTIC TOOL	N/A
1	RAZOR	N/A
1	TWEEZERS	N/A
1	BRUSH	N/A
1	BRUSH WITH HANDLE	N/A

3. Consumable Material.

Qty	Consumable material	Parameters
	ISOPROPYL ALCOHOL	N/A
	AIR	N/A
	COTTON BUDS	N/A
	PRECISION WIPES	N/A
	KAPTON TAPE	N/A
	CLEANING AGENT FOR ESD PAD	REZTORE
	HAND CREAM (ESD)	STATICIDE, LOTION
	mighty pen	N/A
	CLEANING AGENT FOR PLASTICS	CHEMTRONICS
	PERMANENT MARKER	N/A

4. Torque.

Screw location	Torque [kgf·cm]	Torque [N·m]	Torque [lbf·in]
Housing	2.55 +/- 0.1 kgf.cm	0.25 +/- 0.01 N.m	2.21 +/- 0.09 lbf.in
CPU	1.02 +/- 0.1 kgf.cm	0.1 +/- 0.01 N.m	0.89 +/- 0.09 lbf.in



Country Specific AC Line Cord

Qty	Country specific AC line cord	Parameters
1	AC line cord - AUS, CHN, PNG	50-16000-217R
1	AC line cord – BRA	50-16000-727R
1	AC line cord – CHN	50-16000-257R
1	AC line cord - EUR, UAE, BOL, EGY, IRN, KOR, RUS, VNM	50-16000-220R
1	AC line cord - GBR, SGP, MYS, HKG, IRQ,	50-16000-219R
1	AC line cord – IND	50-16000-669R
1	AC line cord – ISR	50-16000-672R
1	AC line cord – ITA	50-16000-671R
1	AC line cord – JAP	50-16000-218R
1	AC line cord – KOR	50-16000-256R
1	AC line cord – USA	50-16000-221R
1	AC line cord – USA	23844-00-00R

Disassembly Process

Hand Strap and Battery Removal

Step 1: Remove the hand strap by pushing the clip in upward direction and press the latch to remove the battery



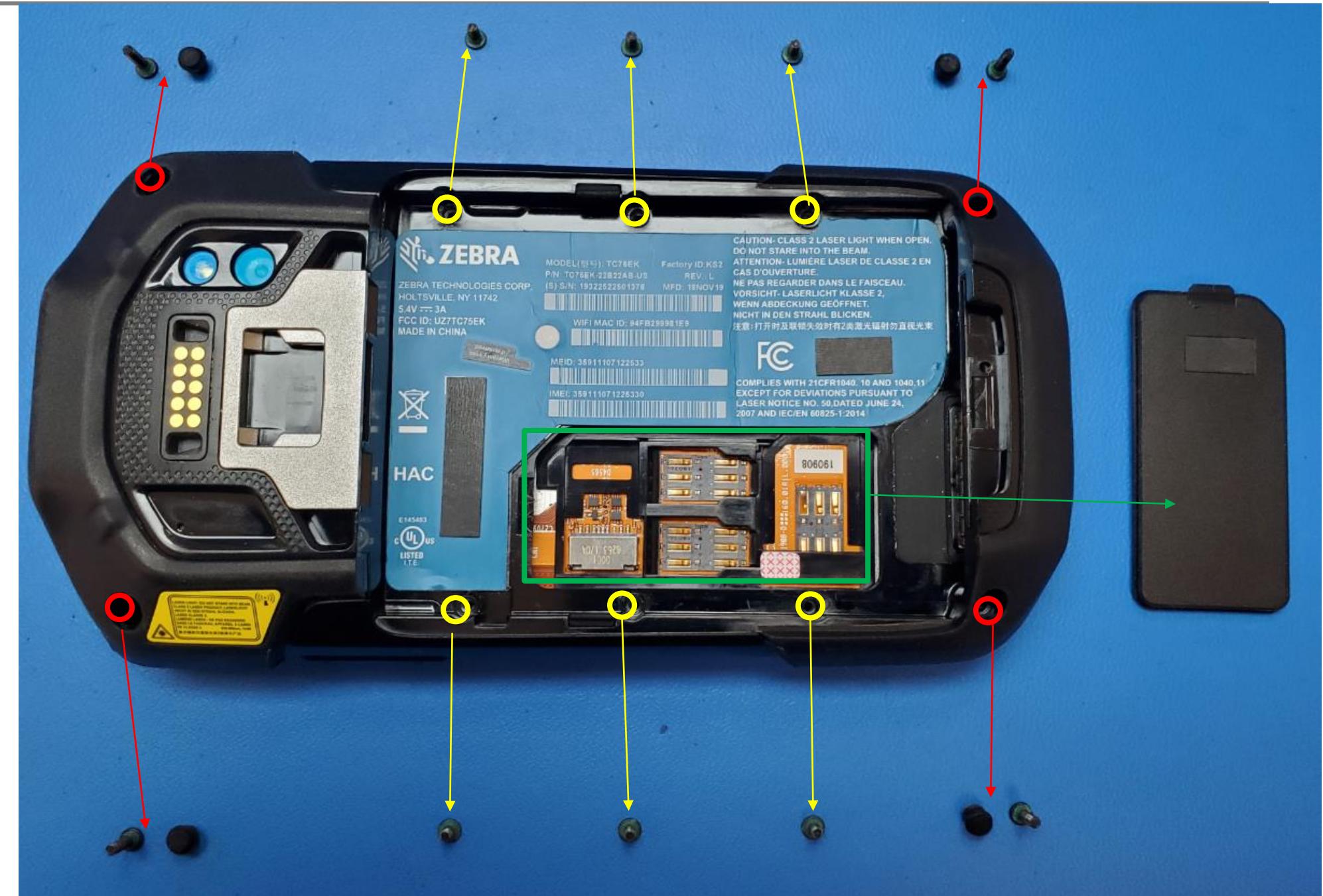
Disassembly Process

SIM Card Plastic Cover, Rubber Pad And Screw Removal

Step 2: Remove SIM card plastic cover.

Remove (4) rubber pads along with the four screws from upper and lower of housing.
(Marked in red color.)

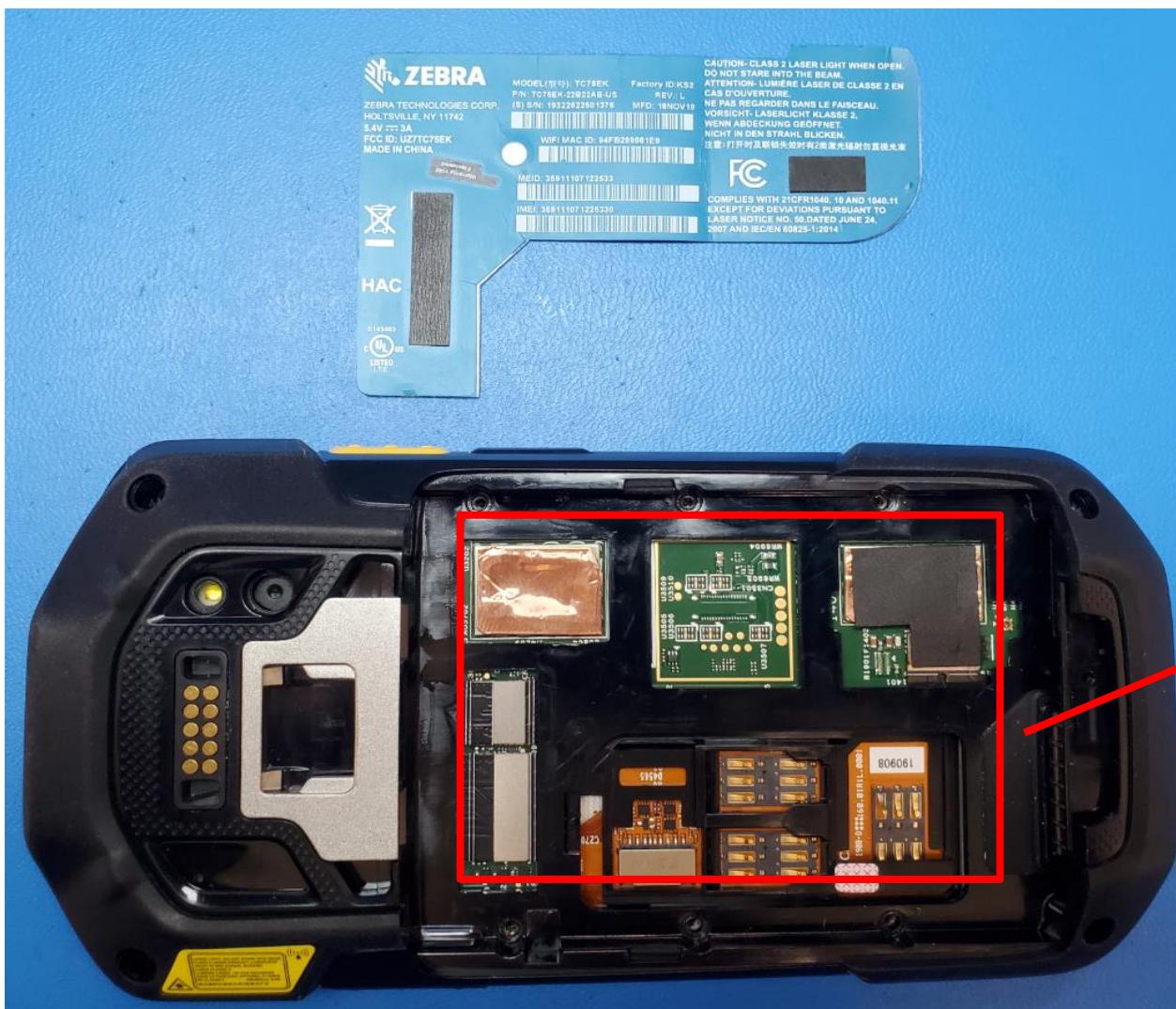
Remove (6) screws from the middle of housing.
(Marked in yellow color.)



Disassembly Process

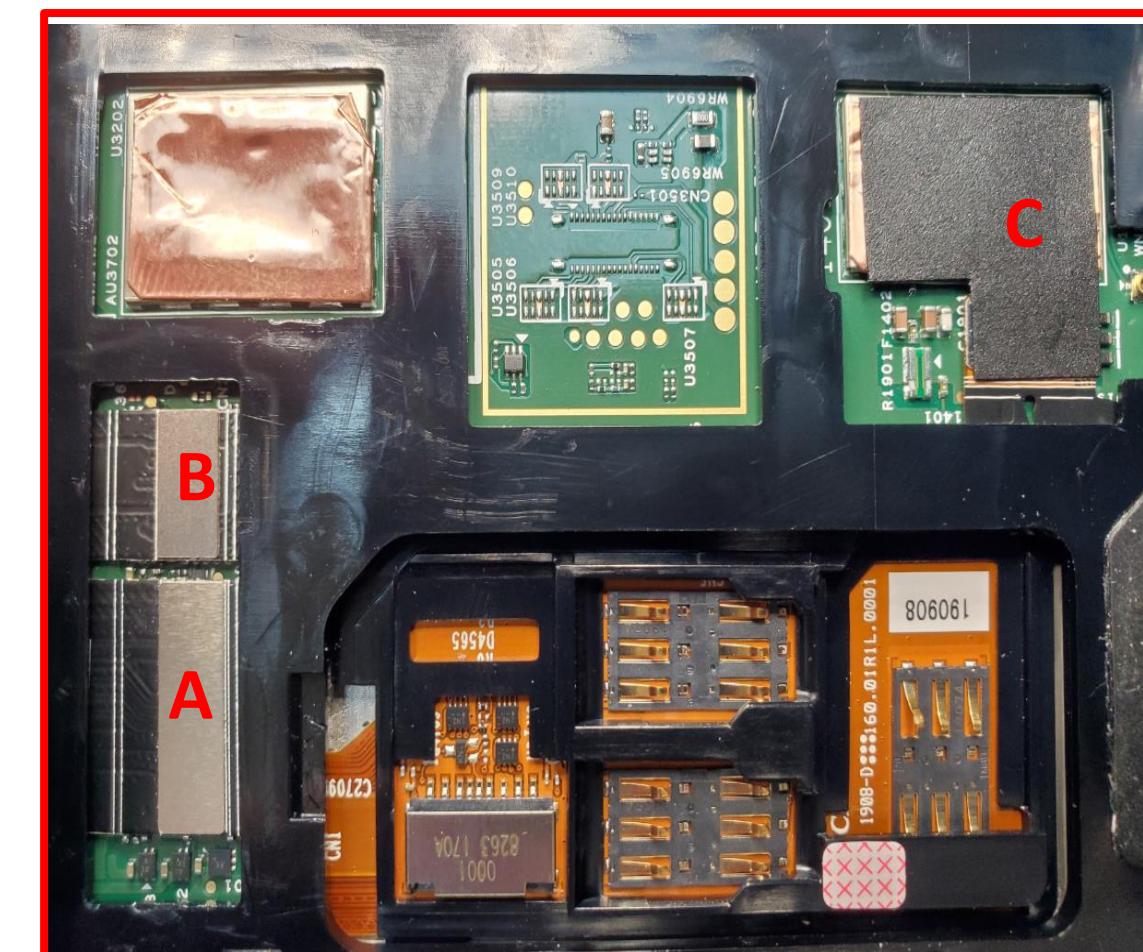
LBL L QP200 removal and Housing Connectors

Step 3: Remove Warranty void label with plastic Tool.



Caution: Before Separating Housing make sure I/O connectors are disconnected.

- A. Scanner / IO Connector.
- B. POGO Connector
- C. Battery Connector



Disassembly Process

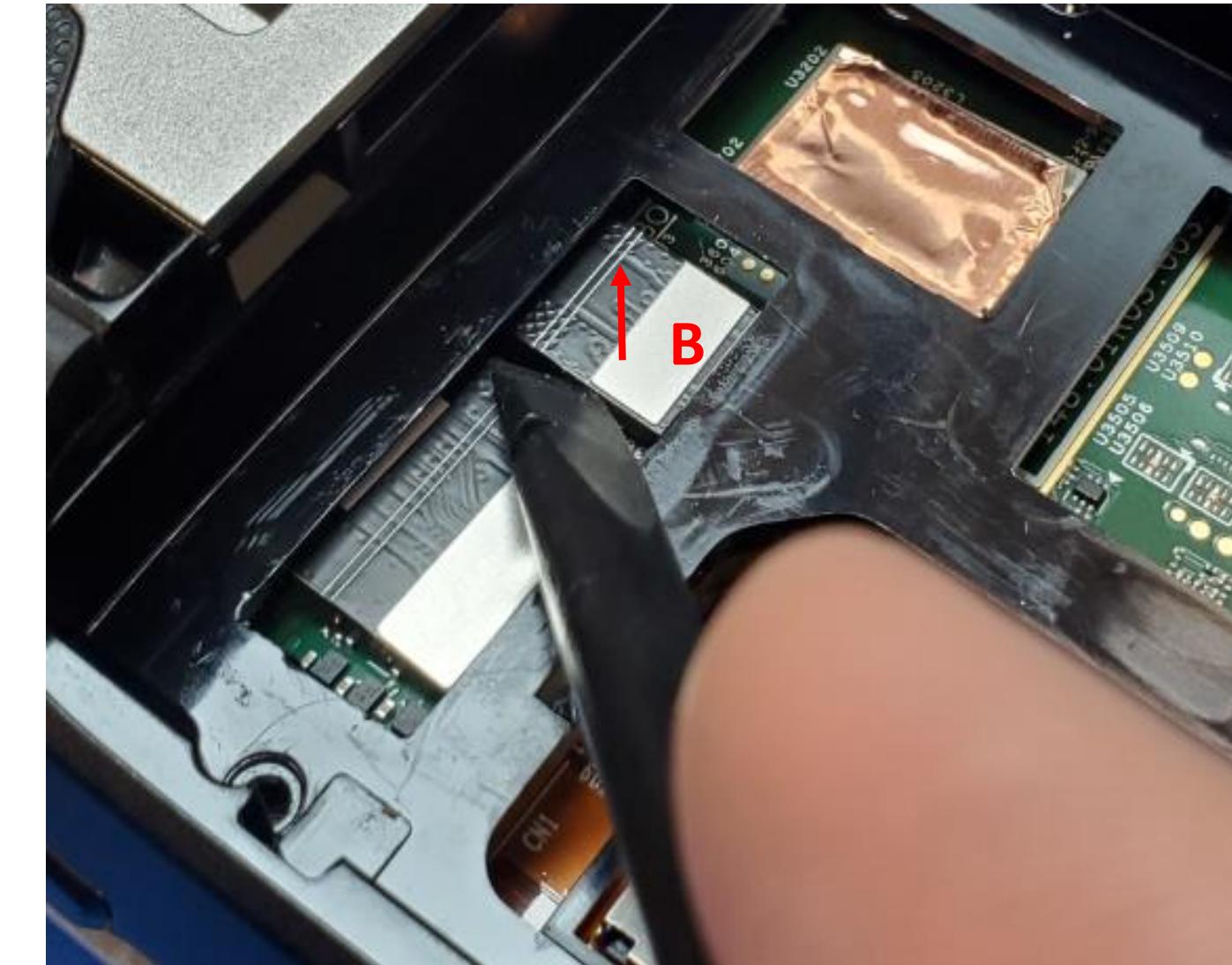
Separate the housings

Step 4: Disconnect IO connector (A) and POGO connector (B) form mother board.

A. Disconnect the IO Connector.



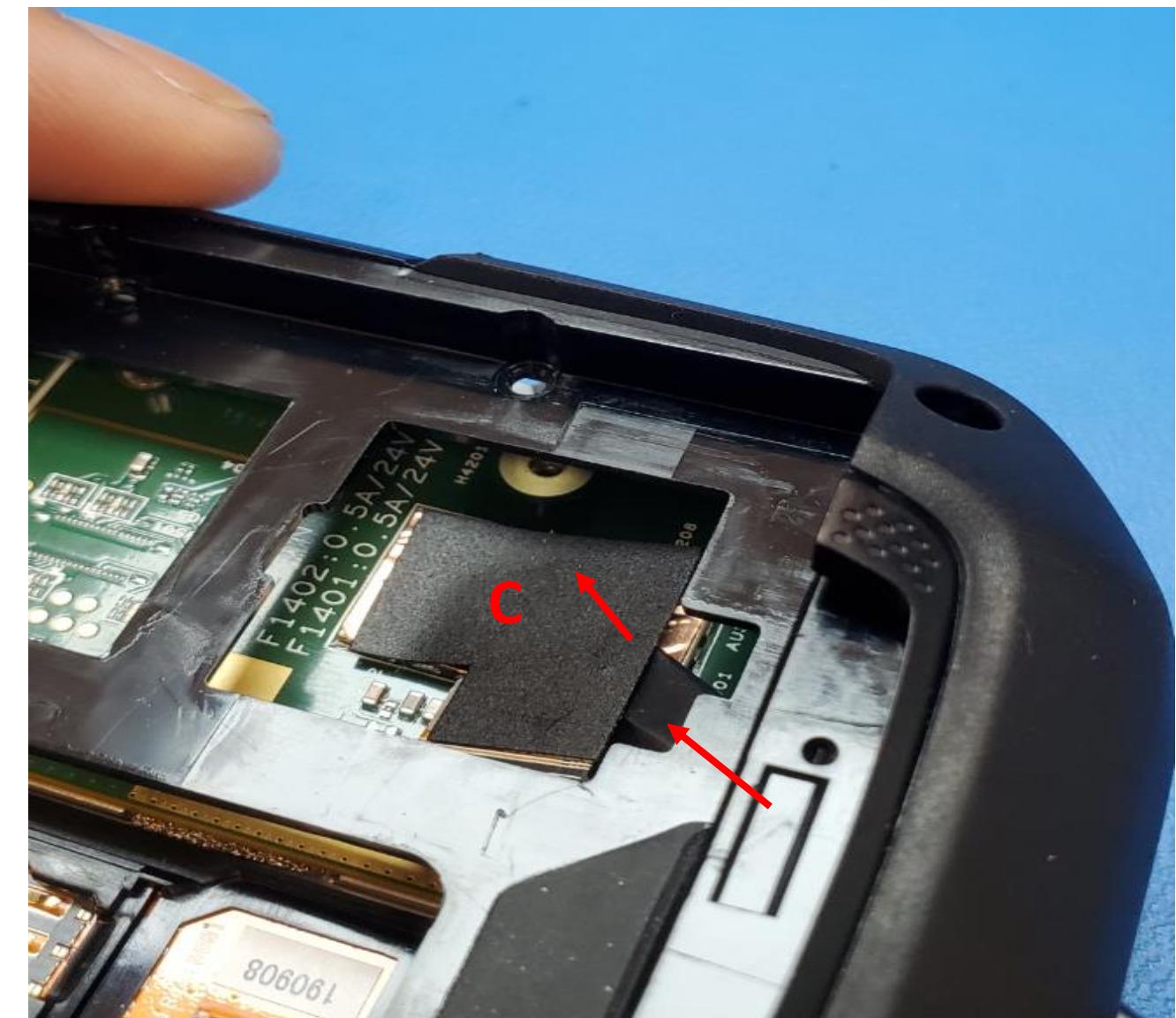
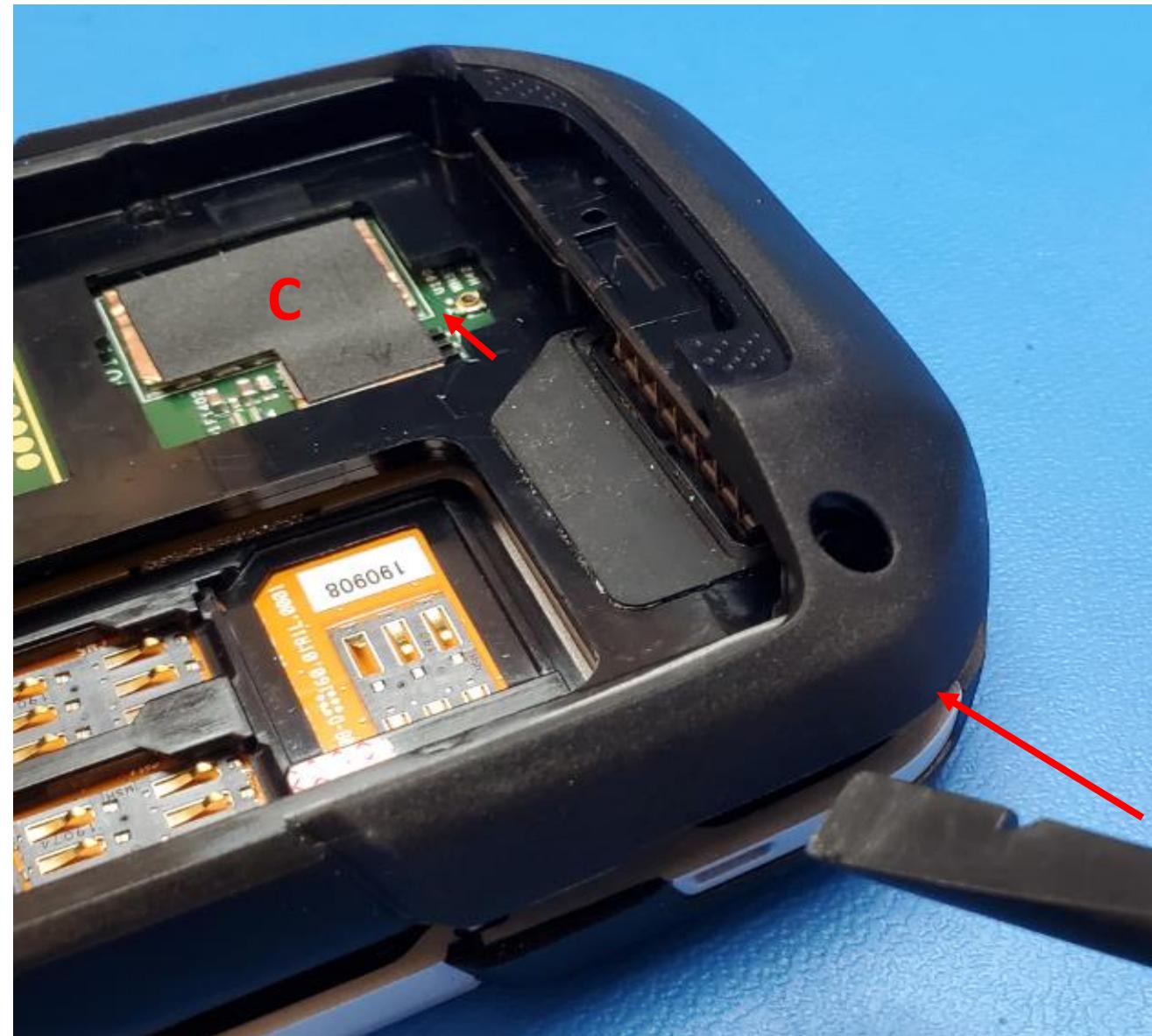
B. Disconnect the POGO Connector



Disassembly Process

Separate the housings

Step 5: Go underneath the housing with a plastic tool to disconnect Battery Connector and Kapton tape (C) and then separate housing.



Disassembly Process

Separate the housings

Step 6: Separate the housings.



Scanner, Vibration, Mic and Camera flash Repair Action

If Zebra SMART / CTDI test fails:

- Scanner Test
- Vibration Test
- Mic Test
- Camera Flash LED Test

Step 1: If the Scanner test fail where as Camera Flash, Mic and Vibration test is pass that means Sub board should be good in 99%. Just replace the Scan Engine module and run the test; if its pass scanner, LED flash, Mic and Vibration test that means problem is fix.



Step 2: Test fails after Scan Engine replaced then change Flex and retest.



Step 3: Test pass: Flex was the issue.



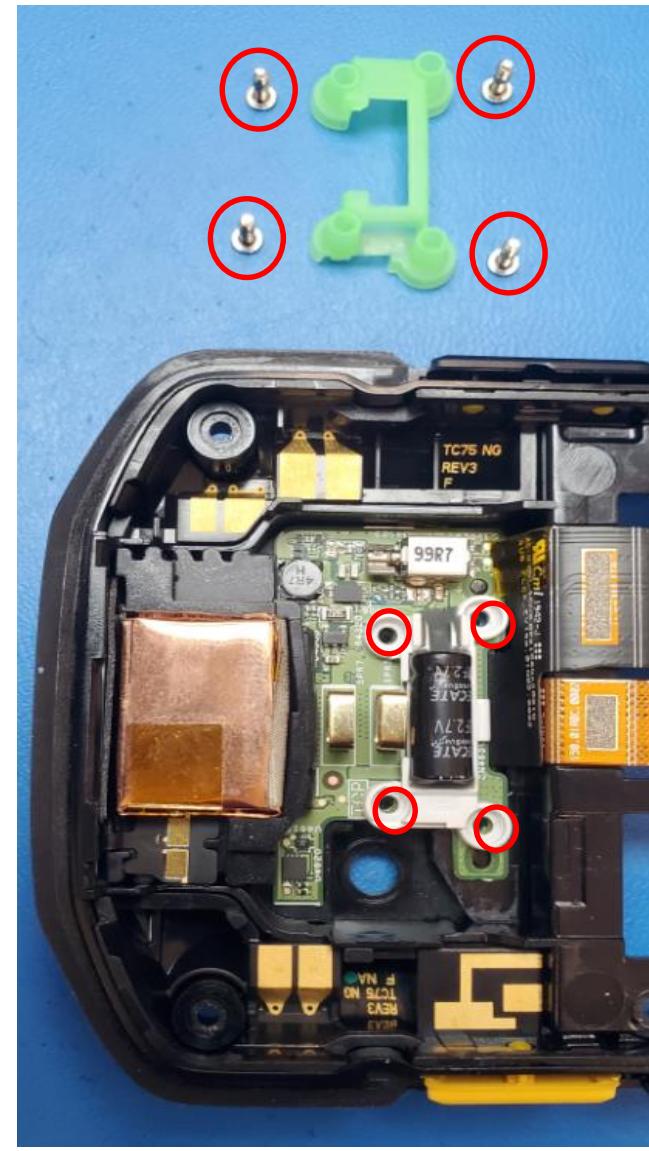
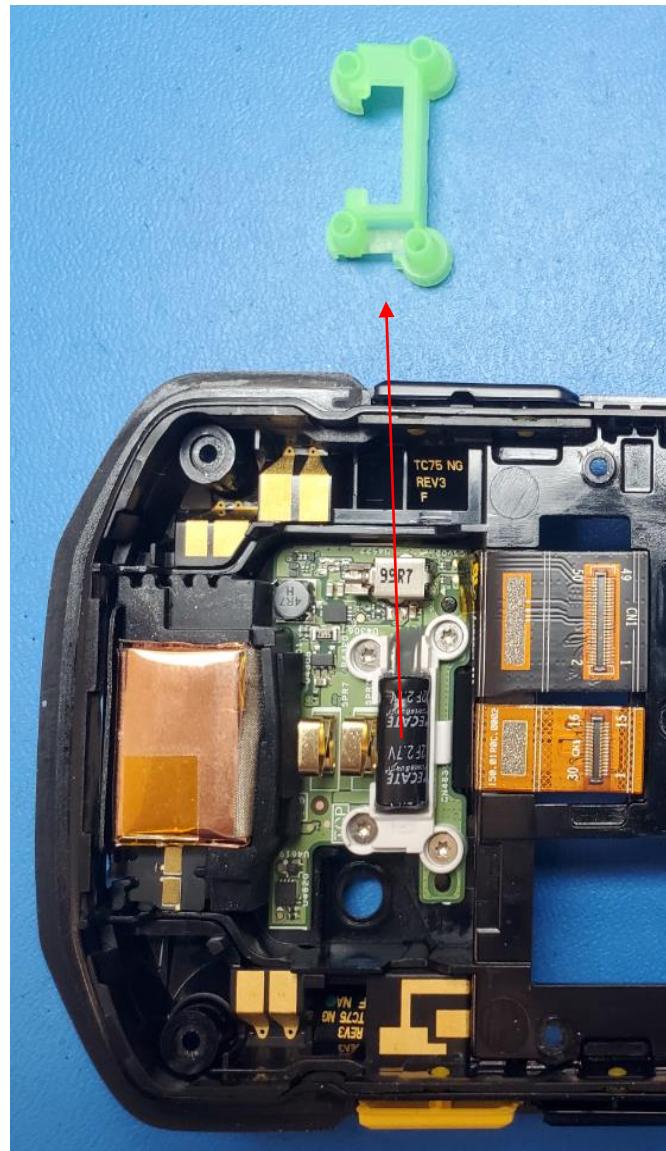
Step 4: Test fail : Then replace the sub board and retest.

Step 5: After replacing the sub board if the test fail; then replace the mother board.

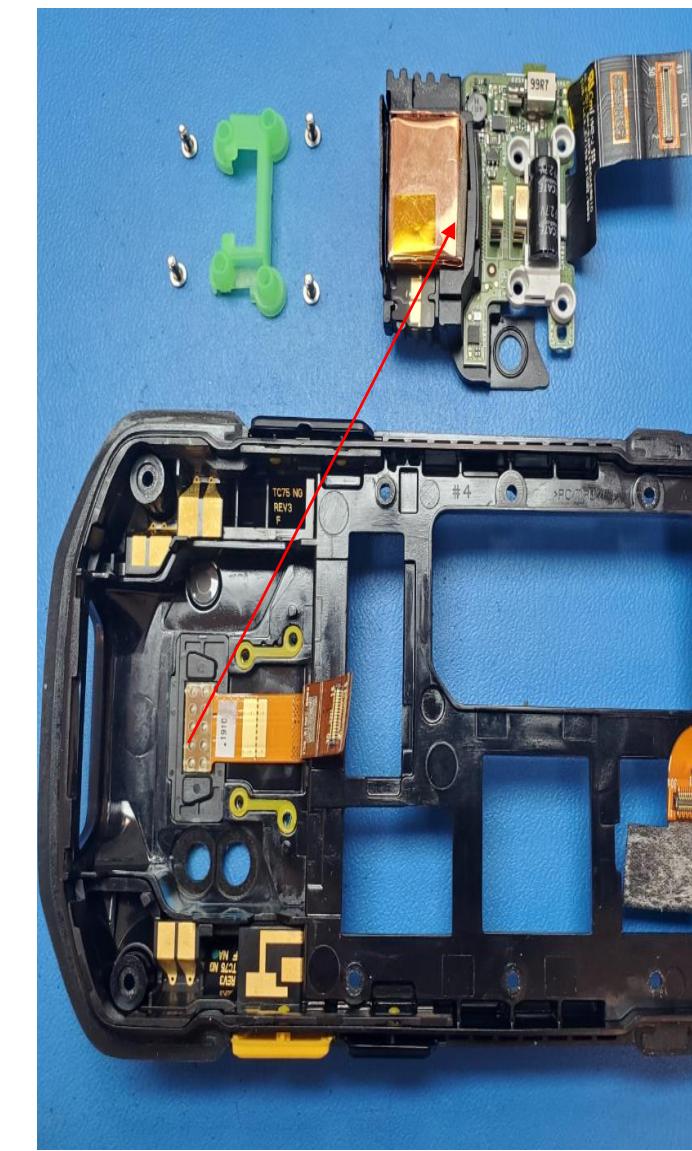
Disassembly Process

Lower Housing Scan Engine Disassembly

Step 7: Remove Green Rubber collar and remove 4 screws.



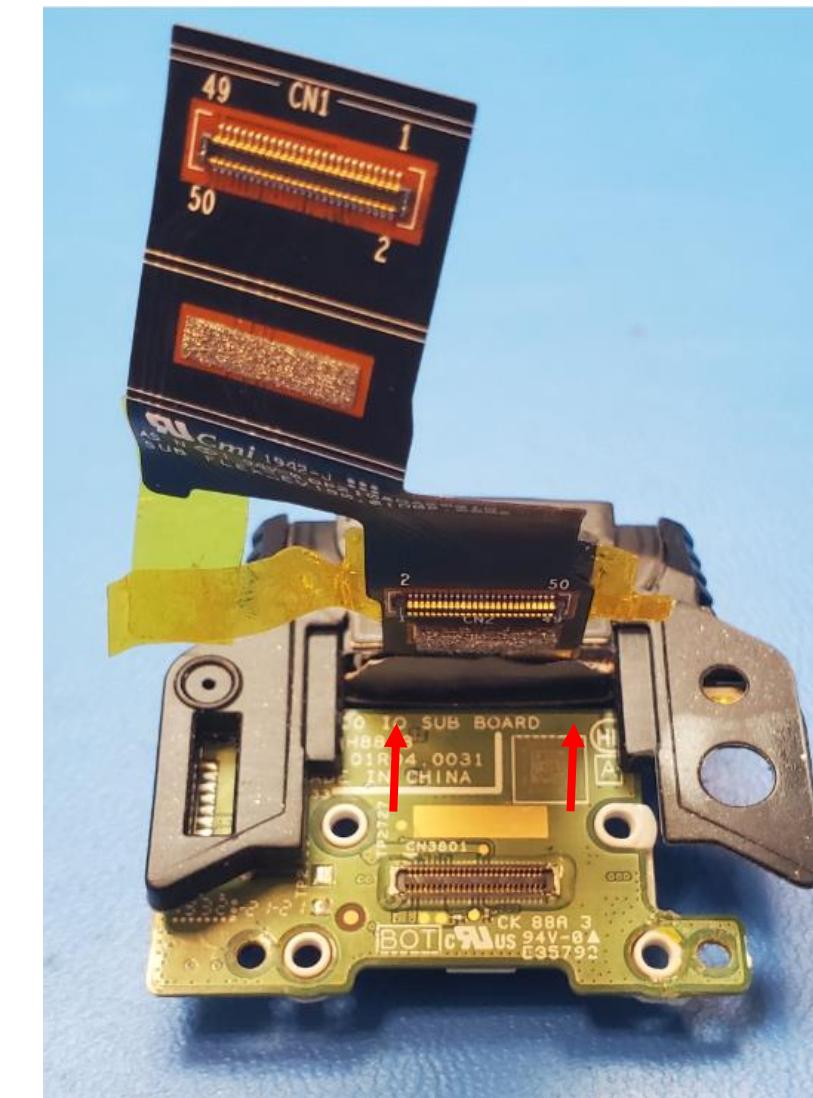
Step 8: Remove Scan Engine Assembly from Lower Housing and yellow rubber collar.



Disassembly Process

Scan Engine Decoder Board Removal

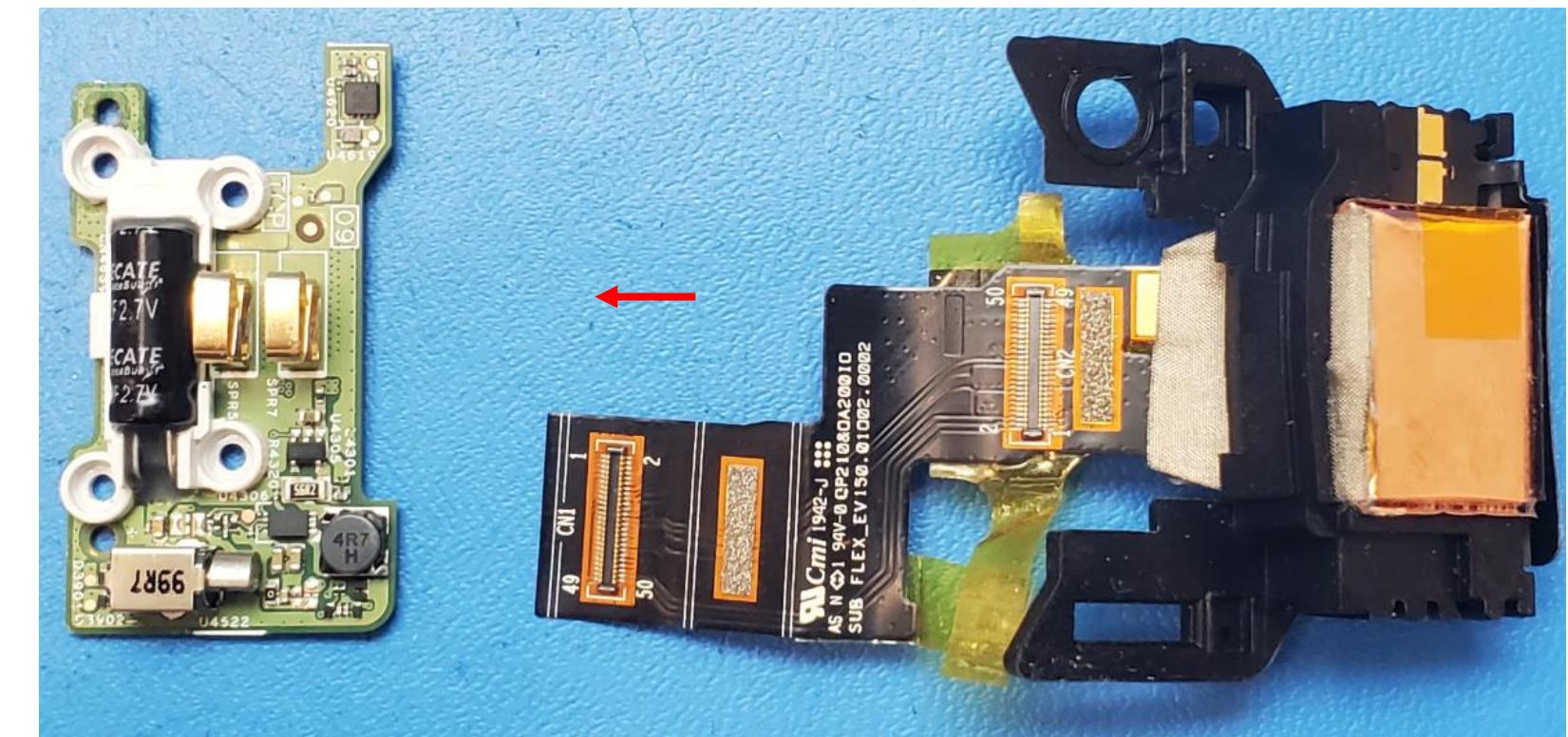
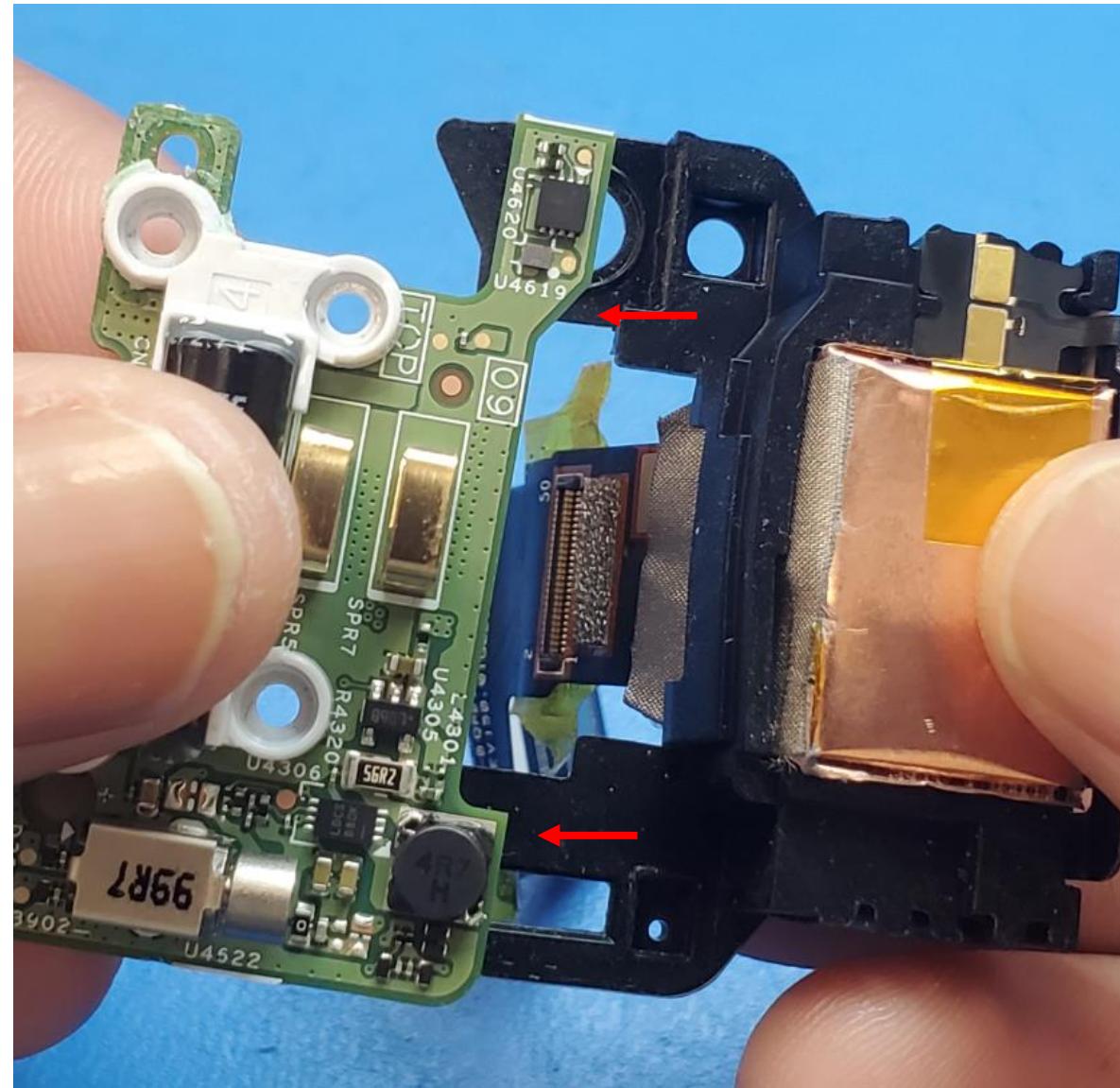
Step 9: Remove Kapton tape and gently disconnect Scan Engine Flex form Decoder Board.



Disassembly Process

Scan Engine Decoder Board Removal

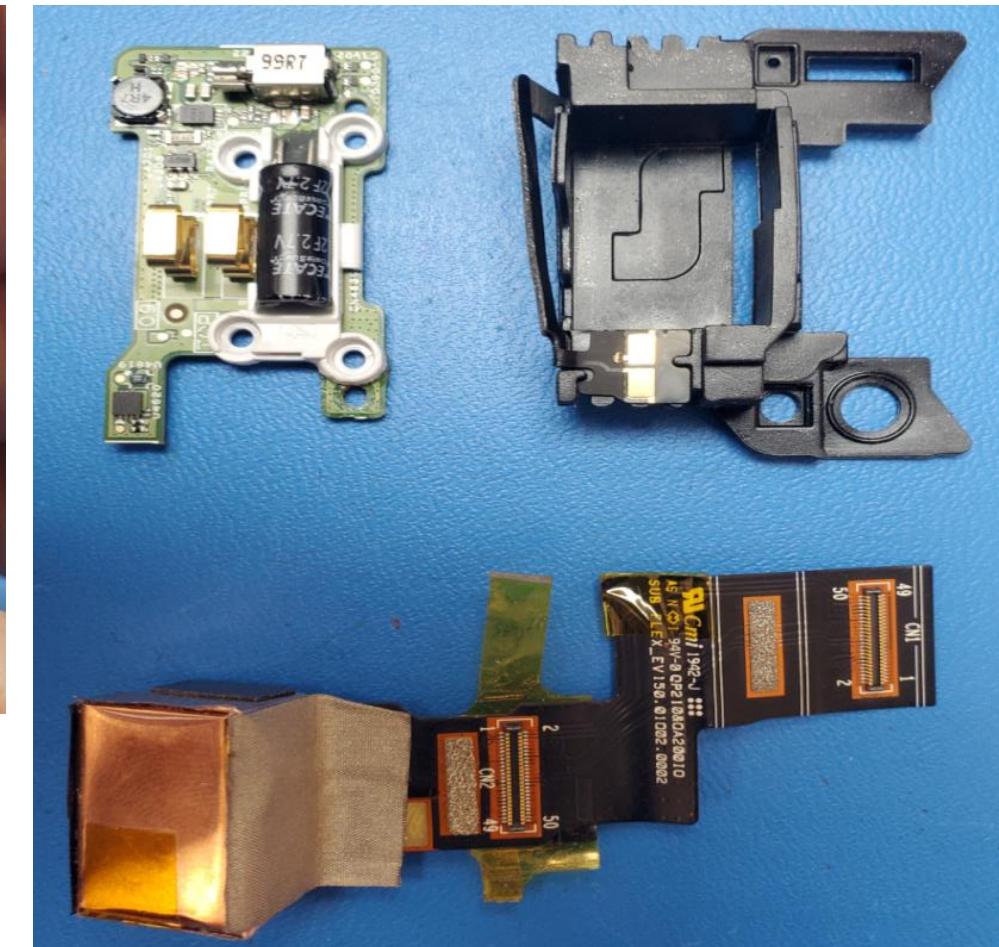
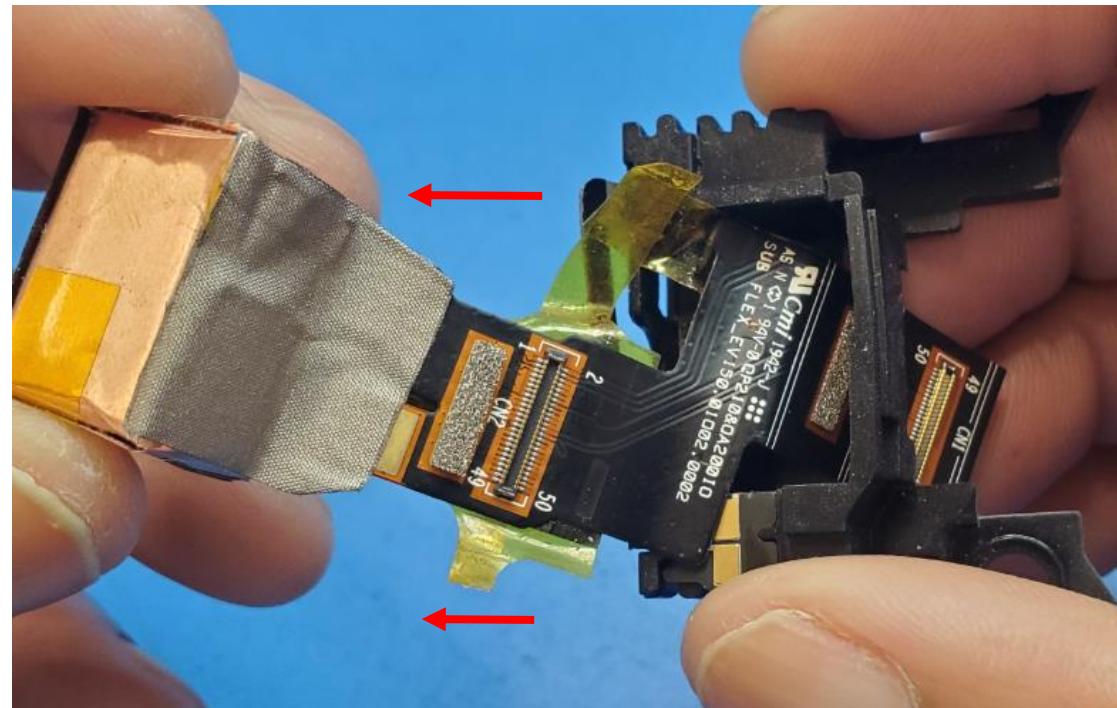
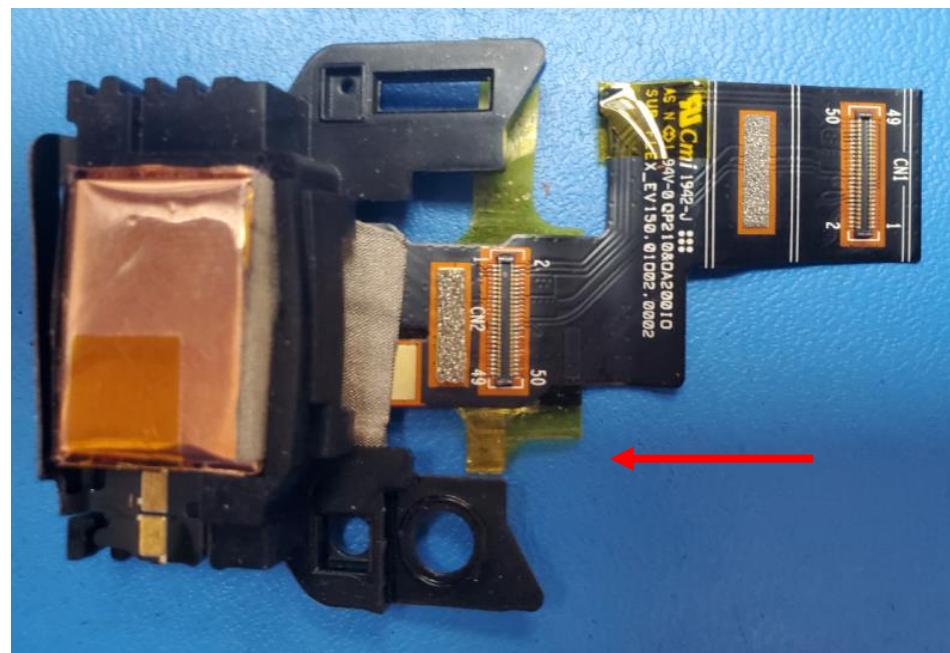
Step 10: Gently Remove Decoder Board.



Disassembly Process

Scan Engine Flex Cable Removal

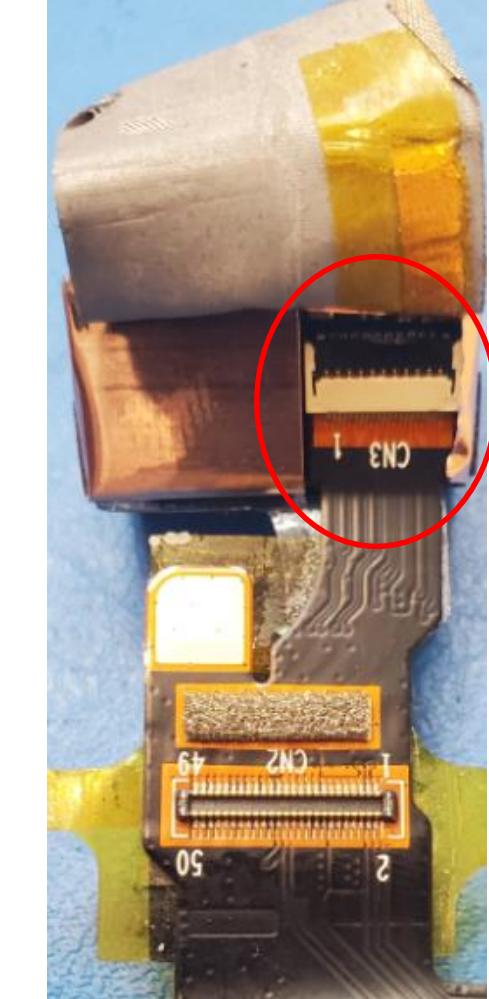
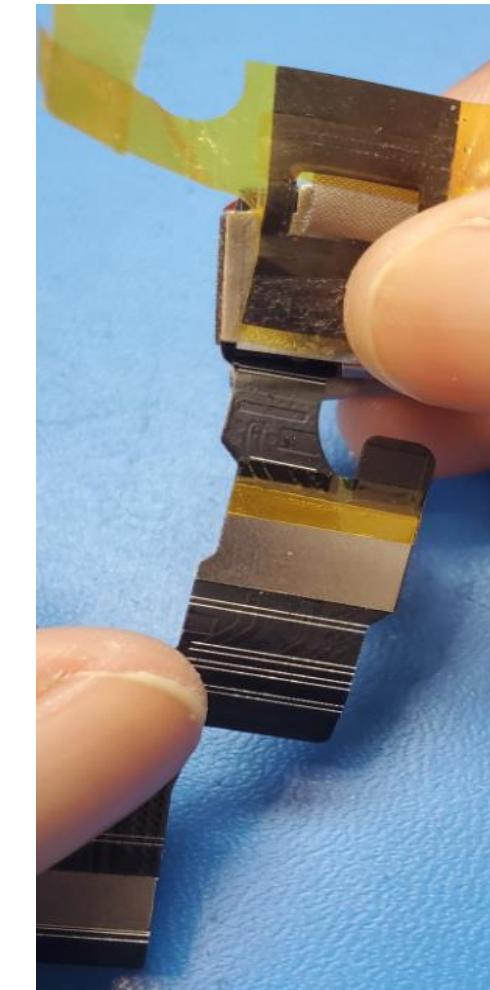
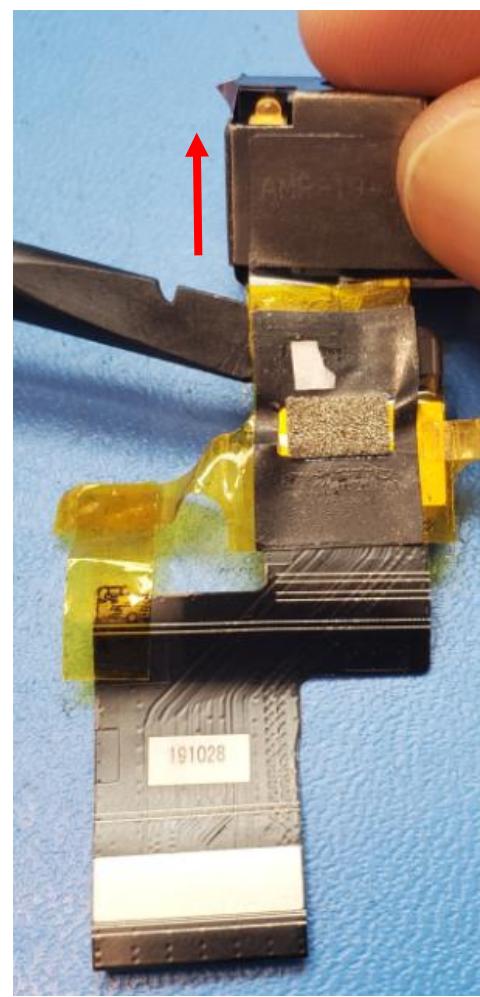
Step 11: Remove Scan Engine from the rubber boot.



Disassembly Process

Scan Engine Flex Cable Removal

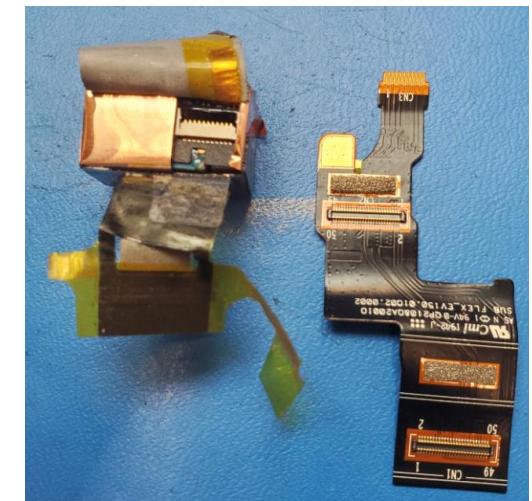
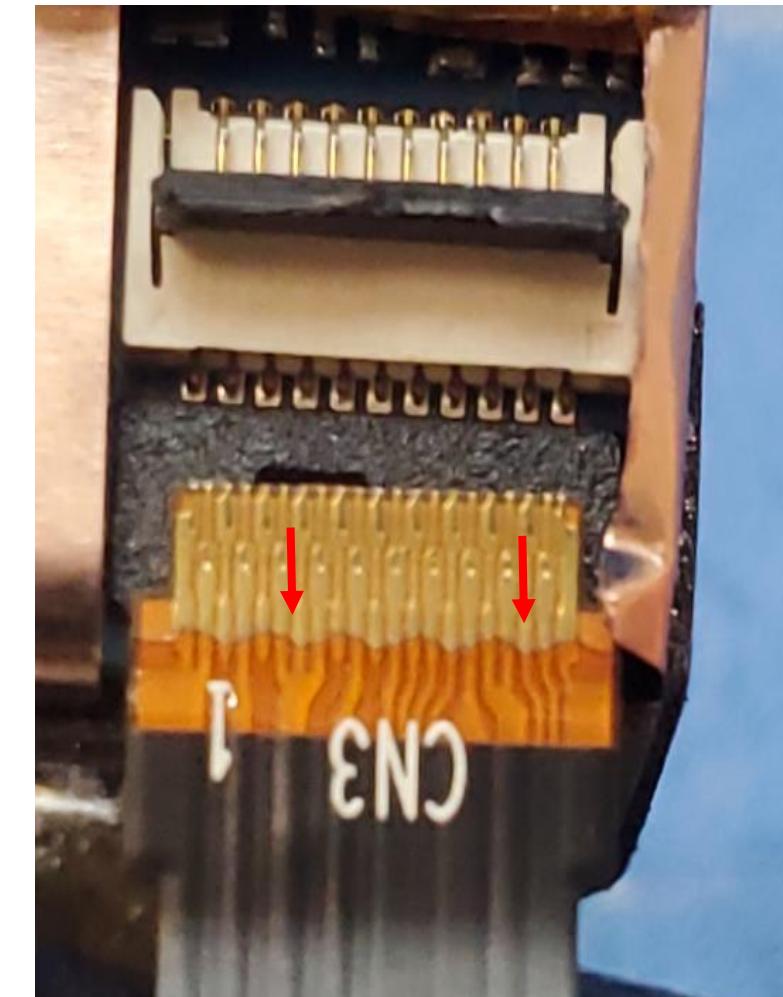
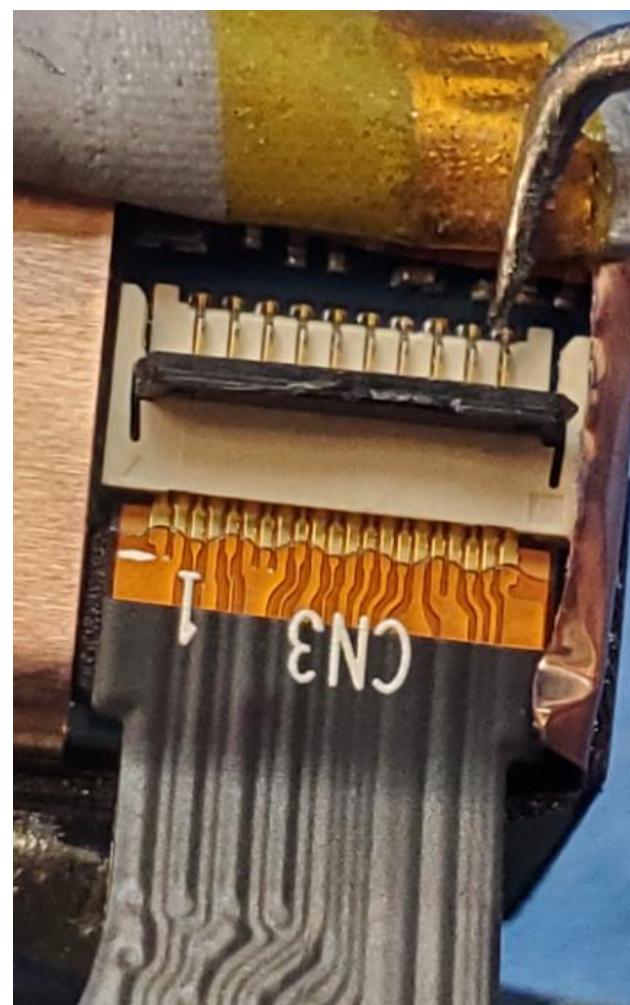
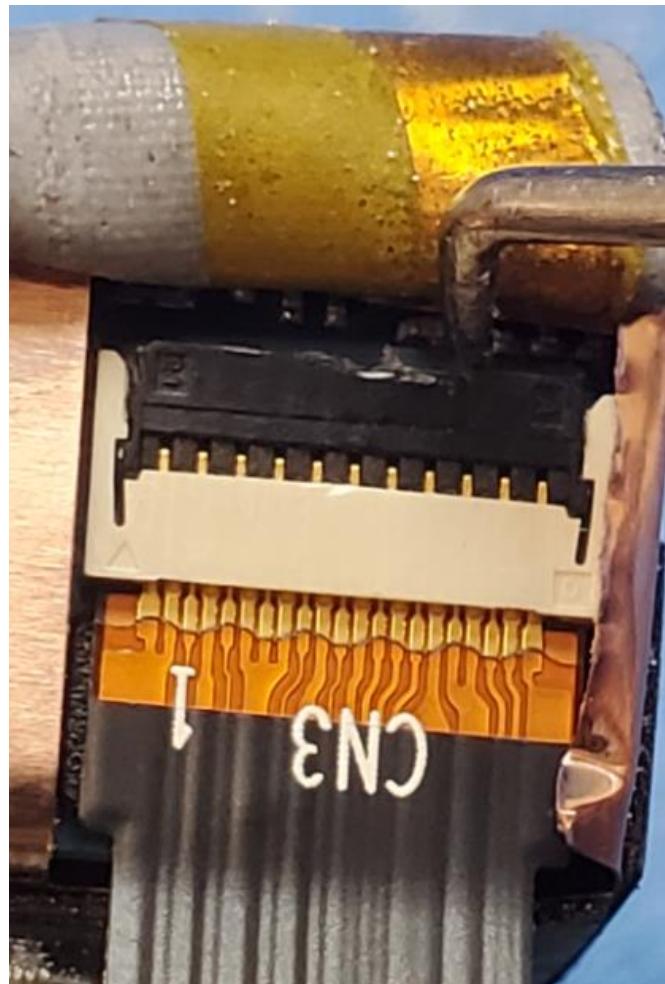
Step 12: Separate ADH SCANNER FLEX HOLDER TOP from the flex and flip around and remove EMI shielding from Scan Engine.



Disassembly Process

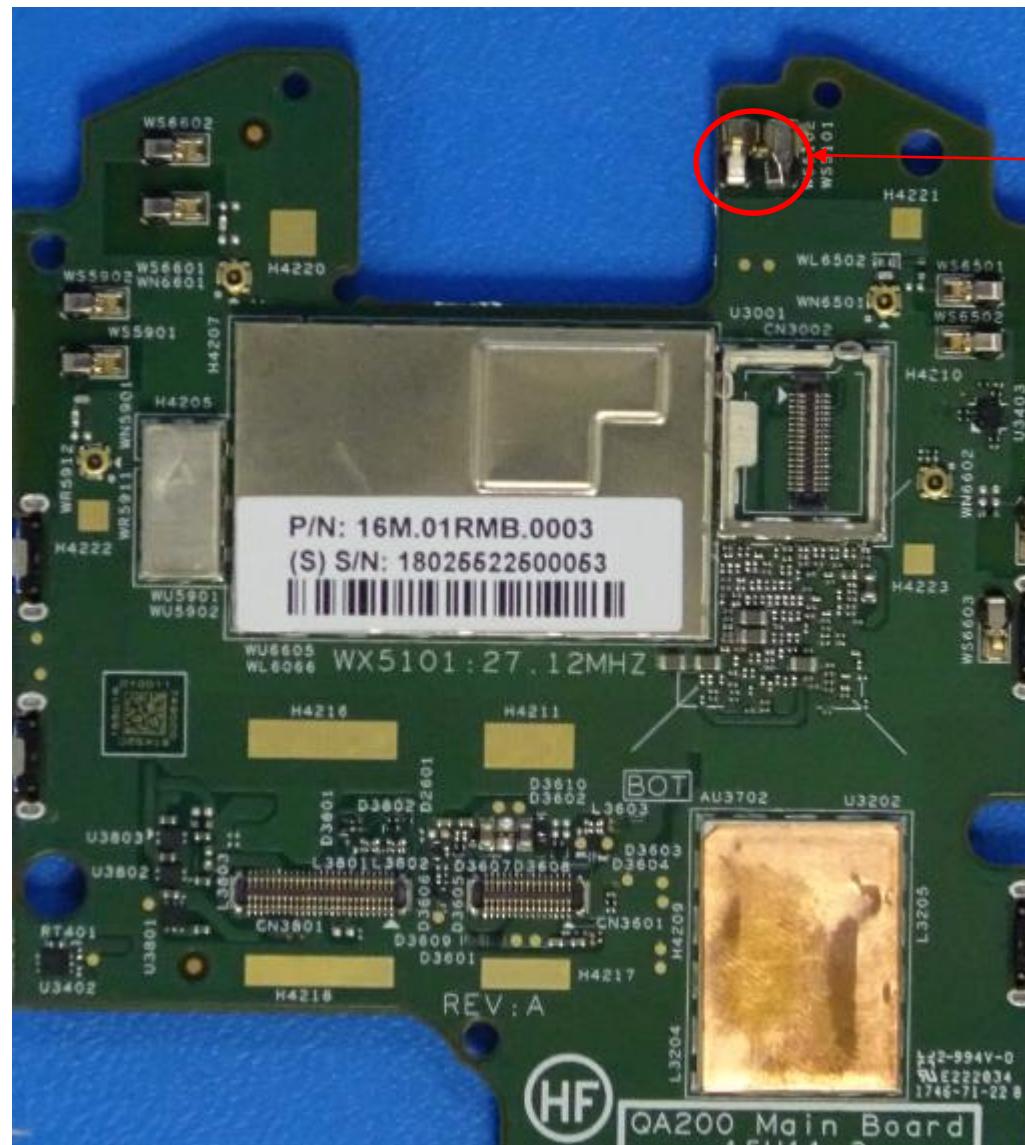
Scan Engine Flex Cable Removal

Step 13: With pick Gently unlatch connector lock and remove Scanner Flex form Scan Engine .



NFC Repair Action

If Zebra SMART / CTDI test fails:
NCF Test



Step 1: Check antenna pad on main board if they are damaged as show in fig then change the main board.

Step 2: If antenna pads are good then change the rubber boot .



NCF Contact pads

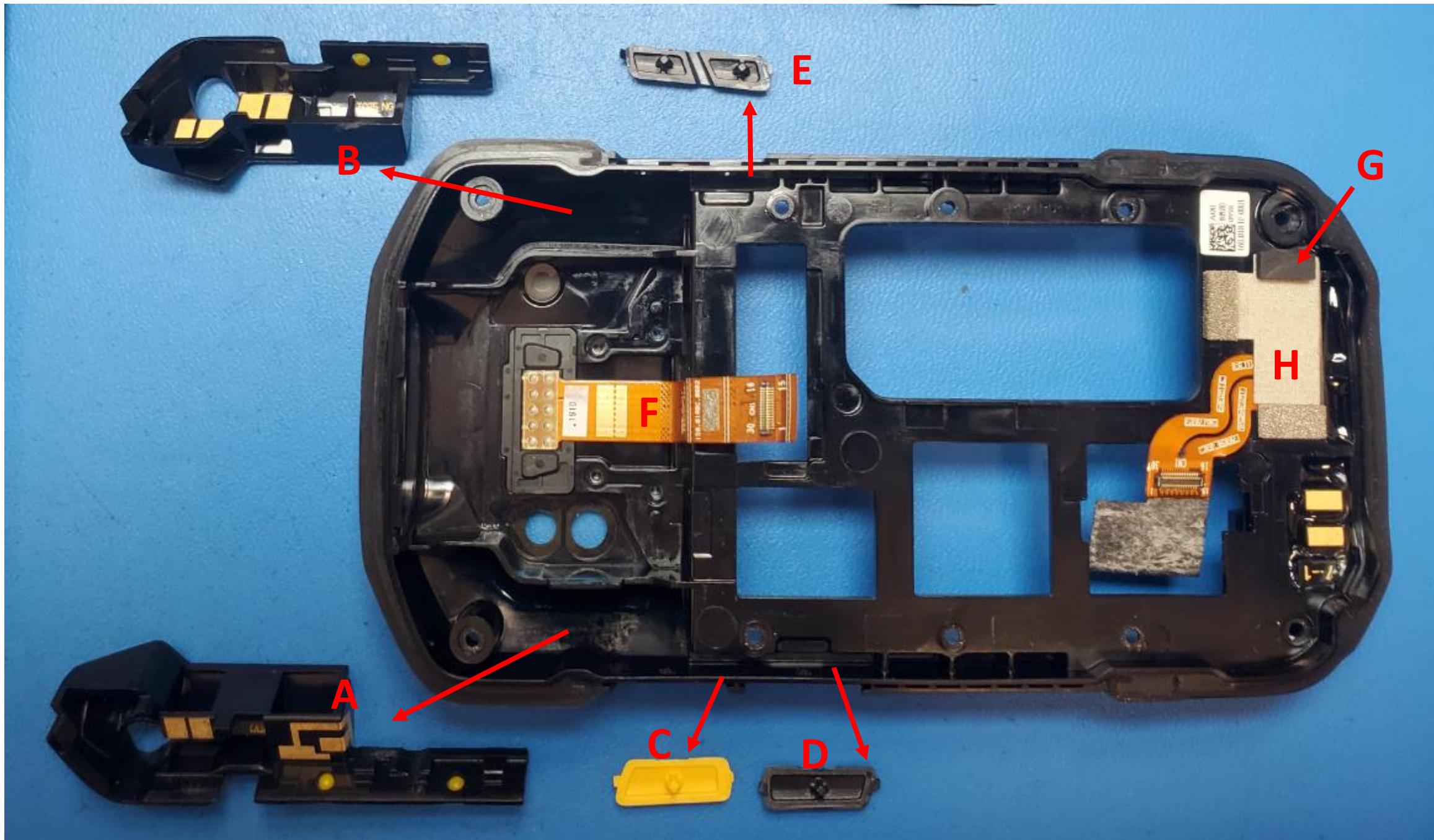
Step 3: If NFC test fails after replacing rubber boot then change the mother board and perform the test.

Disassembly Process

Back Housing Disassembly

Step 14: Back Housing Disassembly:

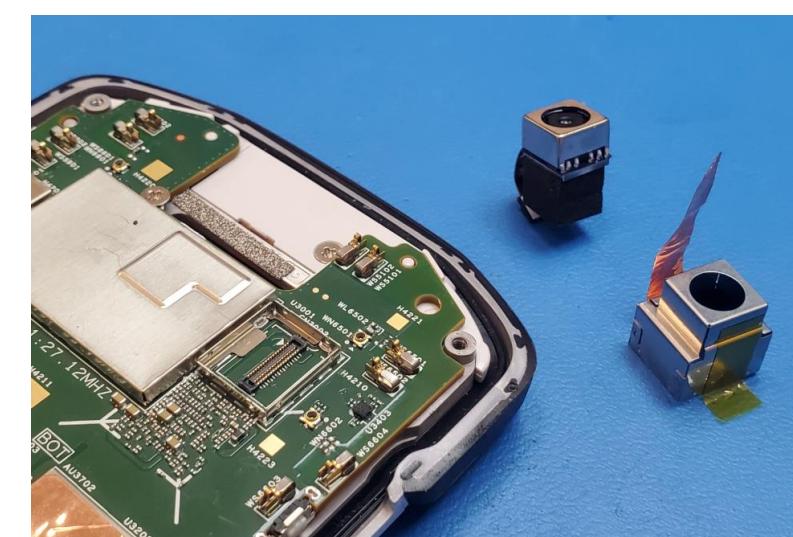
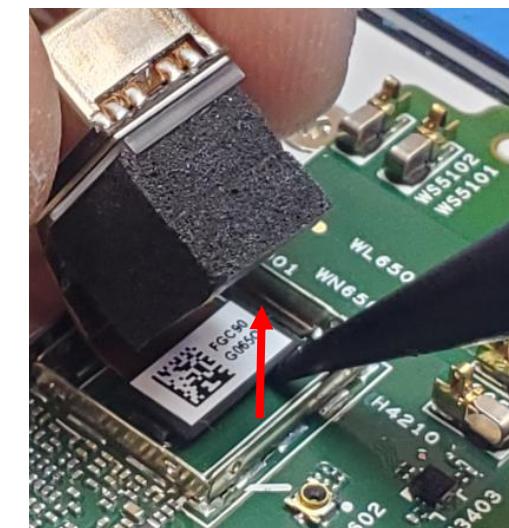
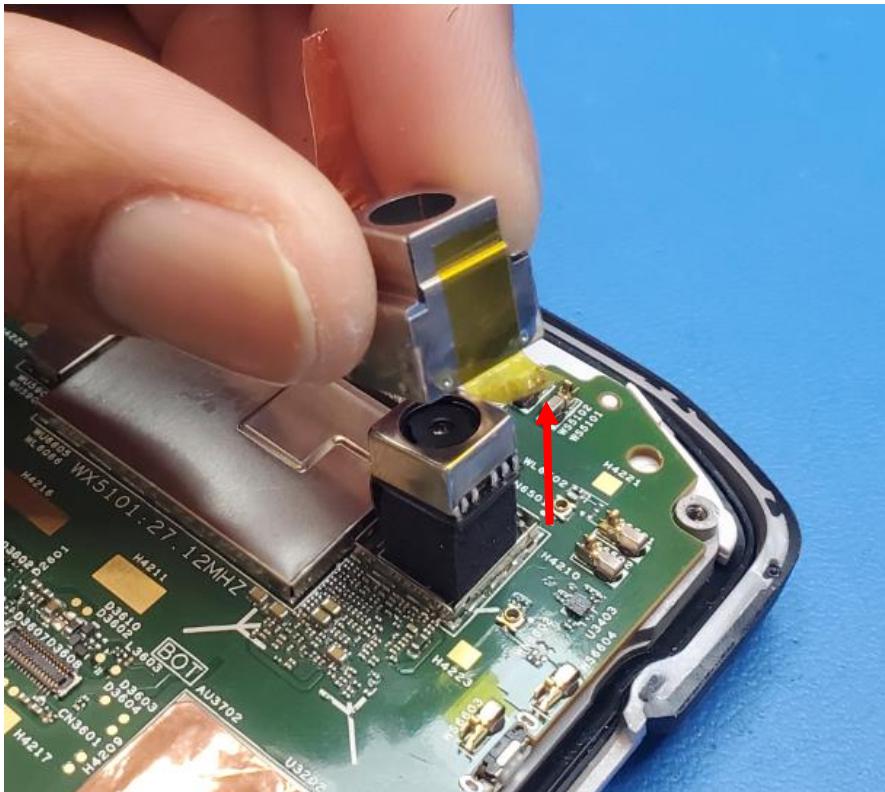
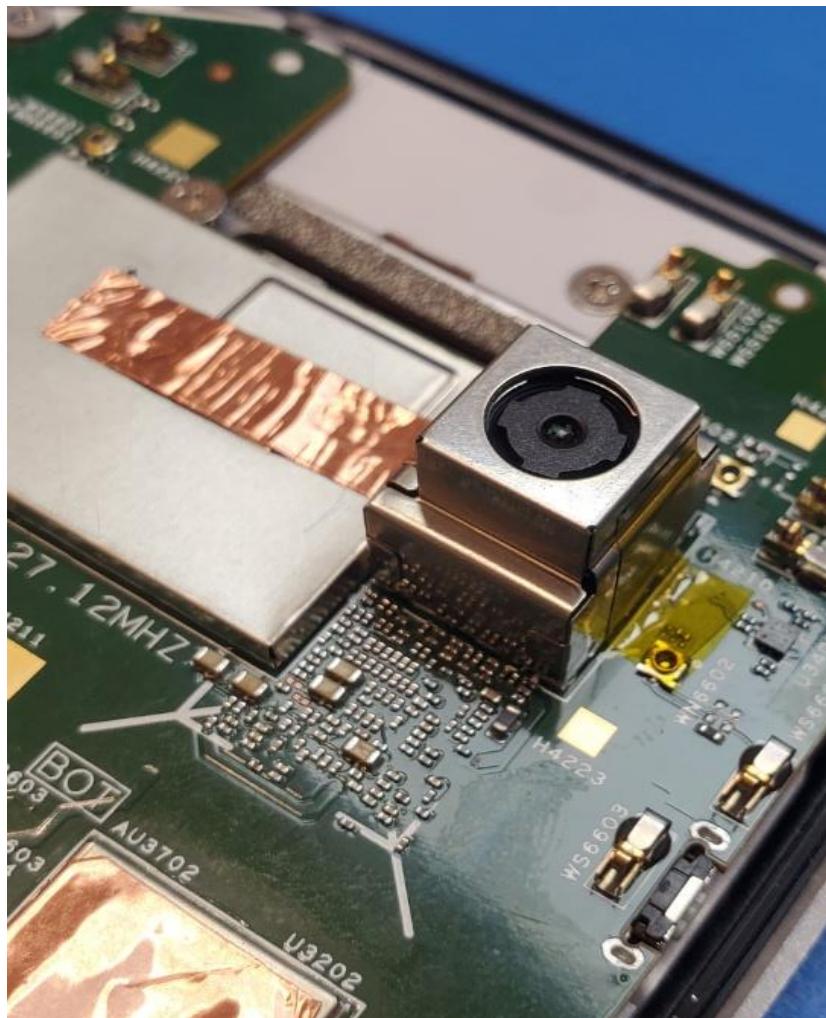
- (A) Remove QP200_LAN_EMPTY_DIV_CARRIER.
- (B) Remove QP200_WLAN_BT_ANTENNA.
- (C) Remove the Knob Side Trigger.
- (D) Remove the Knob Side Key Button.
- (E) Remove the Knob Side Key Volume.
- (F) Push FPC IO CON QP200 in from the back side and remove.
- (G) Remove SPONGE PAD TP CONN QP200.
- (H) Remove FPC BATT CON QP200.



Disassembly Process

Camera

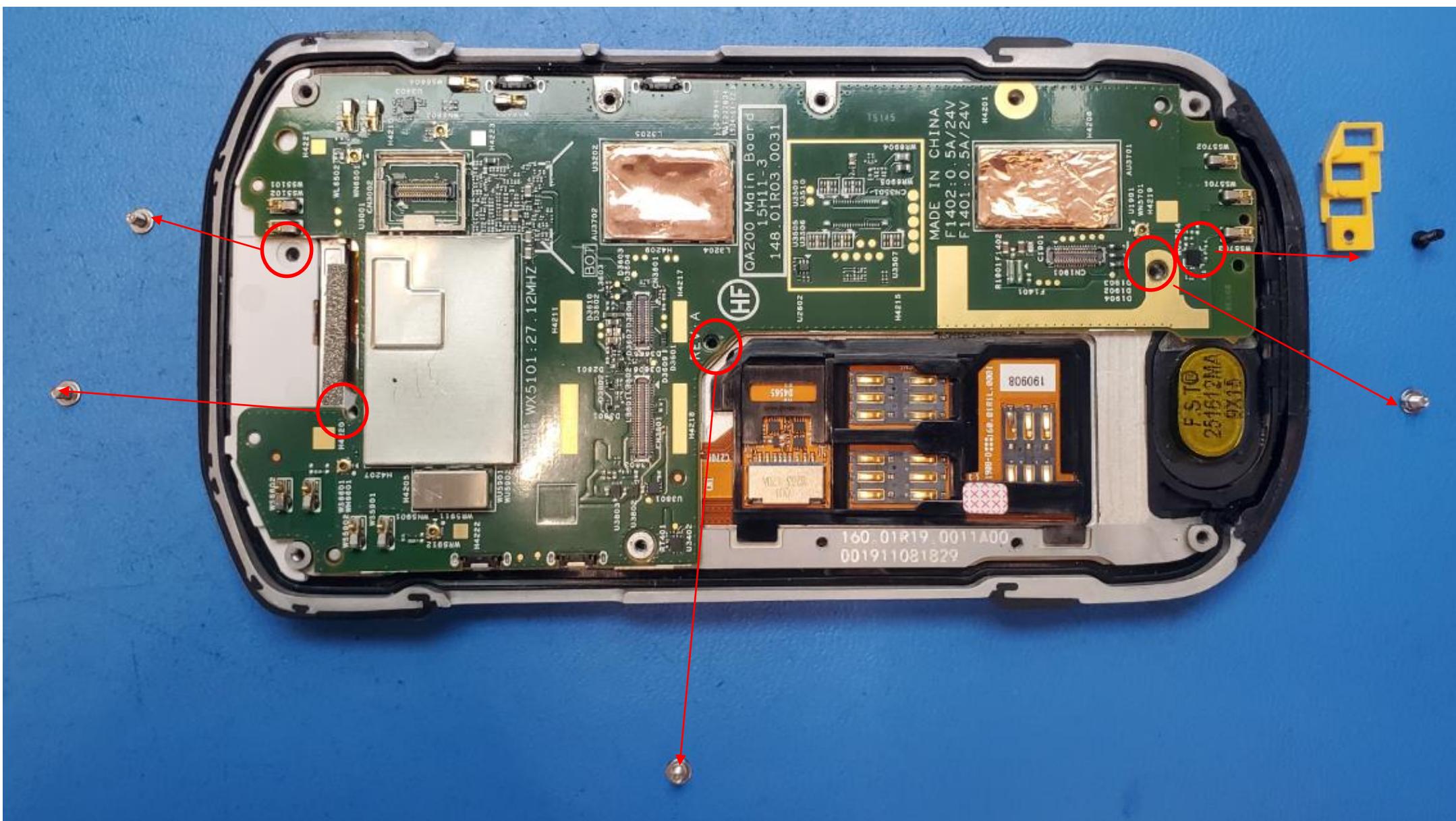
Step 15: Carefully remove tape from 3 side of the rear camera shield & disconnect camera flex.



Disassembly Process

Main Board

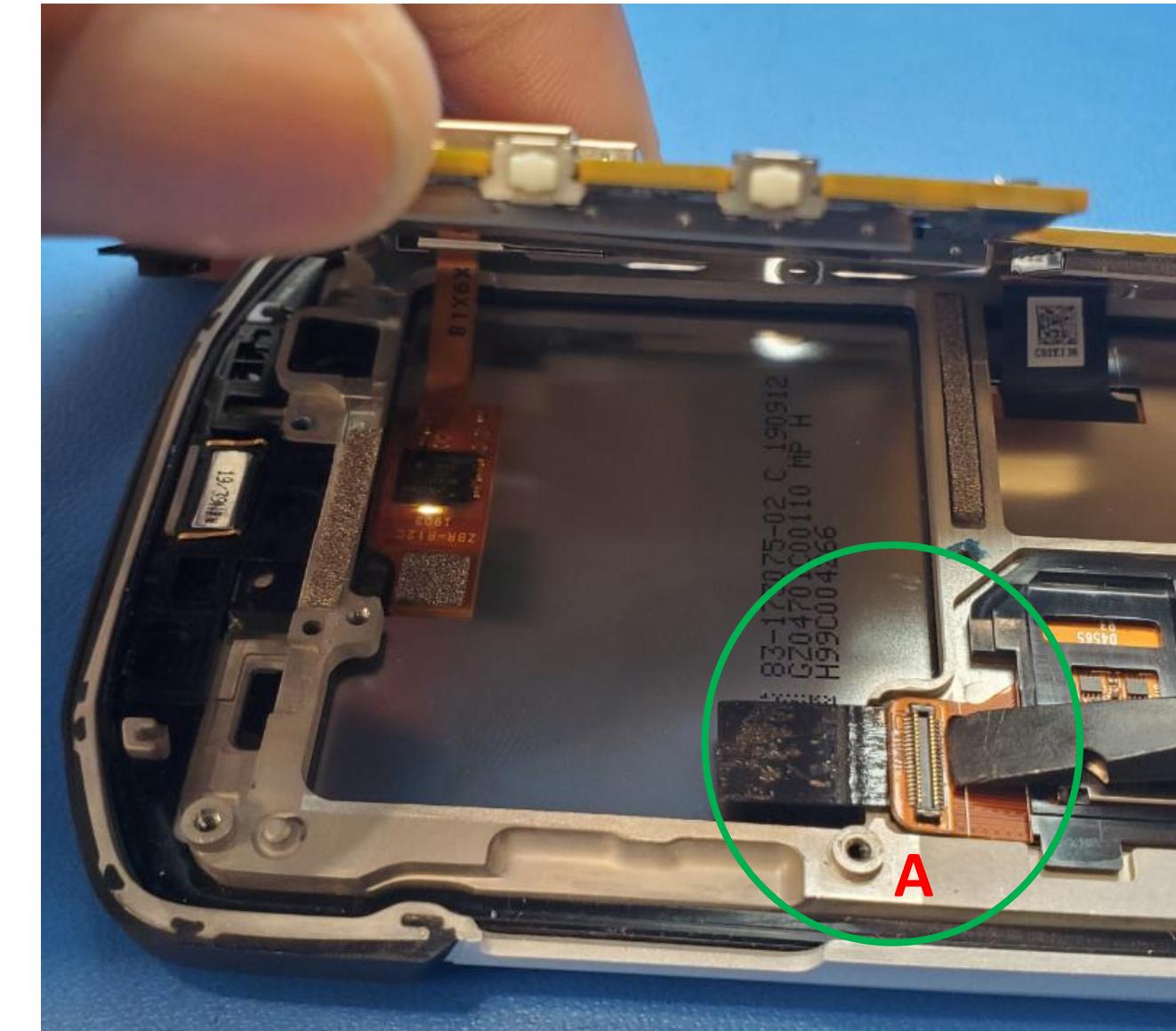
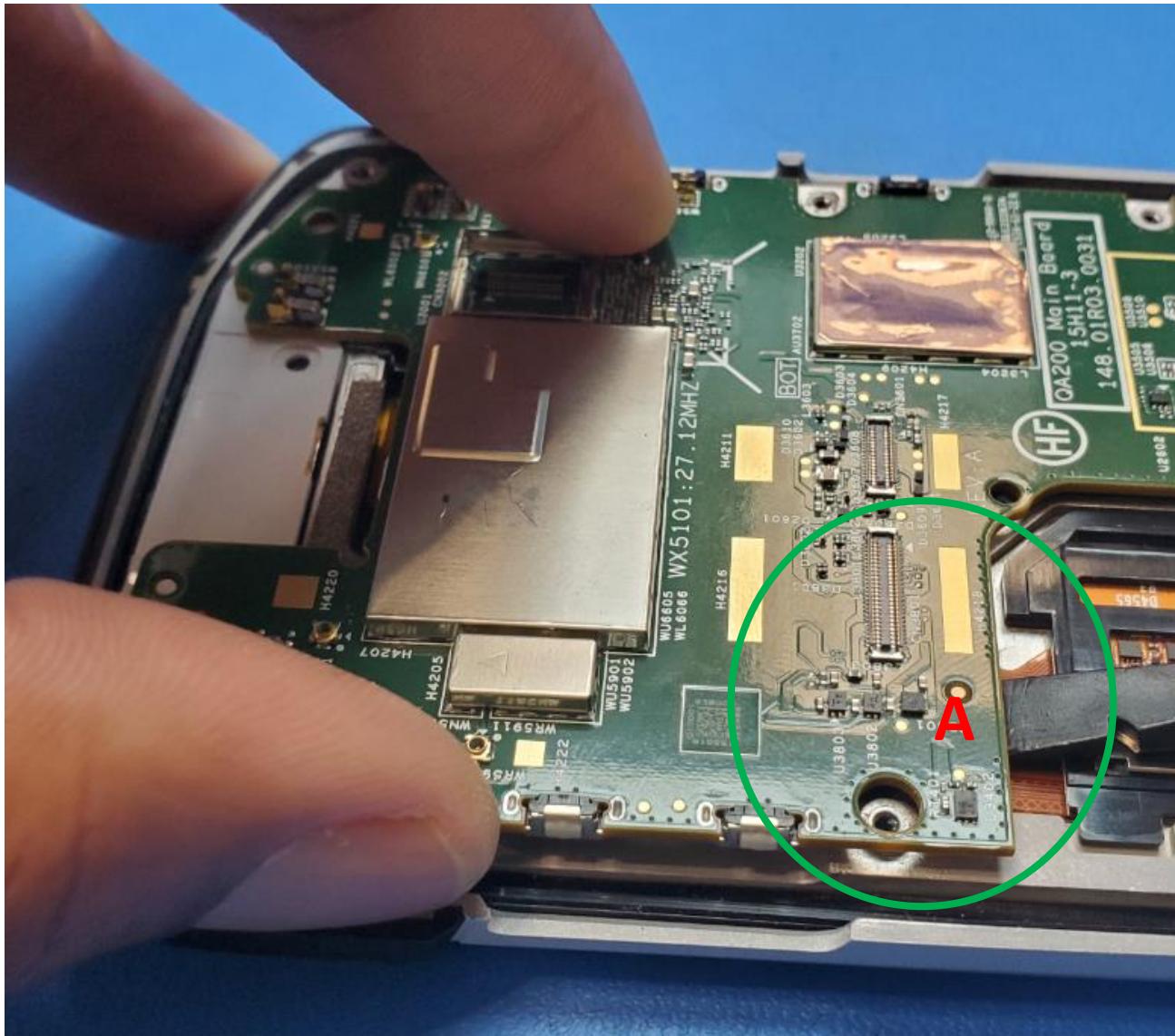
Step 16: Remove (4) screw and antenna Protector form main board.



Disassembly Process

Main Board Removal

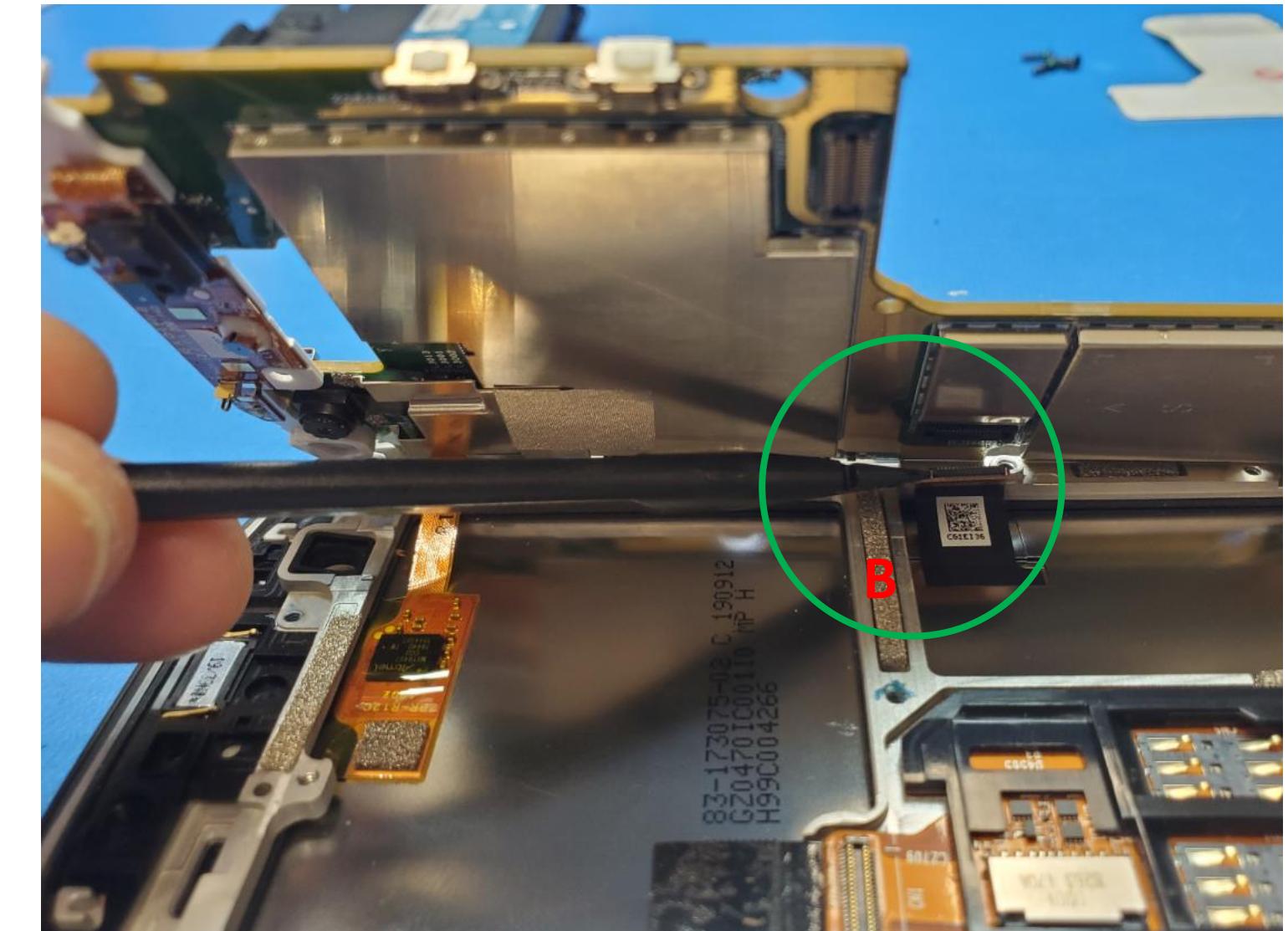
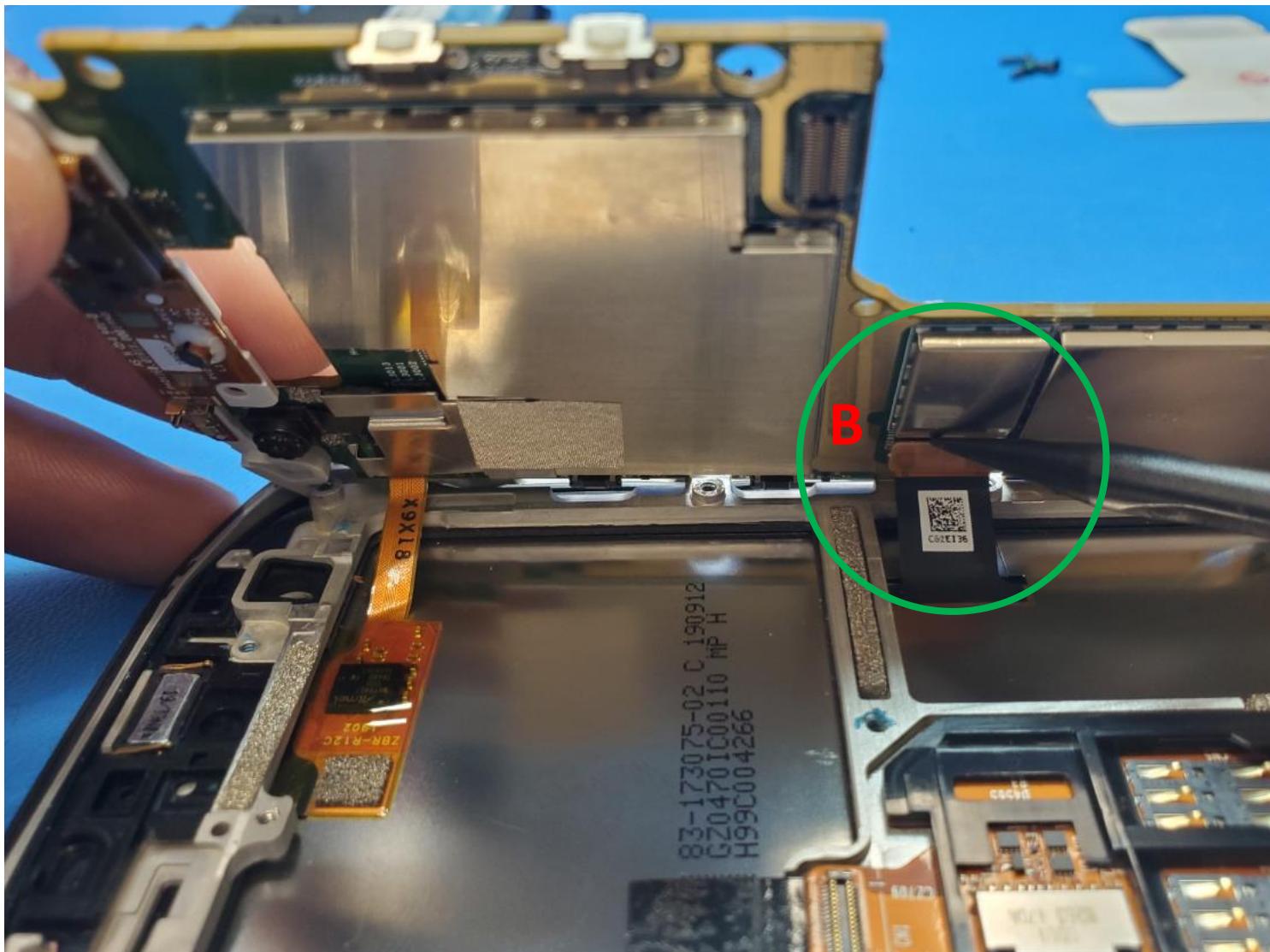
Step 17: Disconnect (A) SD card flex connector from SD connector and kapton tape underneath mother board lift right side up.



Disassembly Process

Main Board Removal

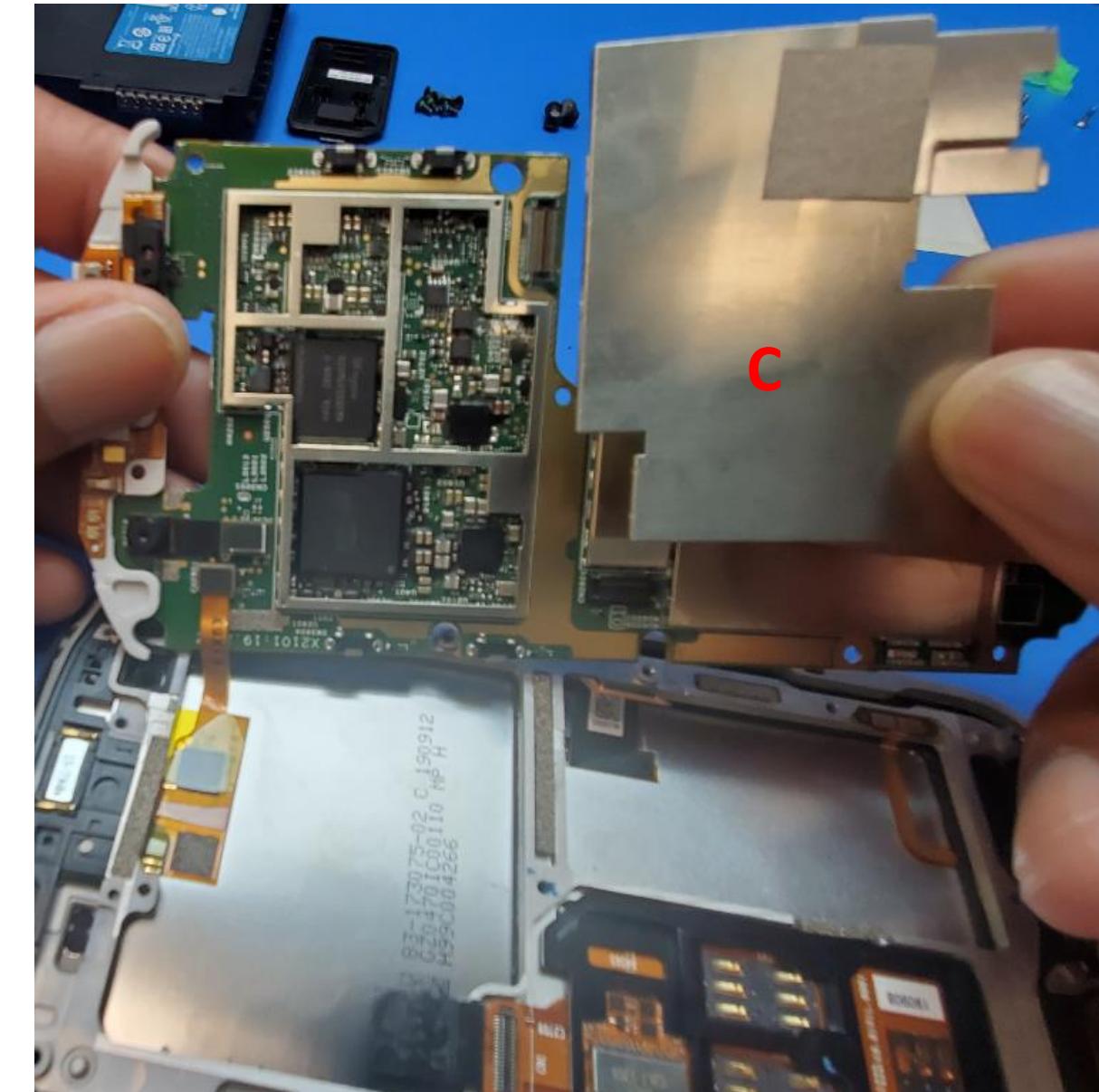
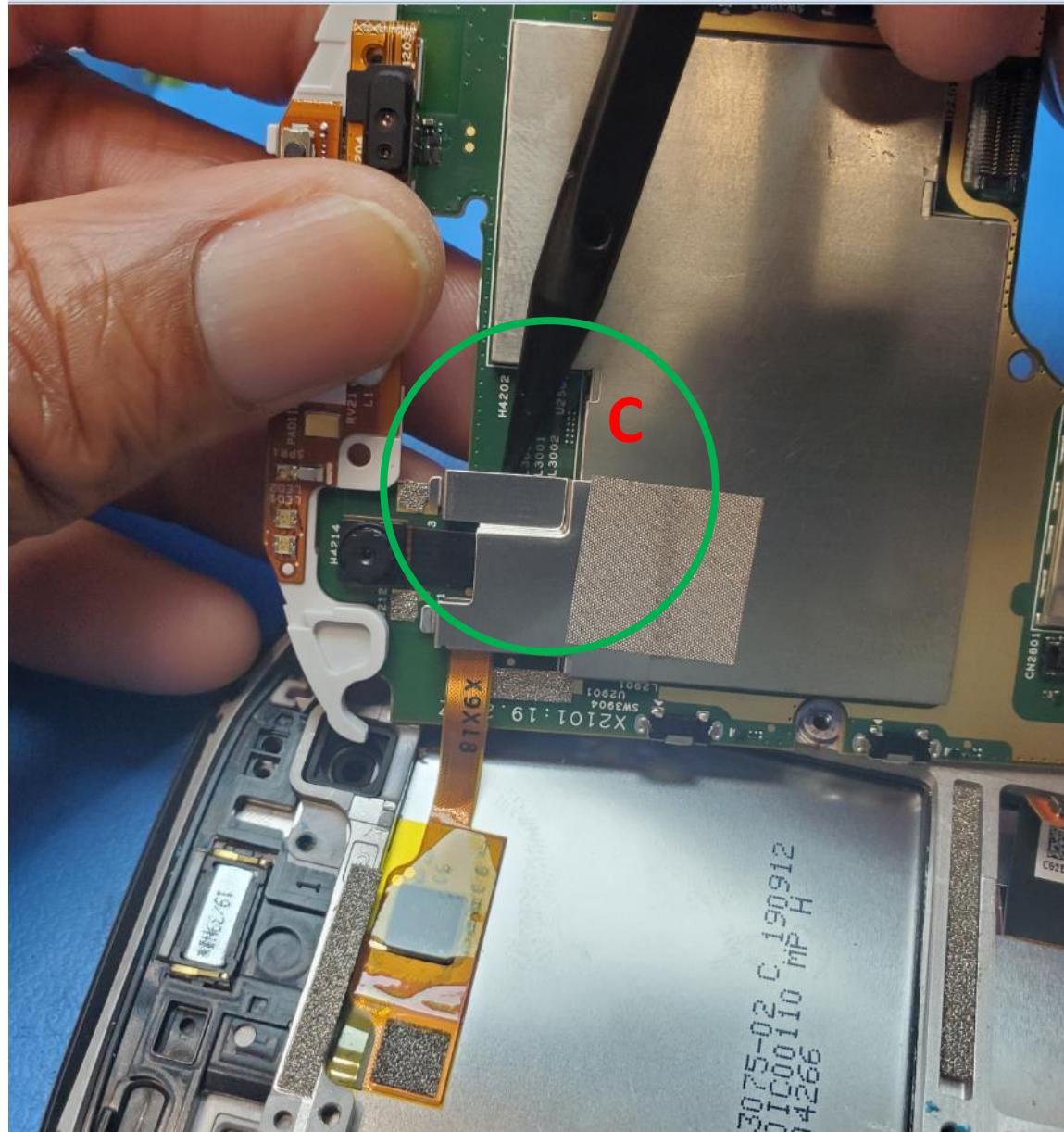
Step 18: Disconnect (B) Display flex form LCM connector which is underneath mother board left side.



Disassembly Process

Main Board

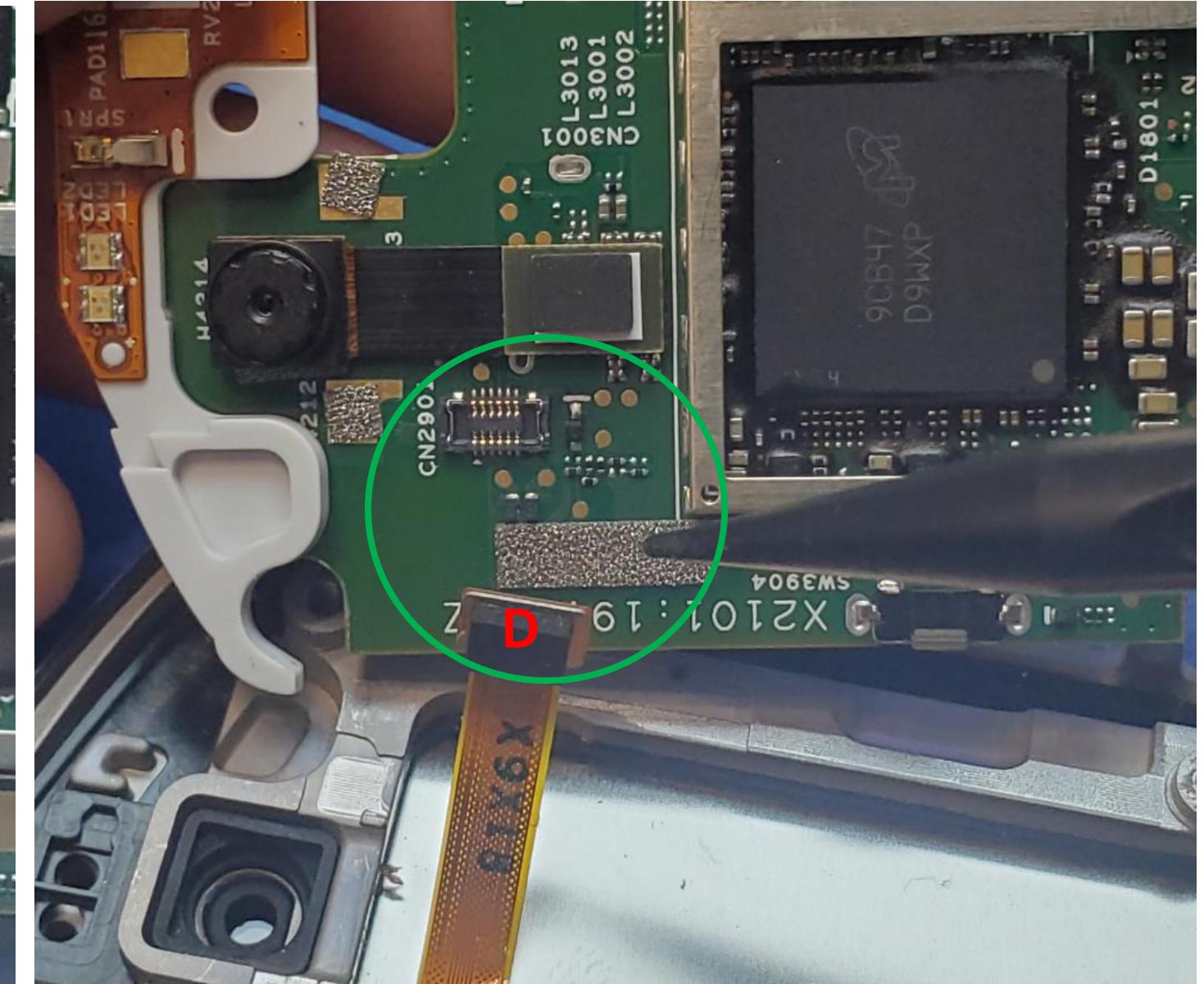
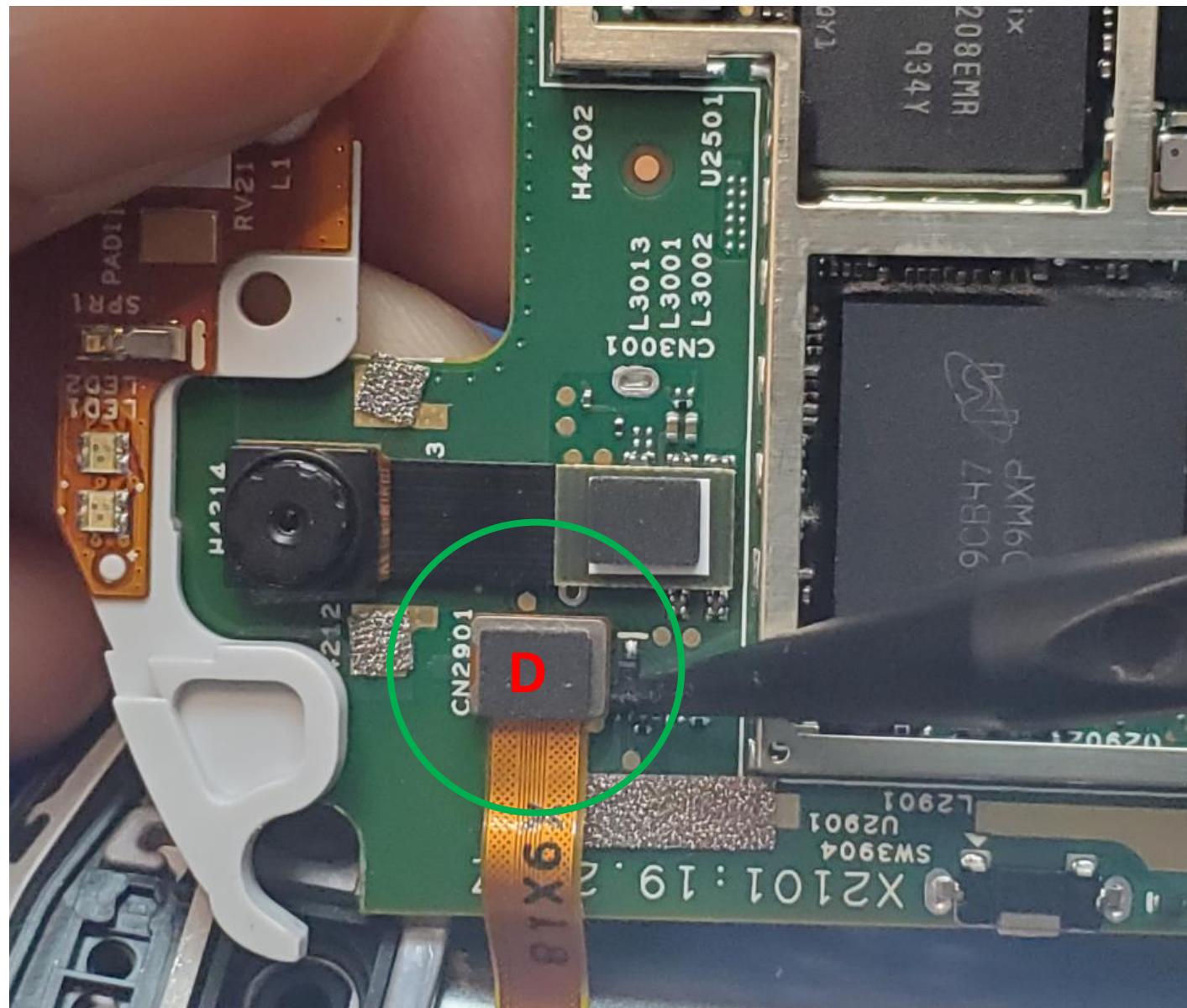
Step 19: Remove the (C) board shield to get access to the touch panel flex.



Disassembly Process

Main Board Removal

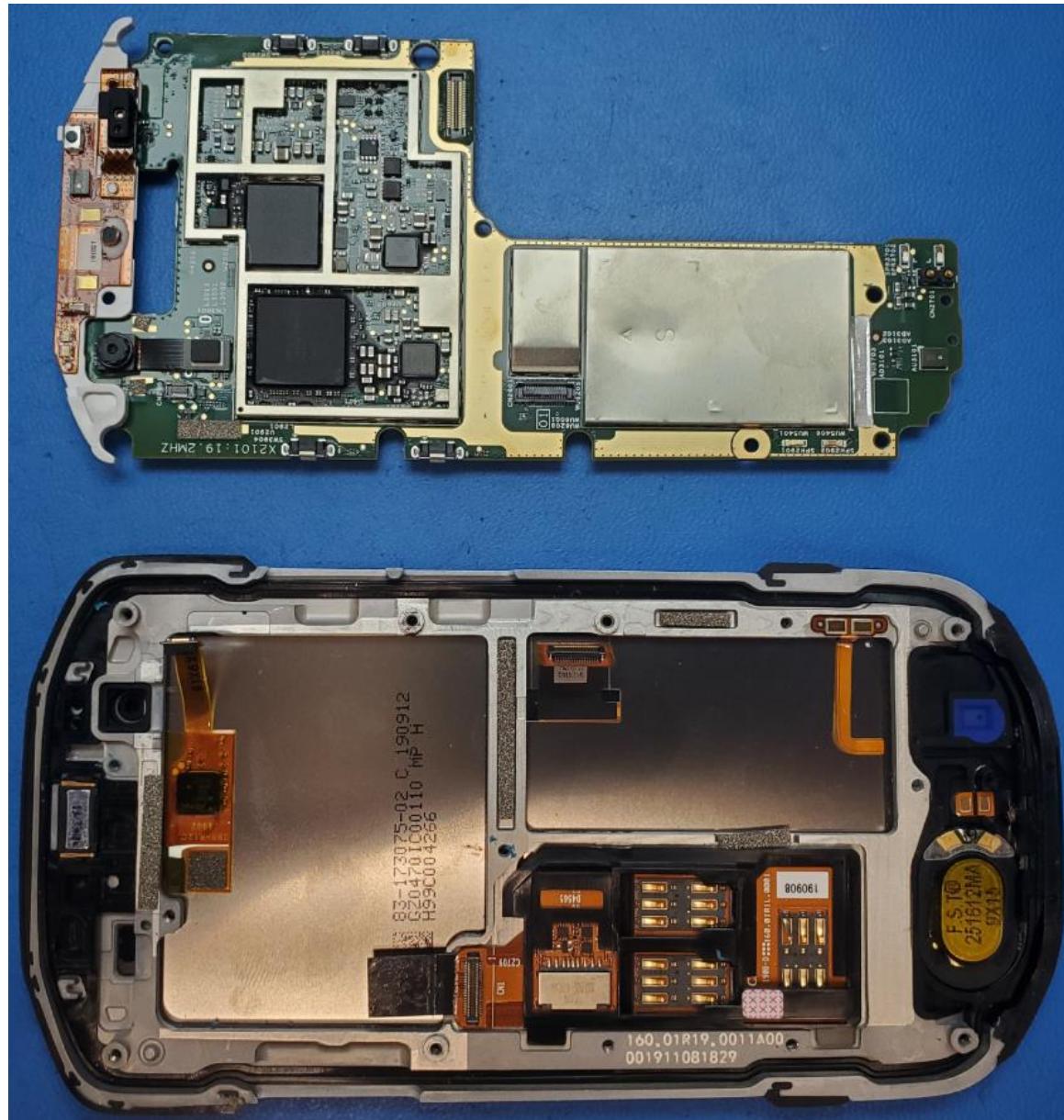
Step 20: Disconnect (D) Touch panel flex form the connector.



Disassembly Process

Main Board Removal

Step 21: Remove mother board .

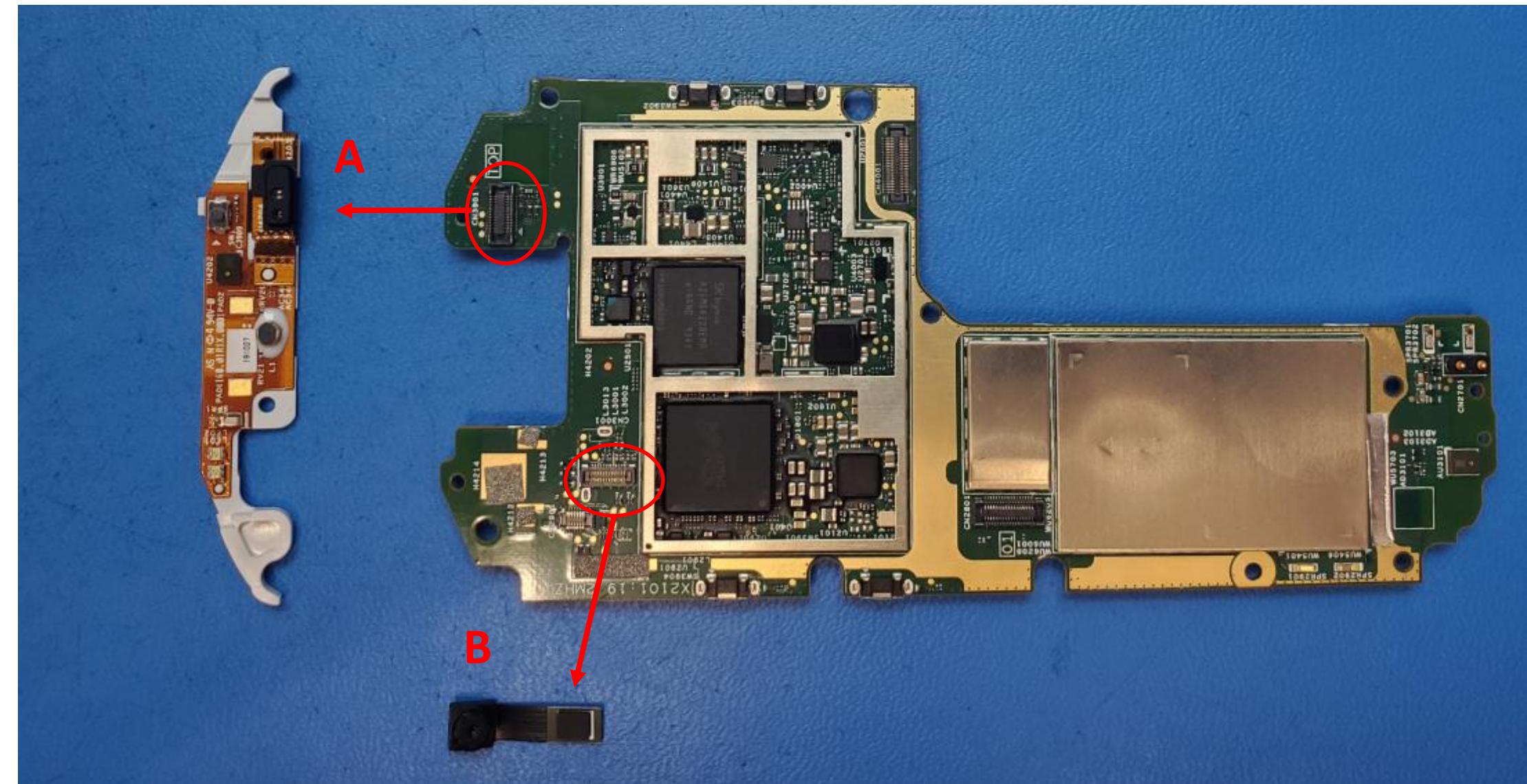


Disassembly Process

Receiver / Proximity and Front Camera

Step 22: Remove Receiver/Proximity Flex:

- Disconnect the receiver board .
- Disconnect the Front Camera.



Disassembly Process

Display Gasket and SIM Card Flex Plastic Guard

Caution: Use Plastic Tool to Remove SIM card flex.

Step 23: Remove display gasket (A), SIM card flex cable and plastic guard (B) form front display housing.

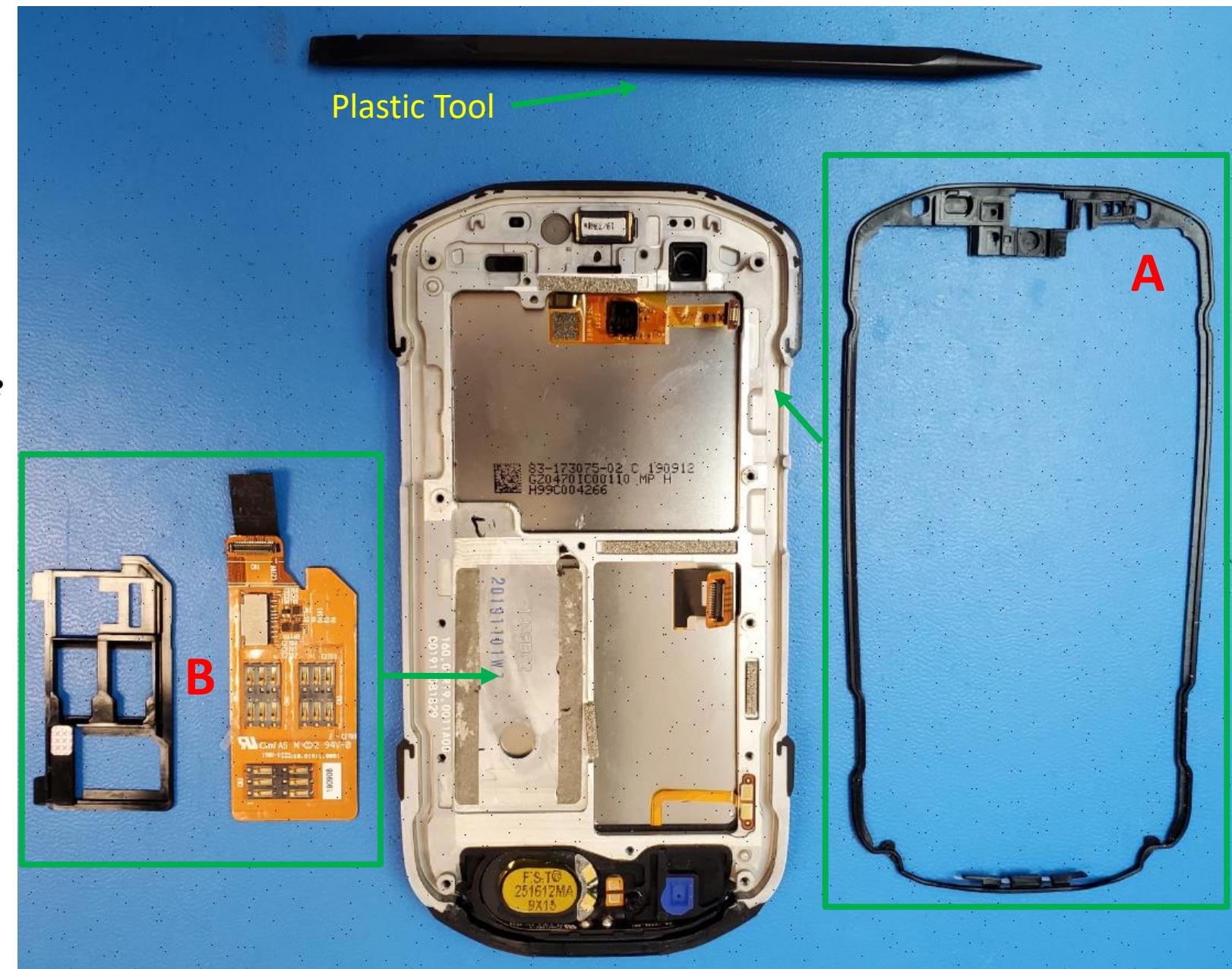
Note: If SMART / CTDI test fails SD card test then first replace SD flex.

Caution:

Note: When you order new SD/SIM card flex please check The product configuration number.

SIM/SAM/Nano slots TC7XXX-?XXXXXX

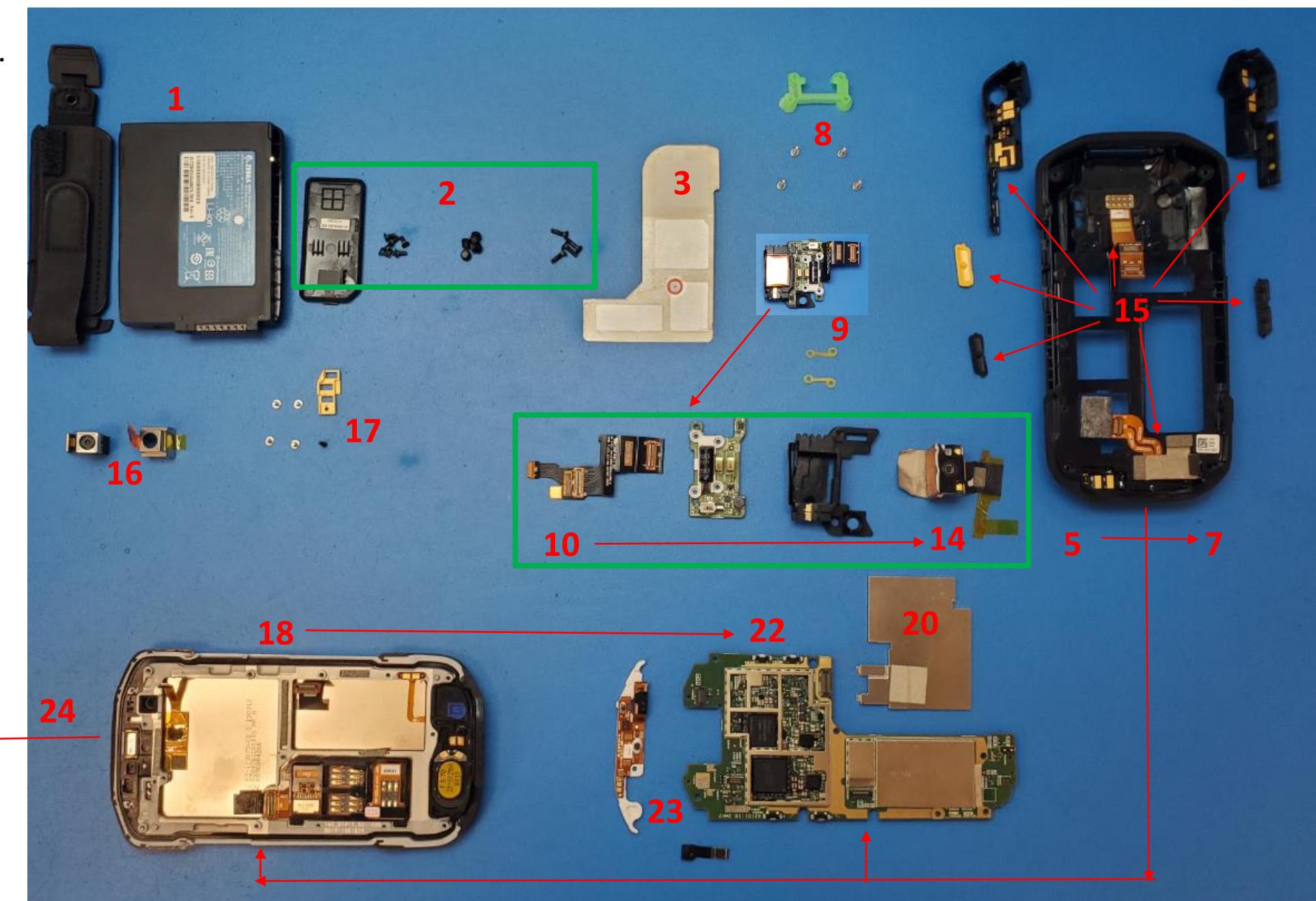
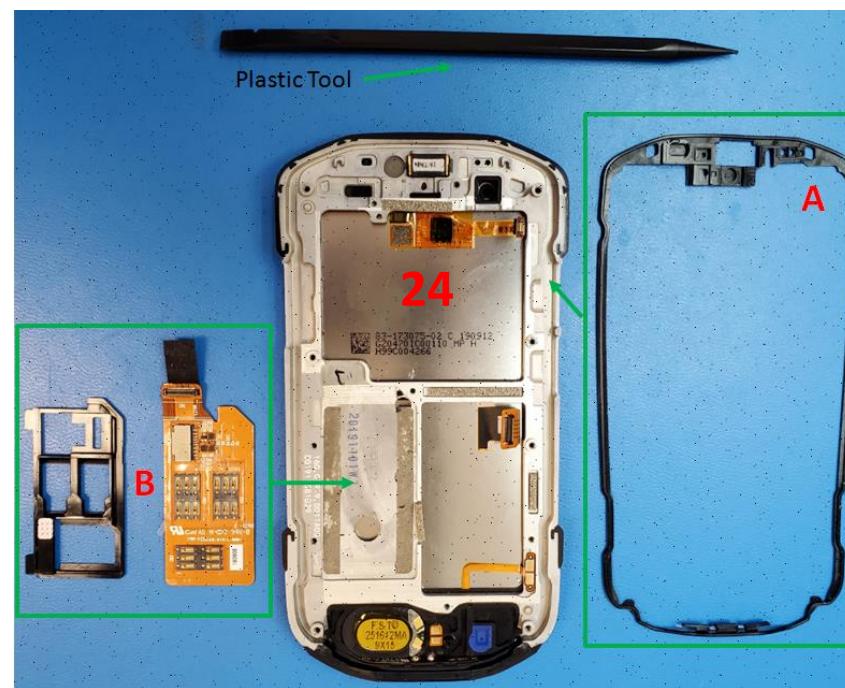
0 =	none (LAN BASE SKU only)
2 =	2 Nano SIM/ 1 SAM
4 =	3 Nano SIM (QC8x92)
5 =	2 Nano SIM (no SAM)
6 =	1 SAM/ No SIM (LAN ONLY QC 8056)



Disassembly Process

All Steps For Disassembly

Step 24: All Steps for Disassembly Process for TC75 .



SIM Card Repair Document Change Note DCN00243

Instruction to clean and apply conductive adhesive parts

1. Remove glue residue from Front HSG substrate and SIM FLEX ASSY using straight edge tool



2. Thoroughly clean both surfaces with isopropyl alcohol before applying the conductive adhesive:



SIM Card Repair Document Change Note DCN00243

Instruction to clean and apply conductive adhesive parts

3. Remove release paper form back side of conductive adhesive and apply to the front HSG substrate as shown below:



4. Remove release paper from front side of conductive adhesive part as shown below:



5. Carefully place SIM Flex Assy onto the conductive adhesive strips, press and hold for at least 5 seconds. Then can reassemble the PCBA:

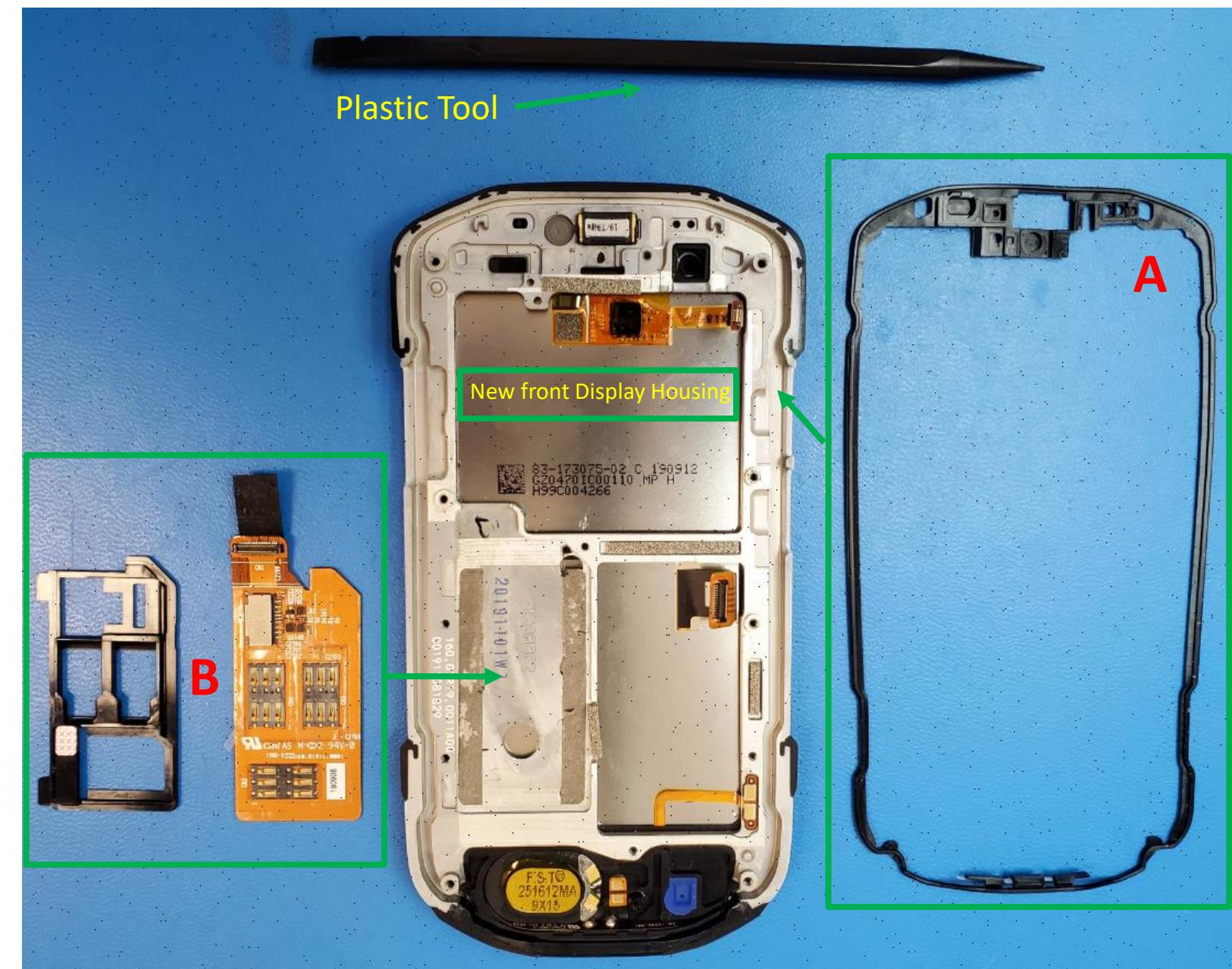


Assembly Process

Install Display Gasket and SIM card flex Plastic Guard

Note: Use Plastic Tool to Install

Step 25: Install Display Gasket (A) and SIM Card flex cable and plastic guard (B) to Display.

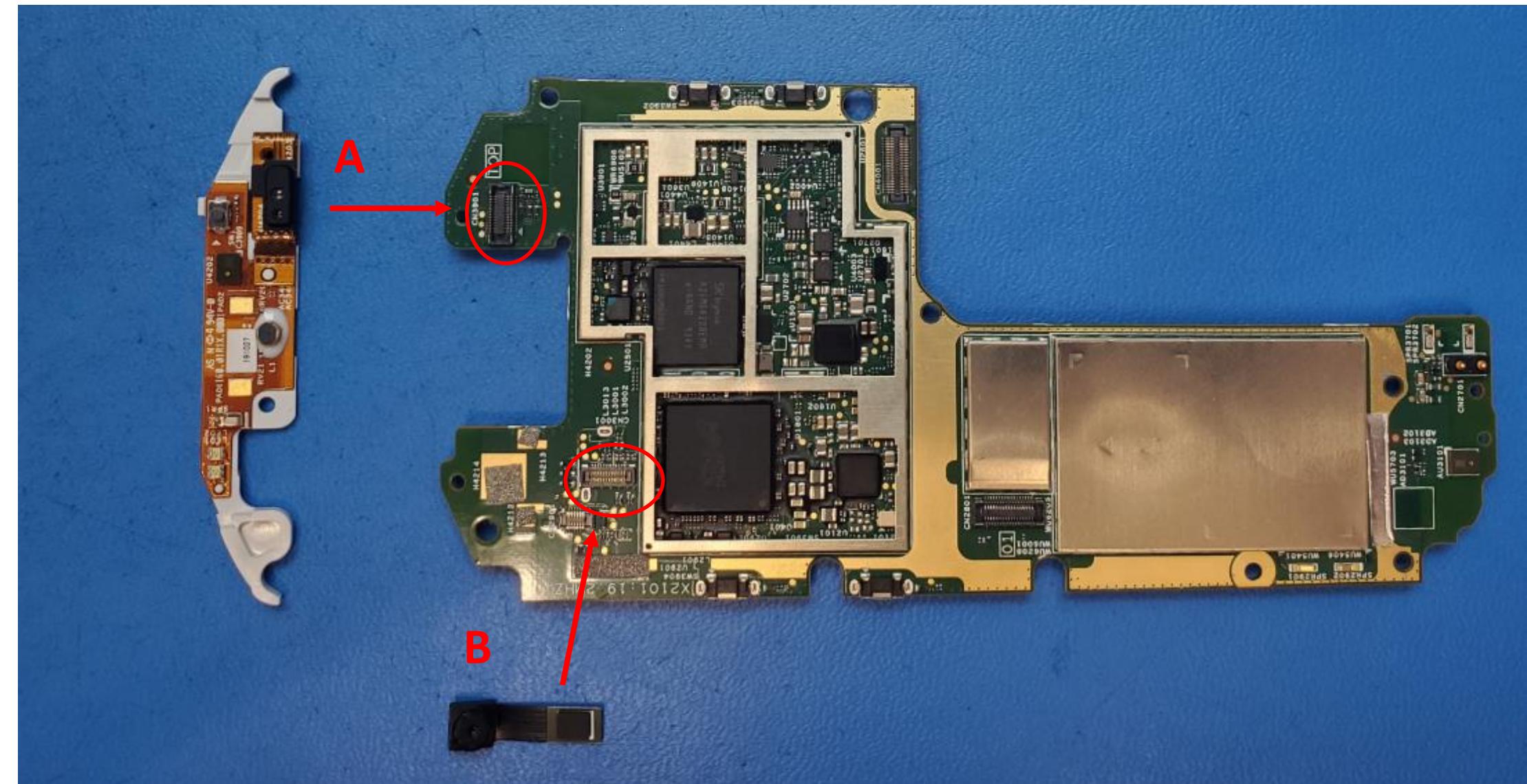


Assembly Process

Install Receiver / Front Camera

Step 26: Install Receiver & Front Camera :

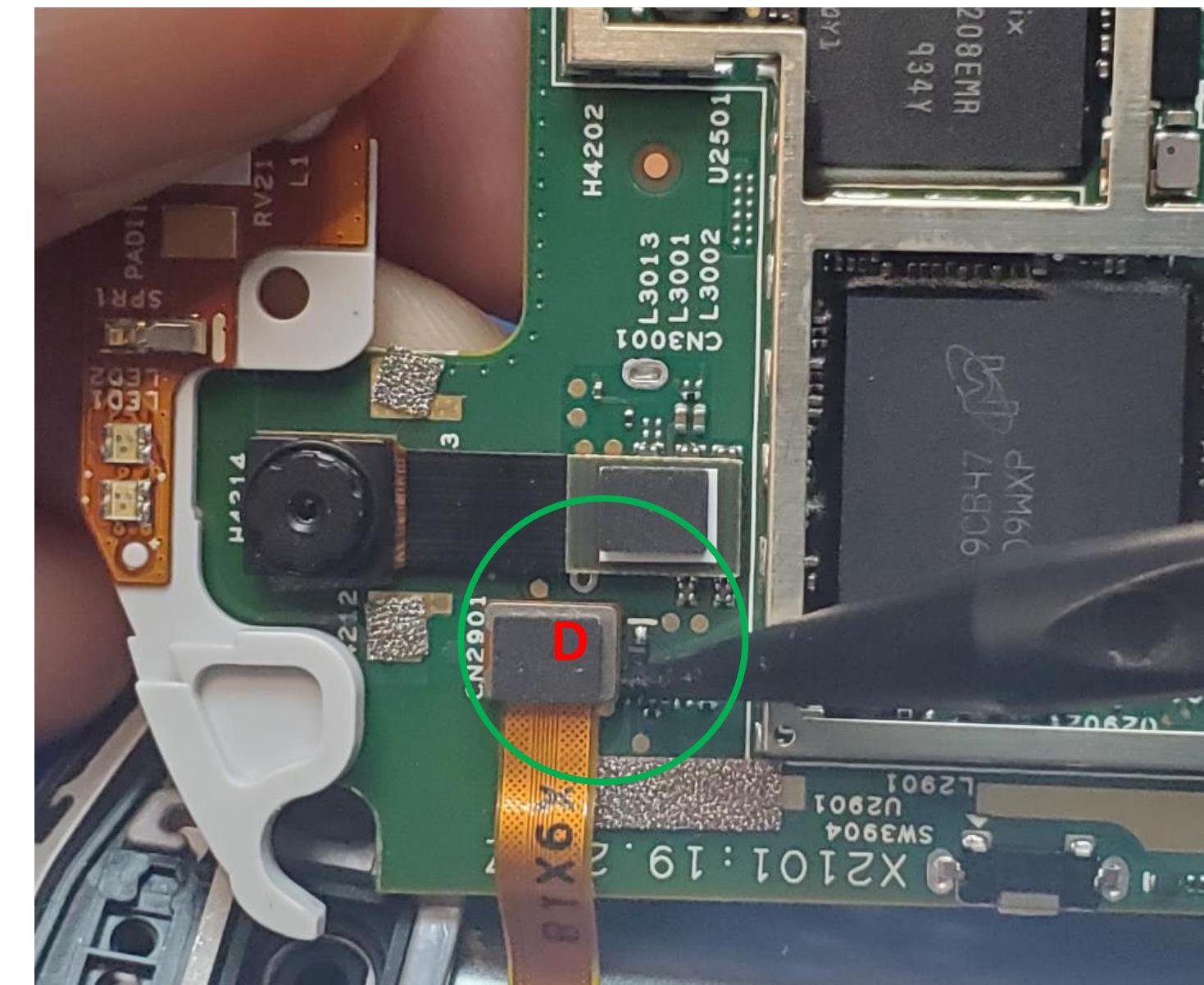
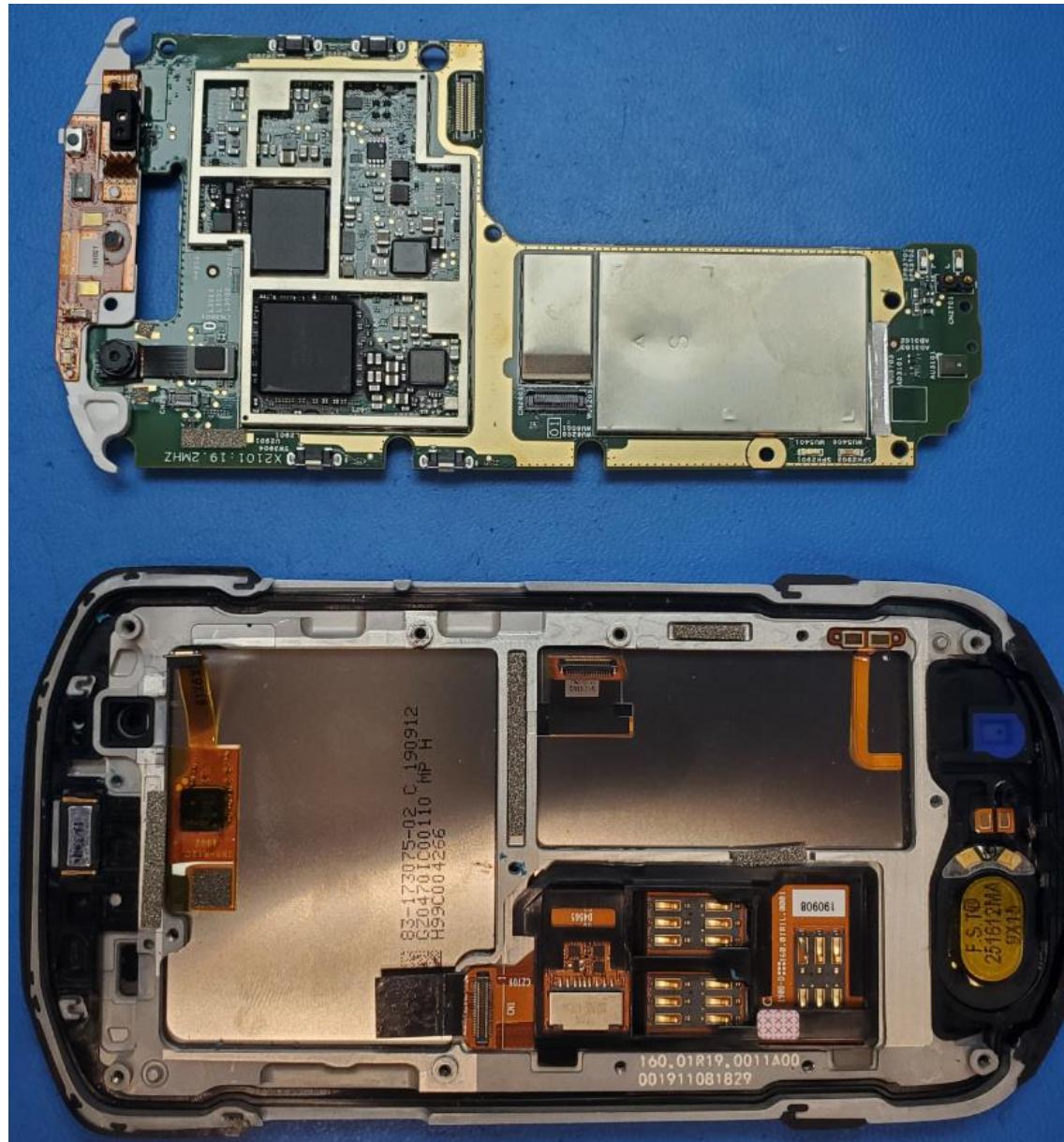
- Install the receiver board back to MB .
- Install the front camera on MB.



Assembly Process

Main Board to Front Display Housing

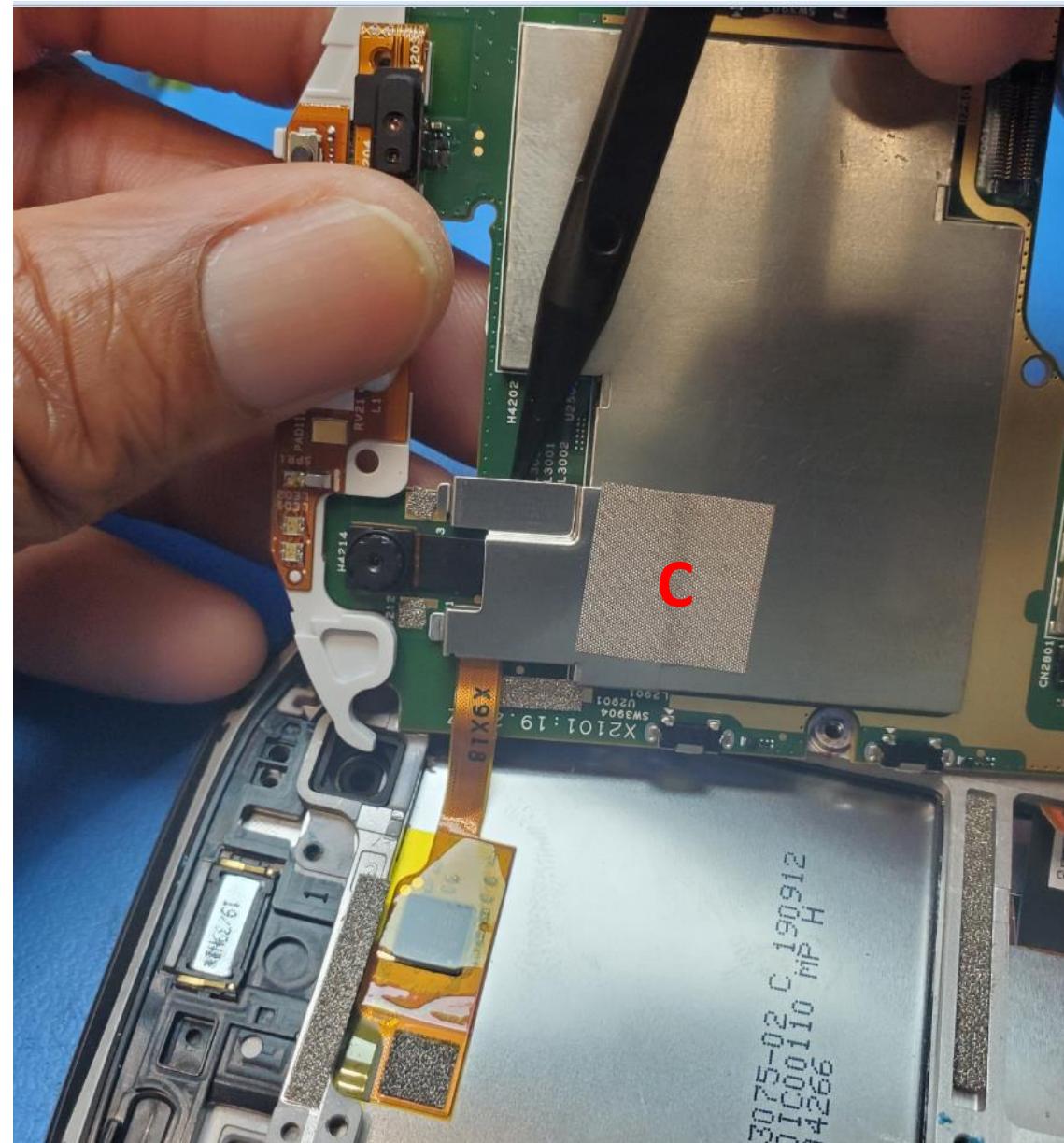
Step 27: Reconnect Mother Board back to front display housing by connecting (D) Touch Panel flex back to mother board.



Assembly Process

Main Board to Front Display Housing

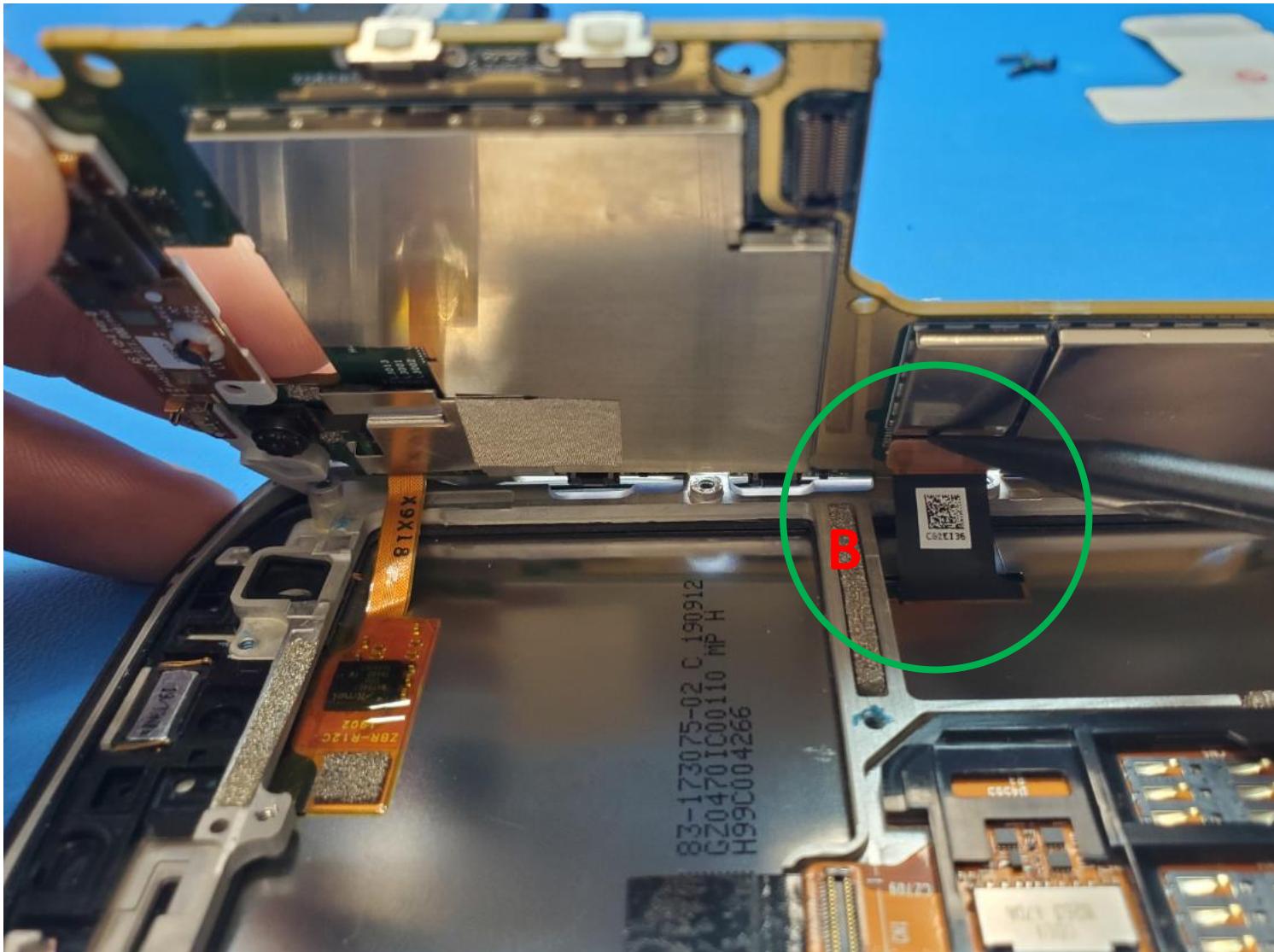
Step 28: Install the shield (C) back on to the mother board.



Assembly Process

Main Board to Front Display Housing

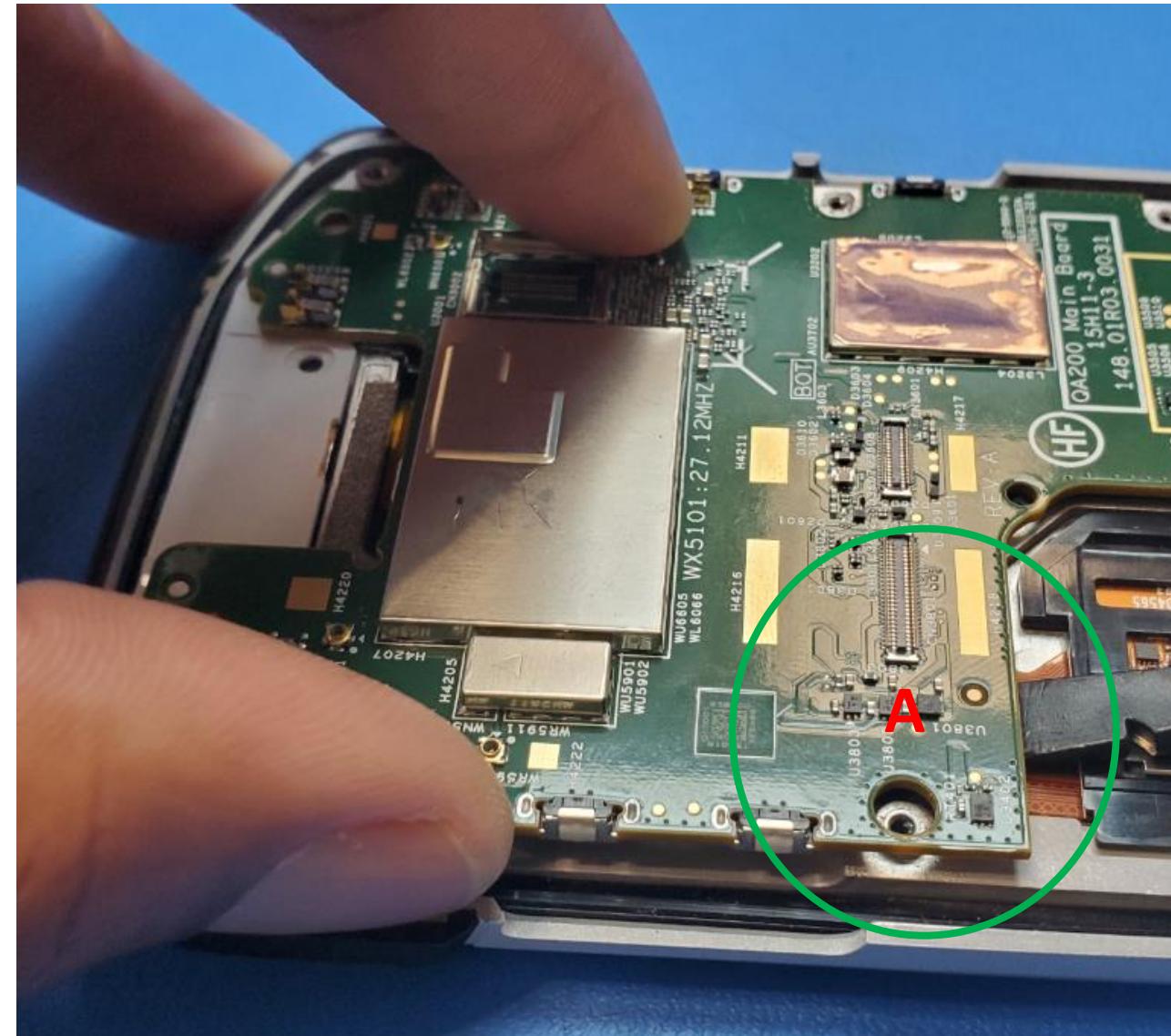
Step 29: Reconnect (B) LCM flex connector back to LCM connector.



Assembly Process

Main Board to Front Display Housing

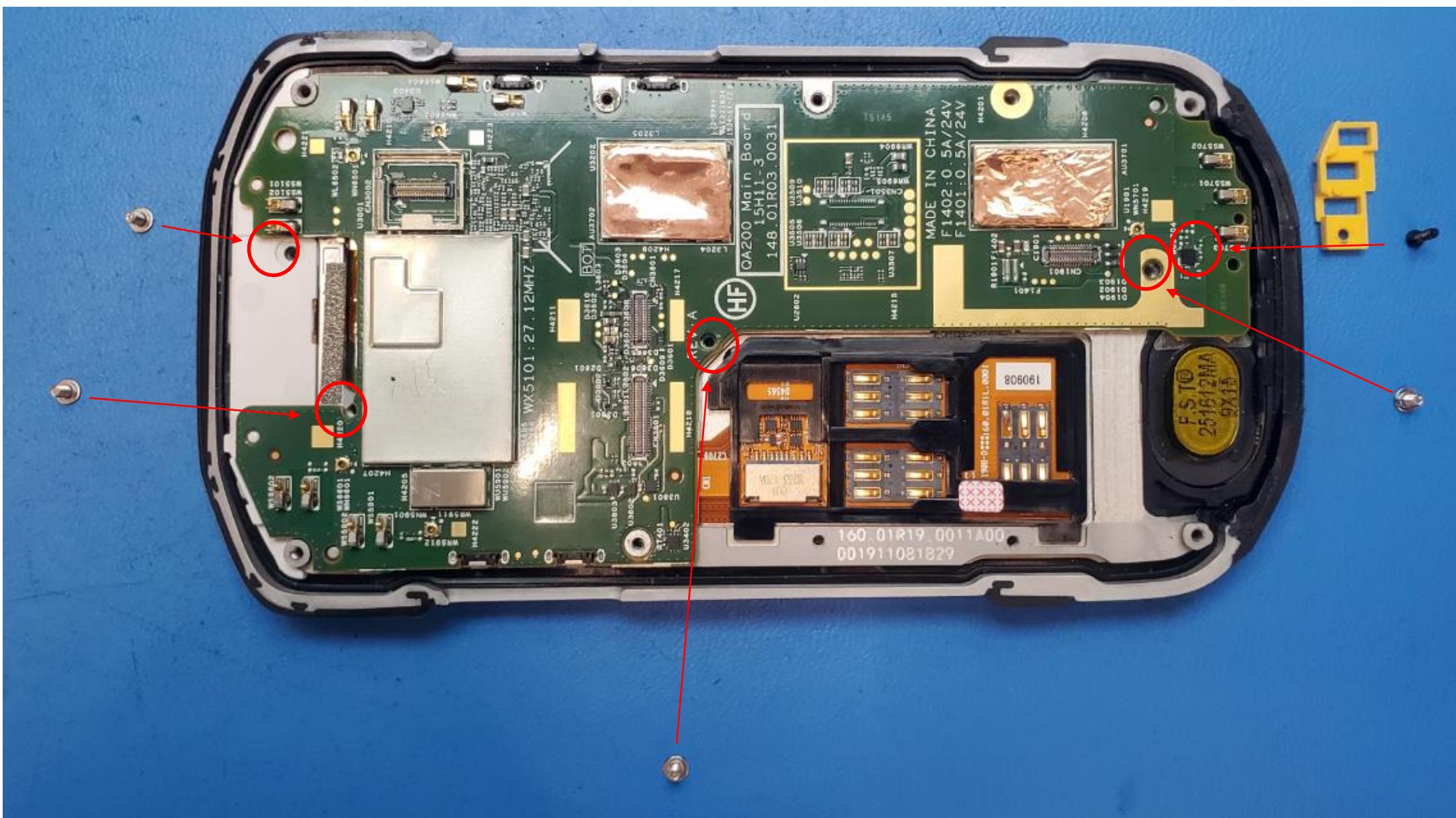
Step 30: Reconnect (A) SD card flex back to SD connector and kapton tape.



Assembly Process

Main Board to Front Display Housing

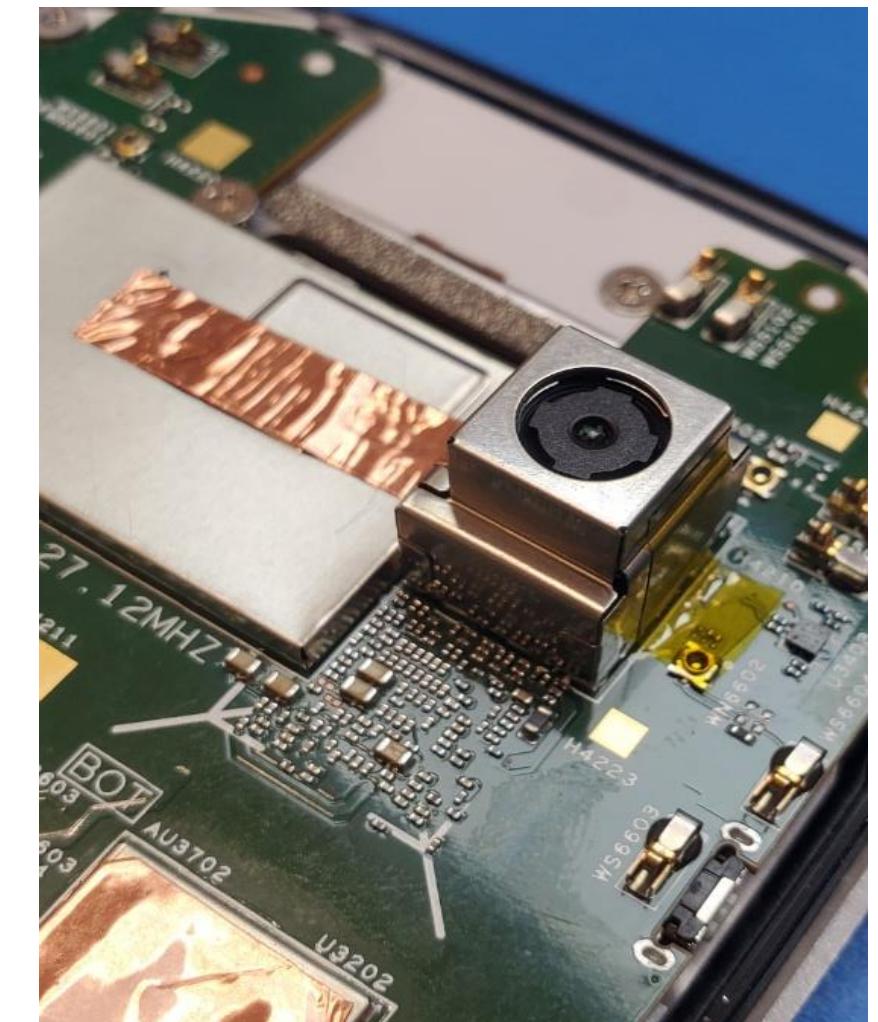
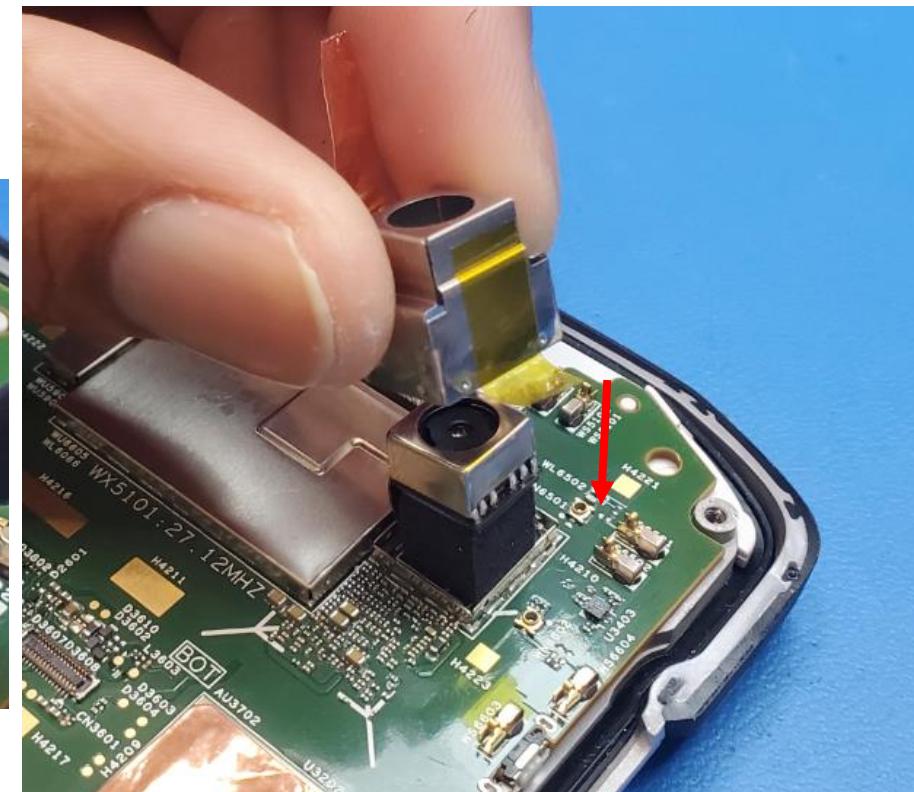
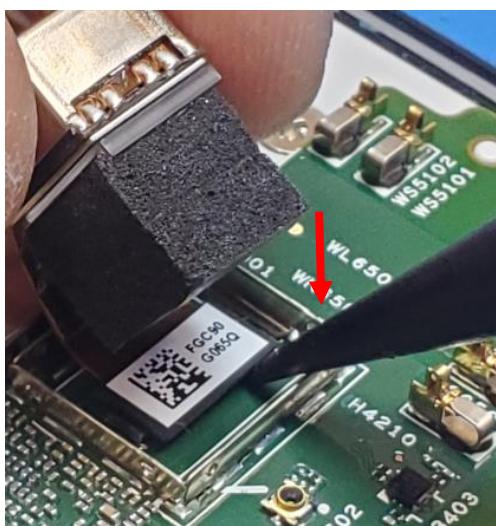
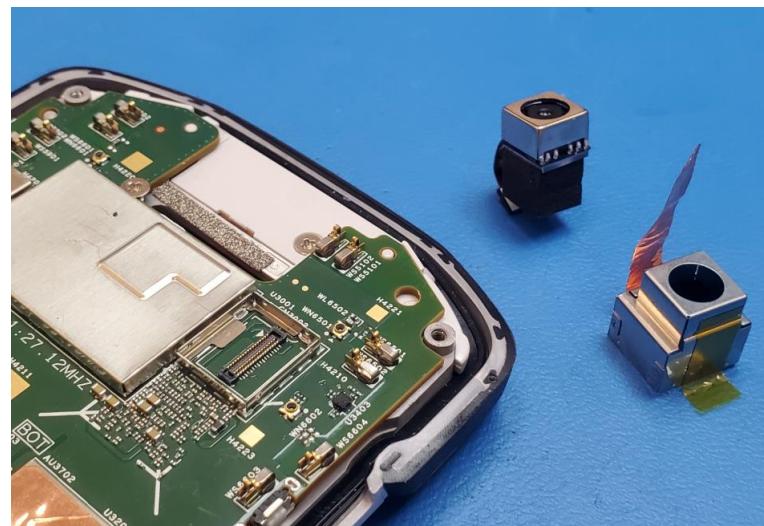
Step 31: Install antenna protector with (1) black screw and tight up (4) Philips screws to the main board.



Assembly Process

Camera

Step 32: Reconnect camera back to main board, install the camera shield and apply kapton tape back to main board.

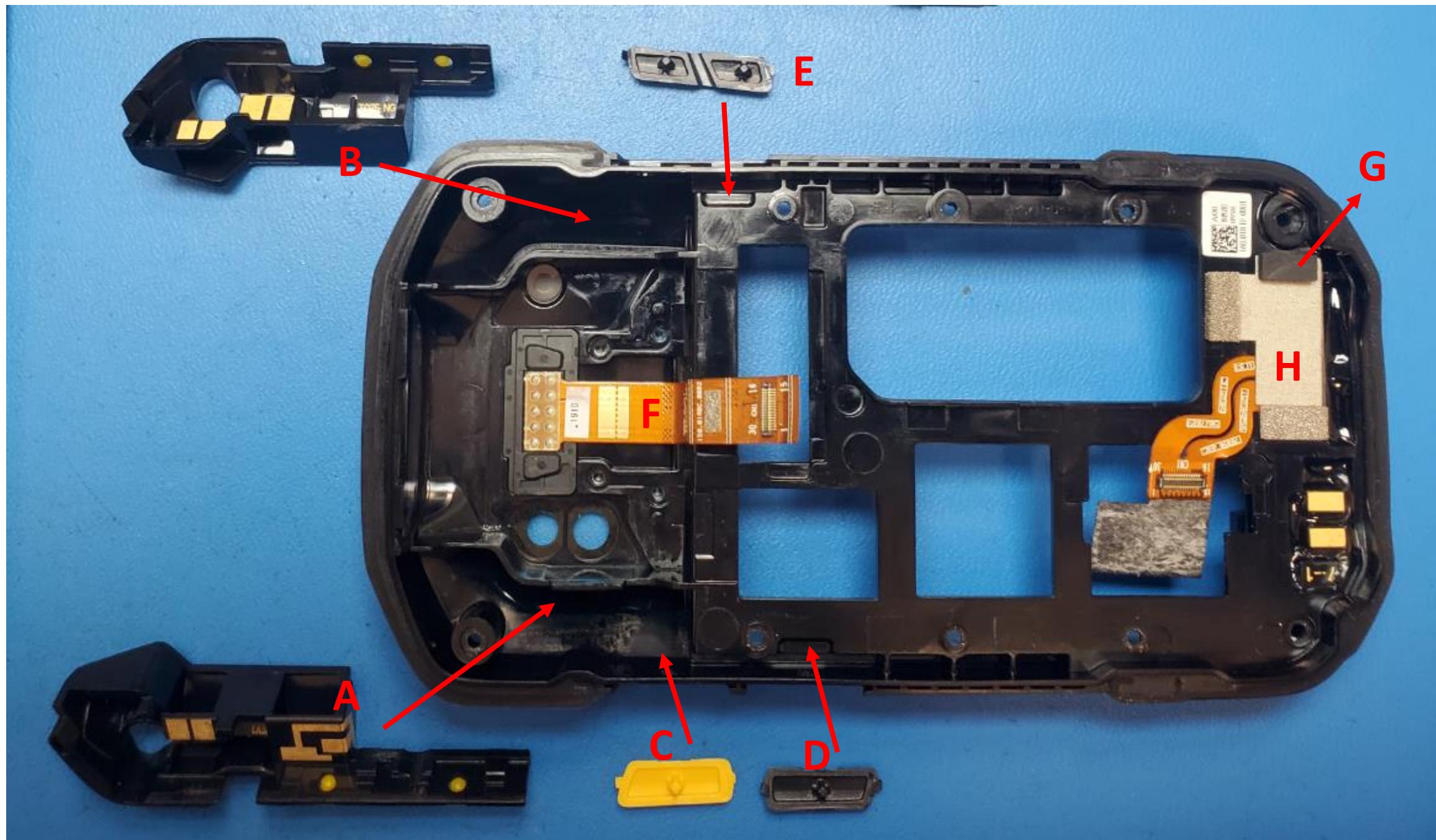


Assembly Process

Back Housing Assembly

Step 33: Back Housing Disassembly:

- (A) install QP200_LAN_EMPTY_DIV_CARRIER.
- (B) Install QP200_WLAN_BT_ANTENNA.
- (C) Install the Knob Side Trigger.
- (D) Install the Knob Side Key Button.
- (E) Install the Knob Side Key Volume.
- (F) Install FPC IO CON QP200 in from the back side and remove.
- (G) Install SPONGE PAD TP CONN QP200.
- (H) Install FPC BATT CON QP200.



Scanner Document Change Note DCN01108

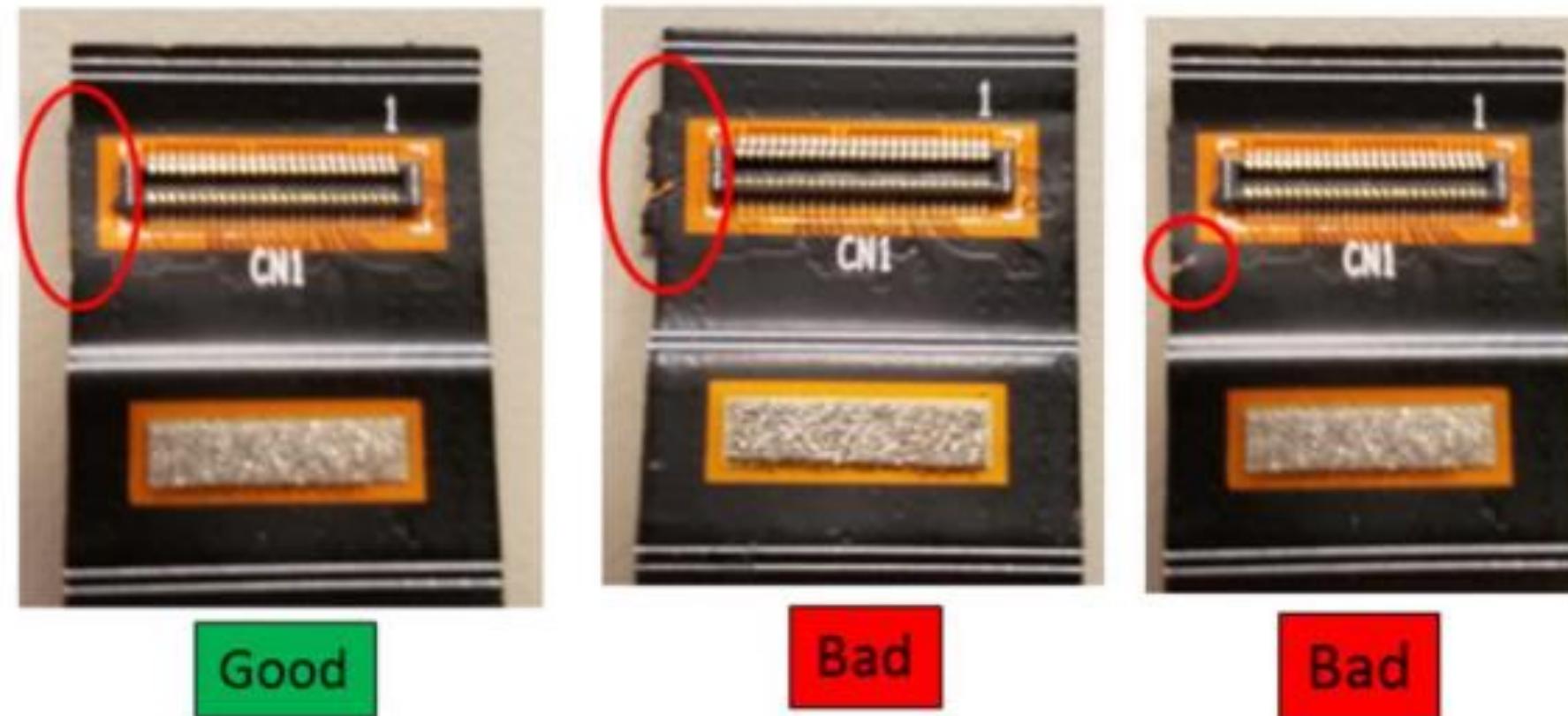
Any TC75 exhibiting a scan engine failure should have the flex Part Number 50.18R37.011 inspected.

If the “flex ear” is present, modify 50.18R37.011 by cutting off the “flex ear” to restore functionality. Clippers similar to the one pictured below may be used to perform the cut. Alternatively, flex Part Number 50.18R37.011 may be replaced with Part Number 50.18R37.012. See figures below for details.



Scanner Document Change Note DCN01108

Please take note of the following Quality Criteria when cutting the flex:

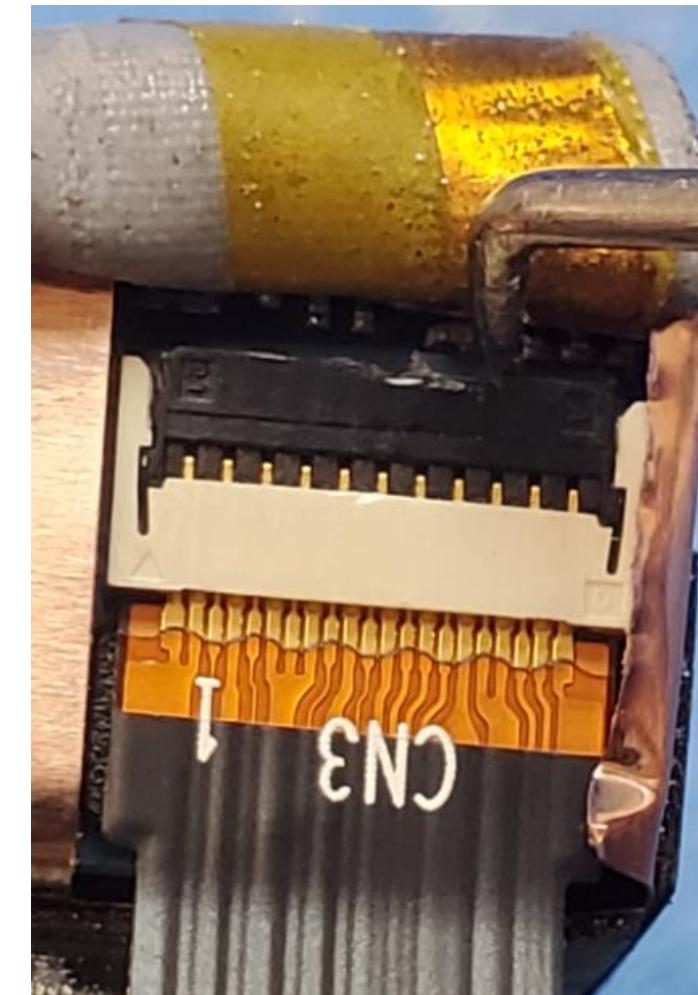
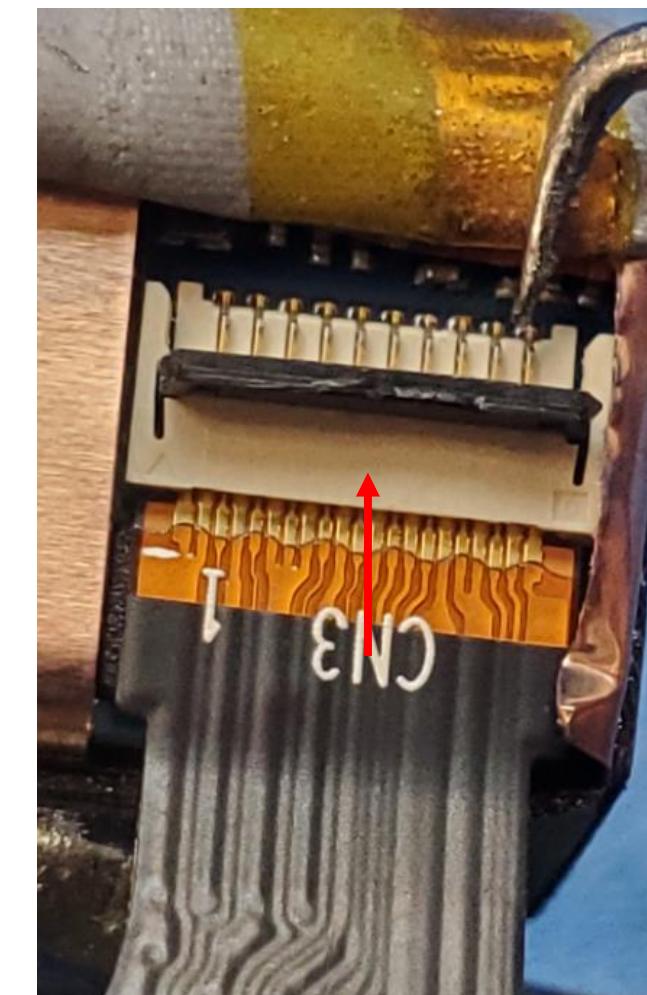
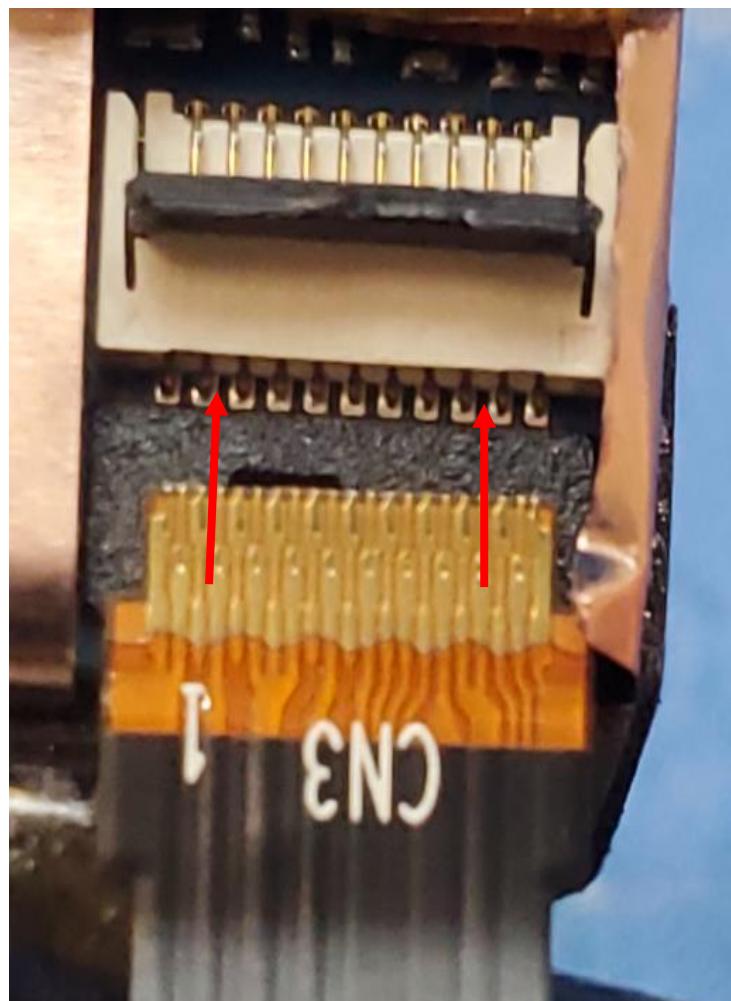
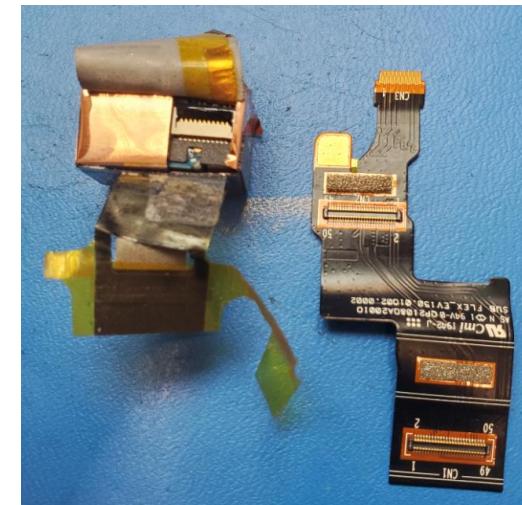


NOTE: The cut must be clean and may not mar the black layer. If these criteria cannot be met, then replace the flex.

Assembly Process

Scan Engine Flex Cable

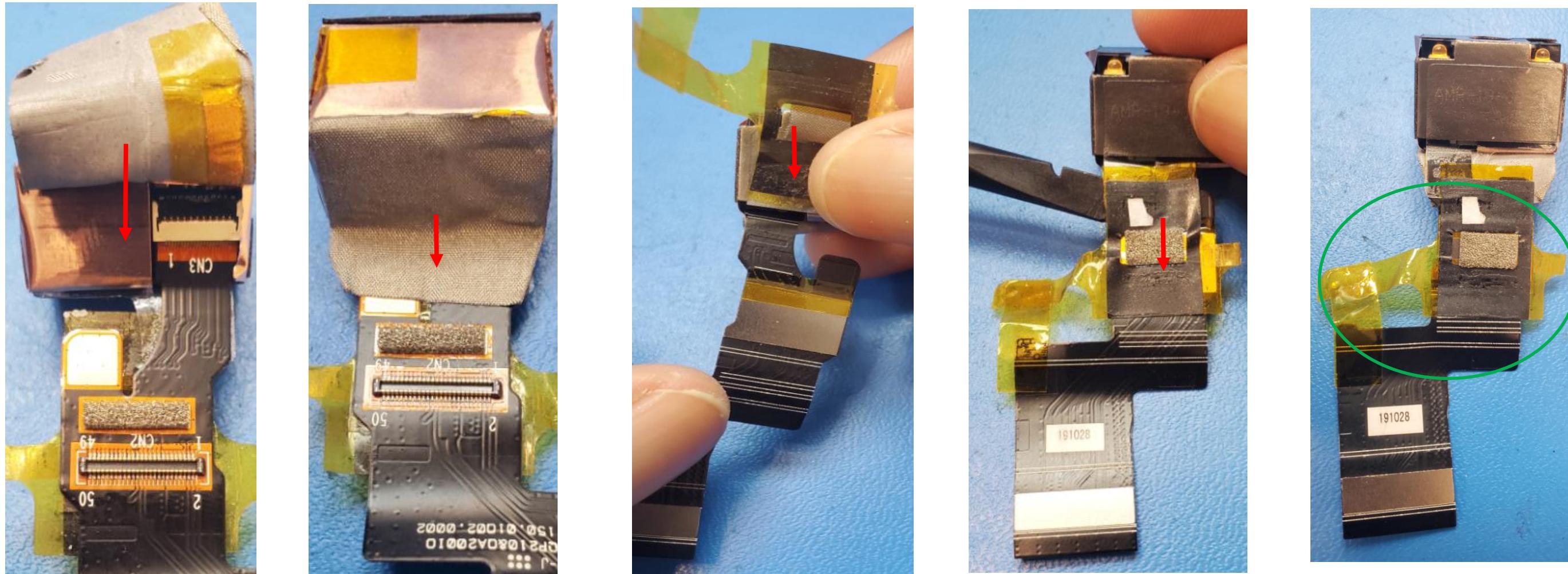
Step 34 : Insert Scan Engine Flex back to Scanner connector and with a pick Gently lock connector latch.



Assembly Process

Install Scan Engine Flex Cable

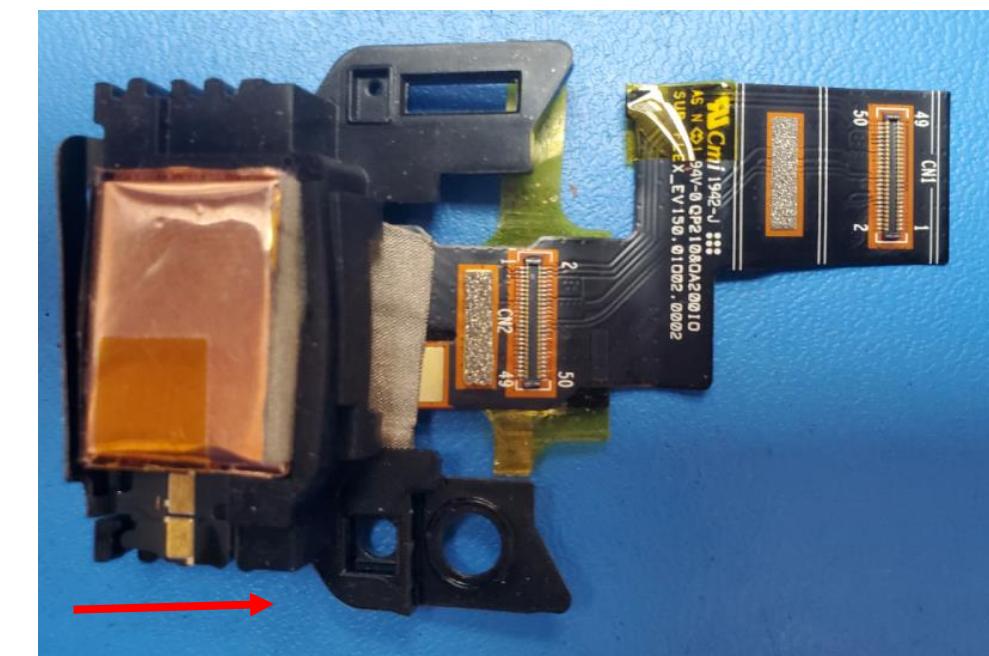
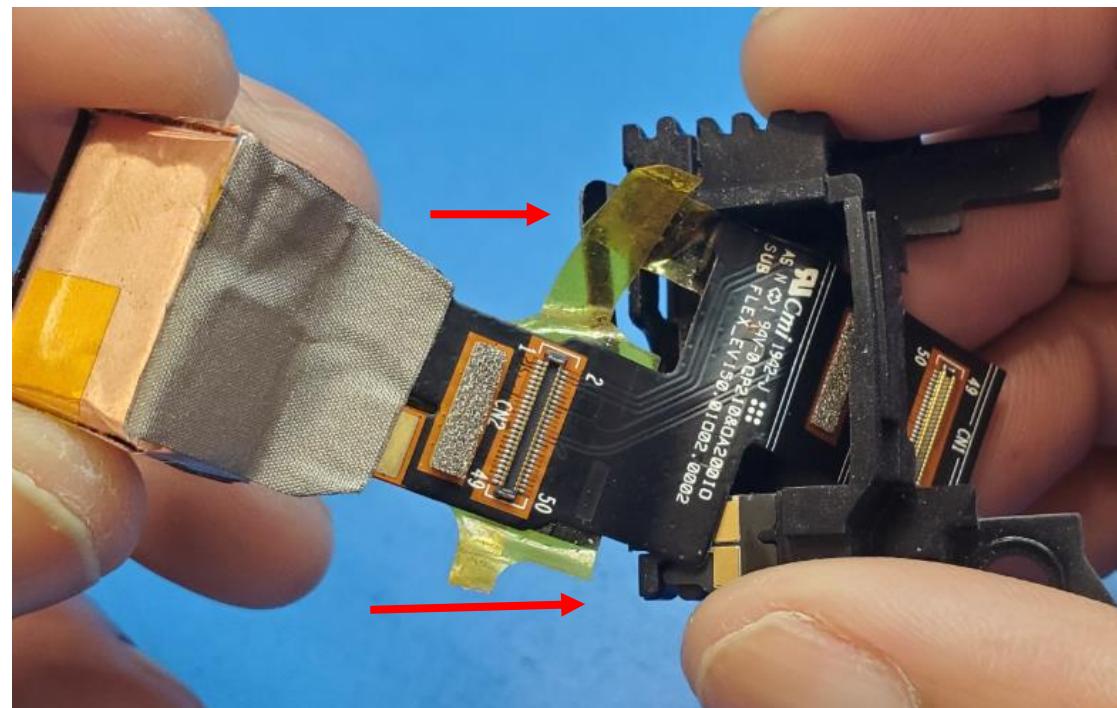
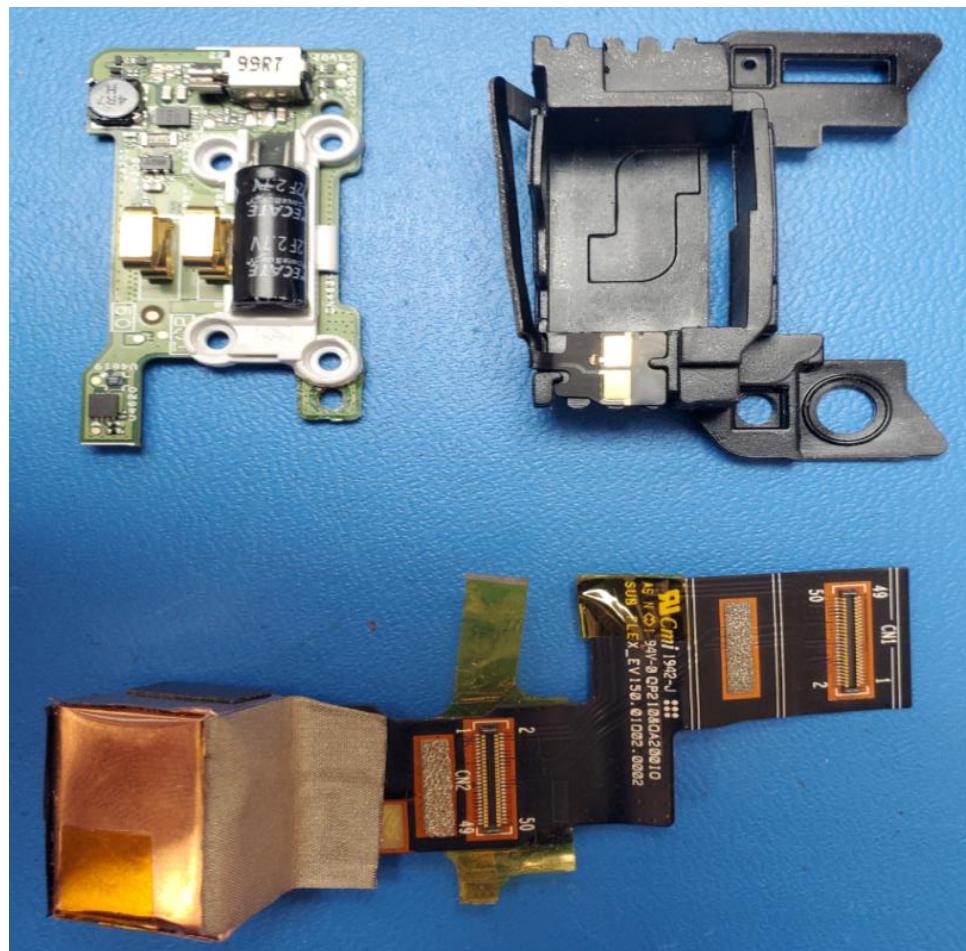
Step 35 : Put back EMI Shielding from SE and apply ADH Scanner Flex holder Top to the flex cable



Assembly Process

Install SE Flex Cable

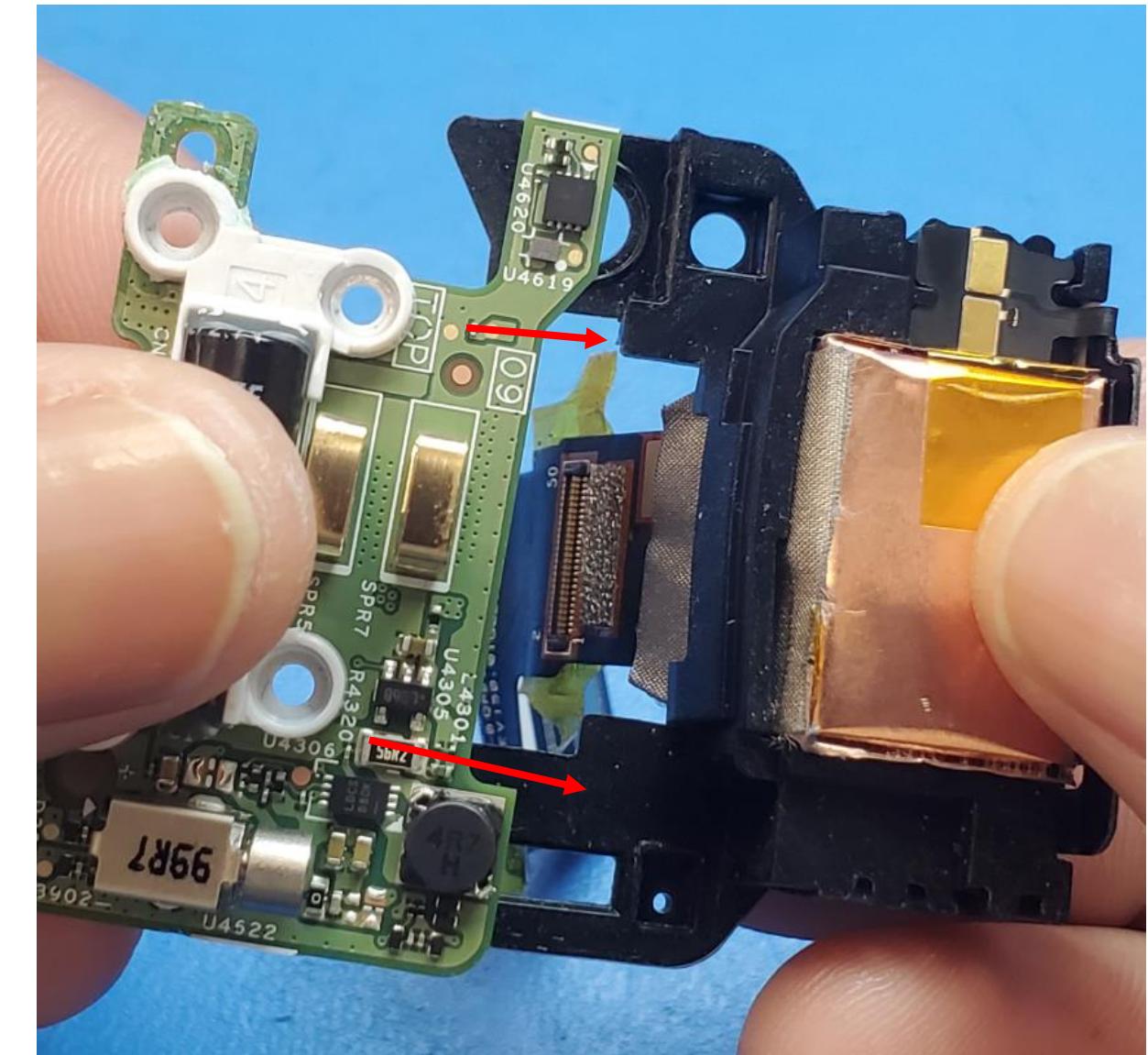
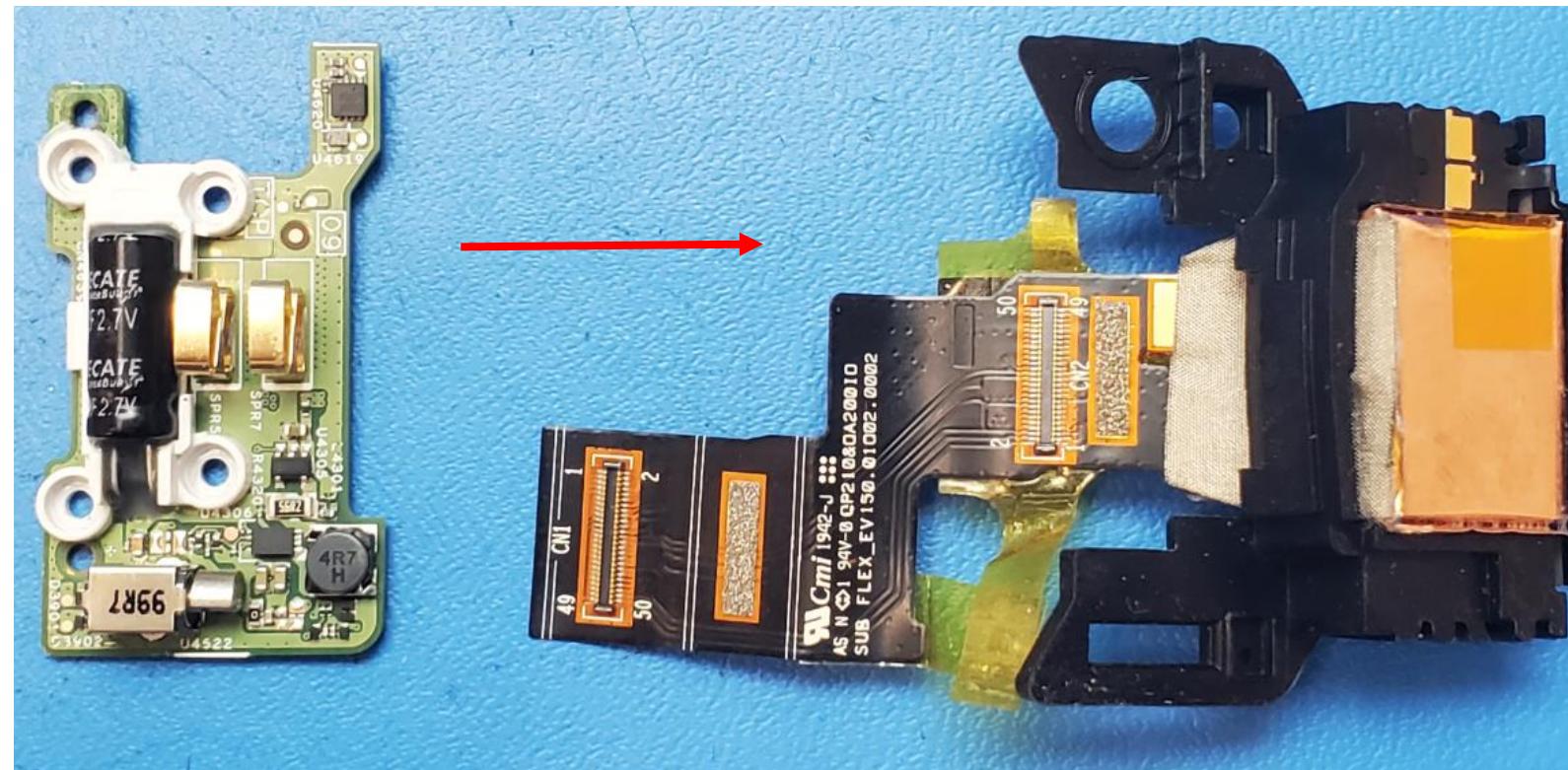
Step 36: Install Scan Engine back into the rubber boot.



Assembly Process

Install SE Decoder Board

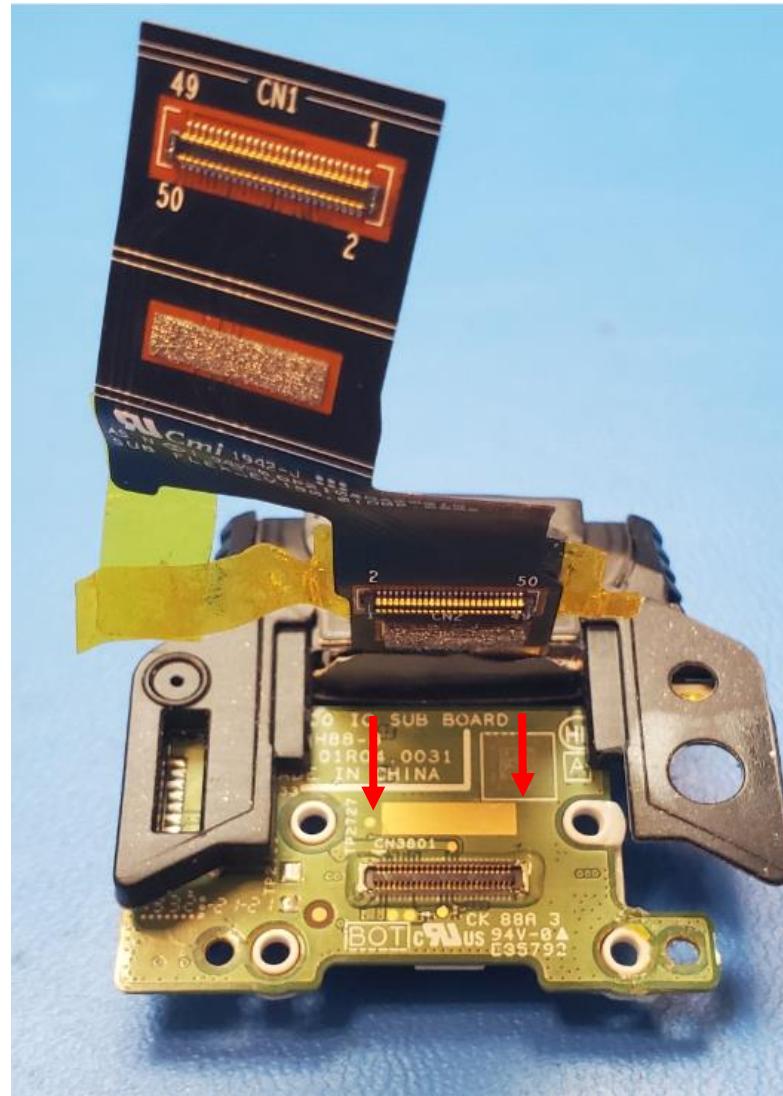
Step 37: Gently install back Decoder Board.



Assembly Process

Install Scan Engine Decoder Board

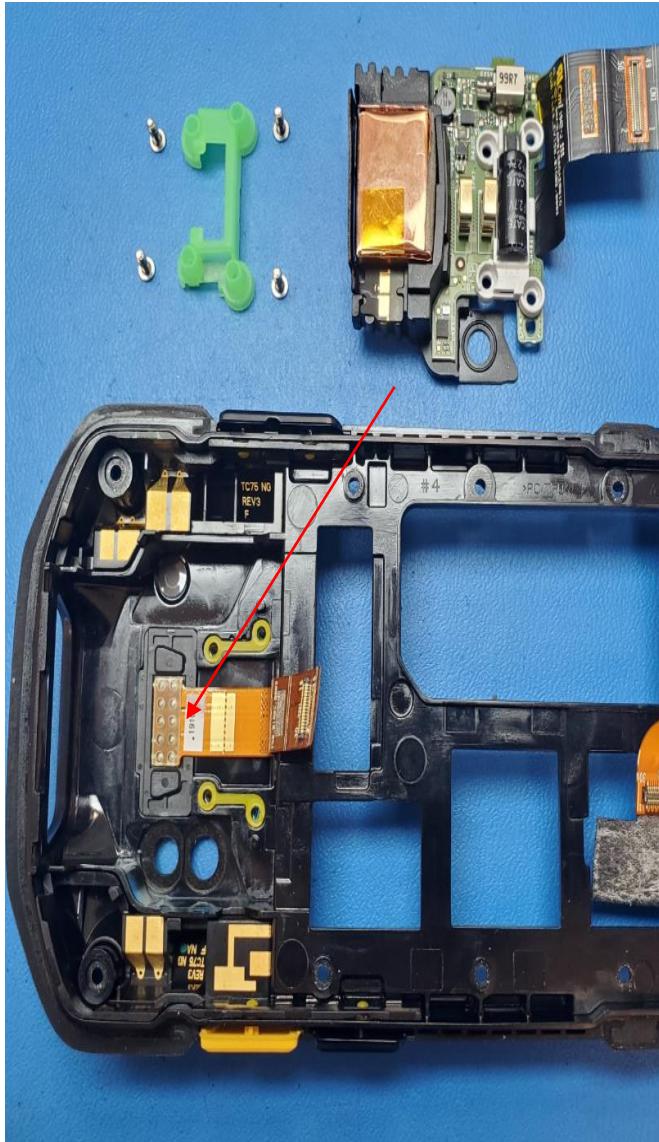
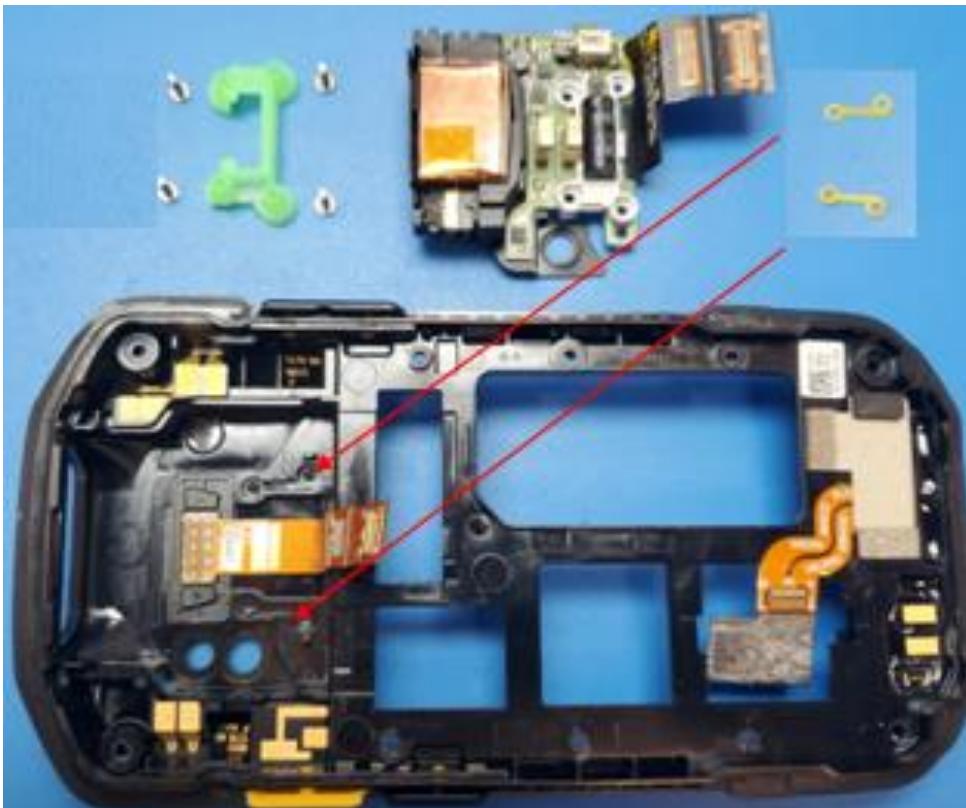
Step 38: Gently Reconnect Scan Engine Flex to Decoder Board and reinsert kapton tap to decode board



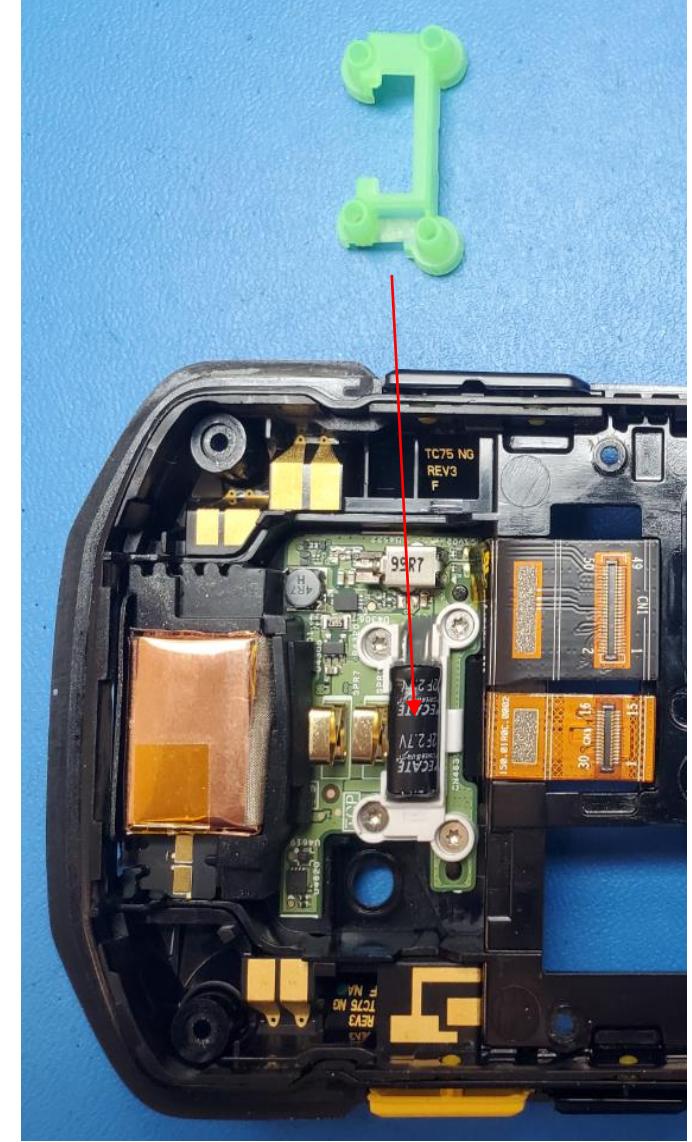
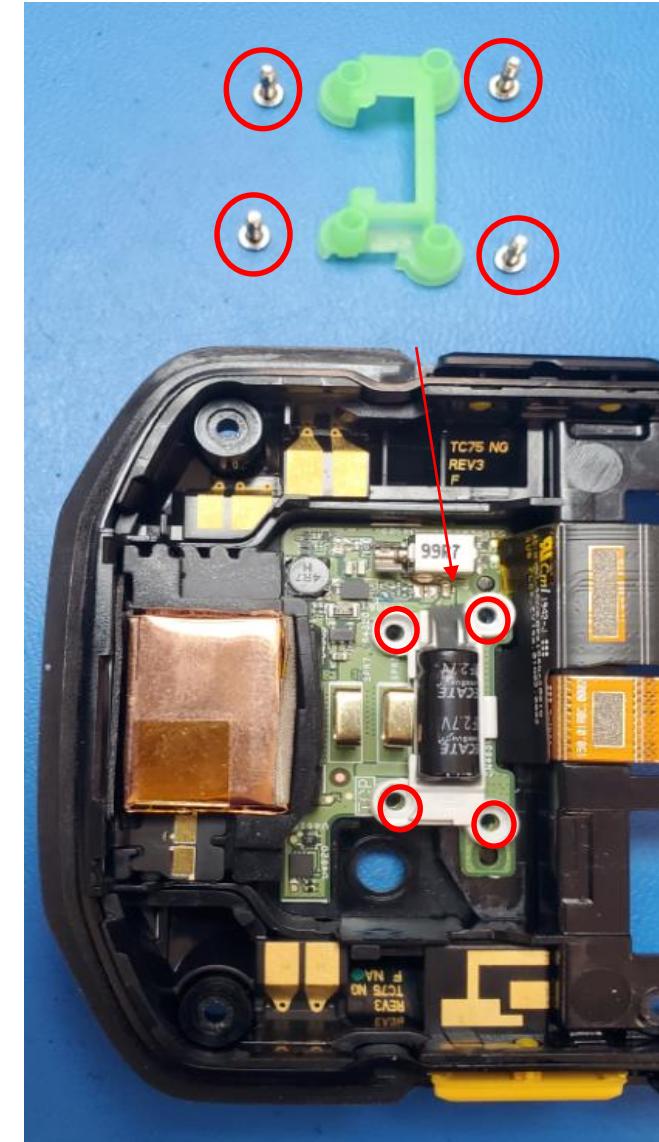
Assembly Process

Install Lower Housing Scan Engine Assembly

Step 39: Install 2 yellow rubber collar and Scan Engine Assembly to the lower housing .



Step 40: Install 4 screws and Green rubber collar.



Assembly Process

Reconnect the Housing

Step 41: Reconnect the housings .



Assembly Process

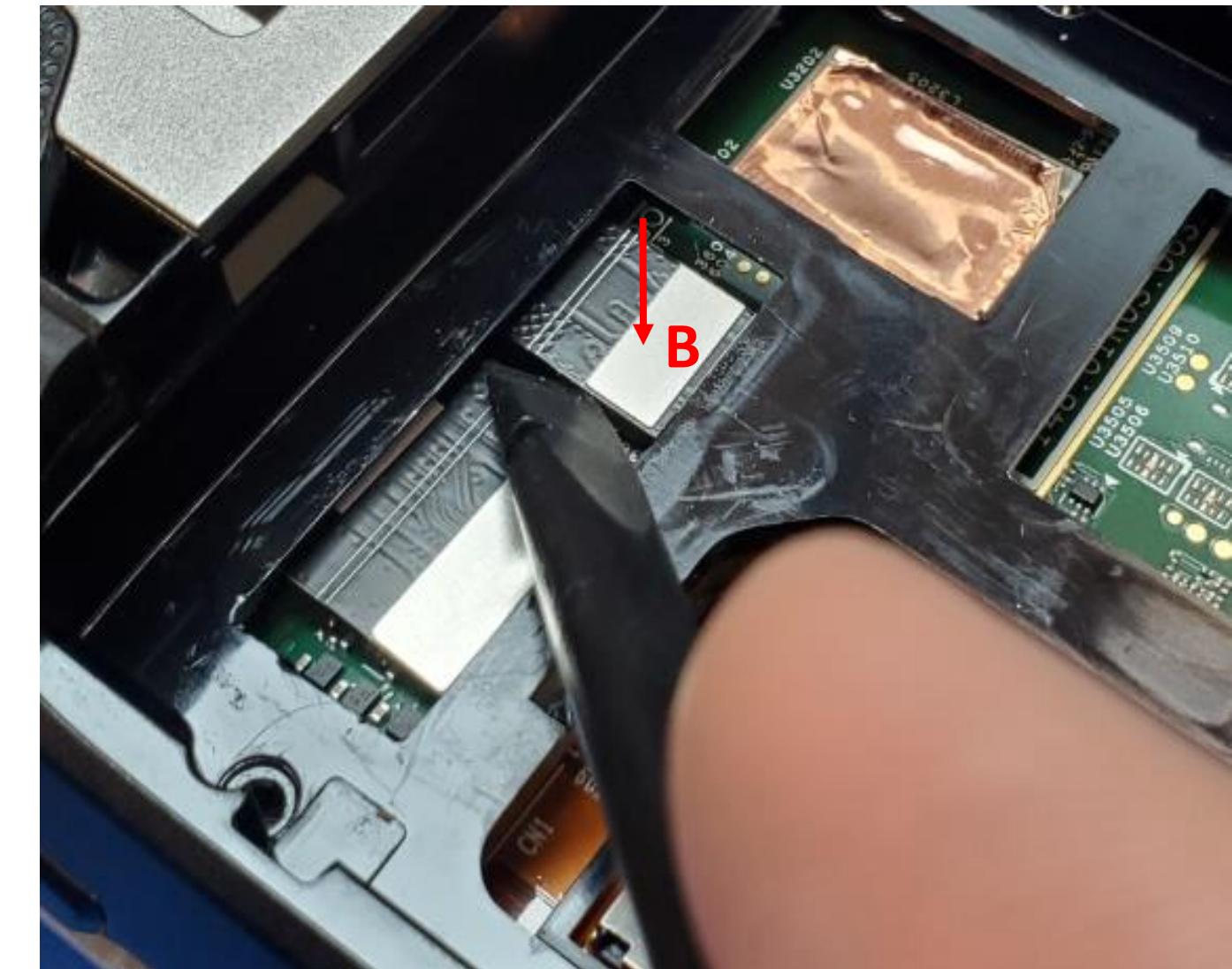
Reconnect the housings

Step 42: Reconnect IO connector (A) and POGO connector (B) to the mother board.

A. Gently push down and reconnect the IO Connector.



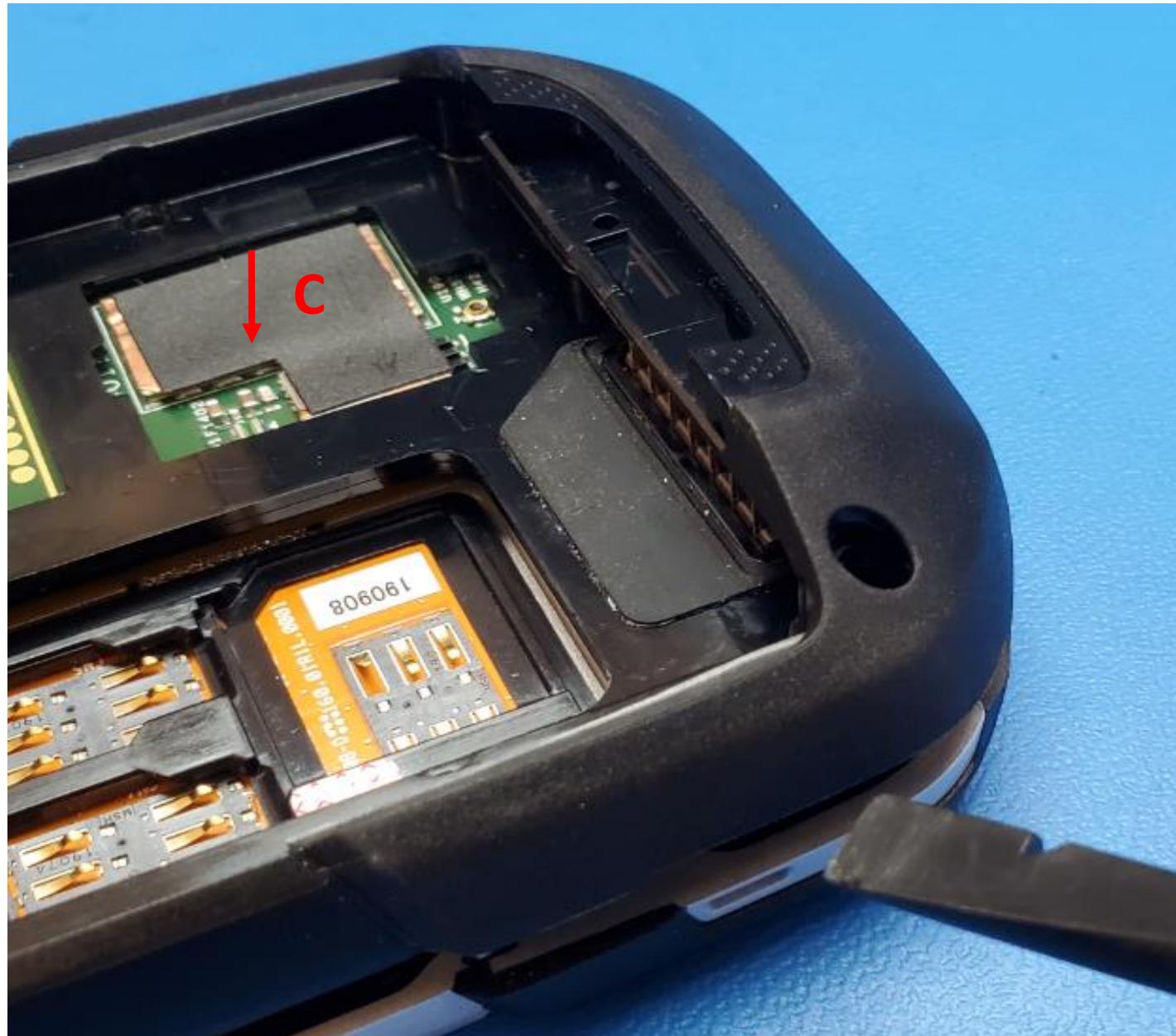
B. Gently push down and reconnect the POGO Connector.



Assembly Process

Reconnect the housings

Step 43: With a plastic tool gently push down and reconnect the Battery Connector and Kapton tape (C).

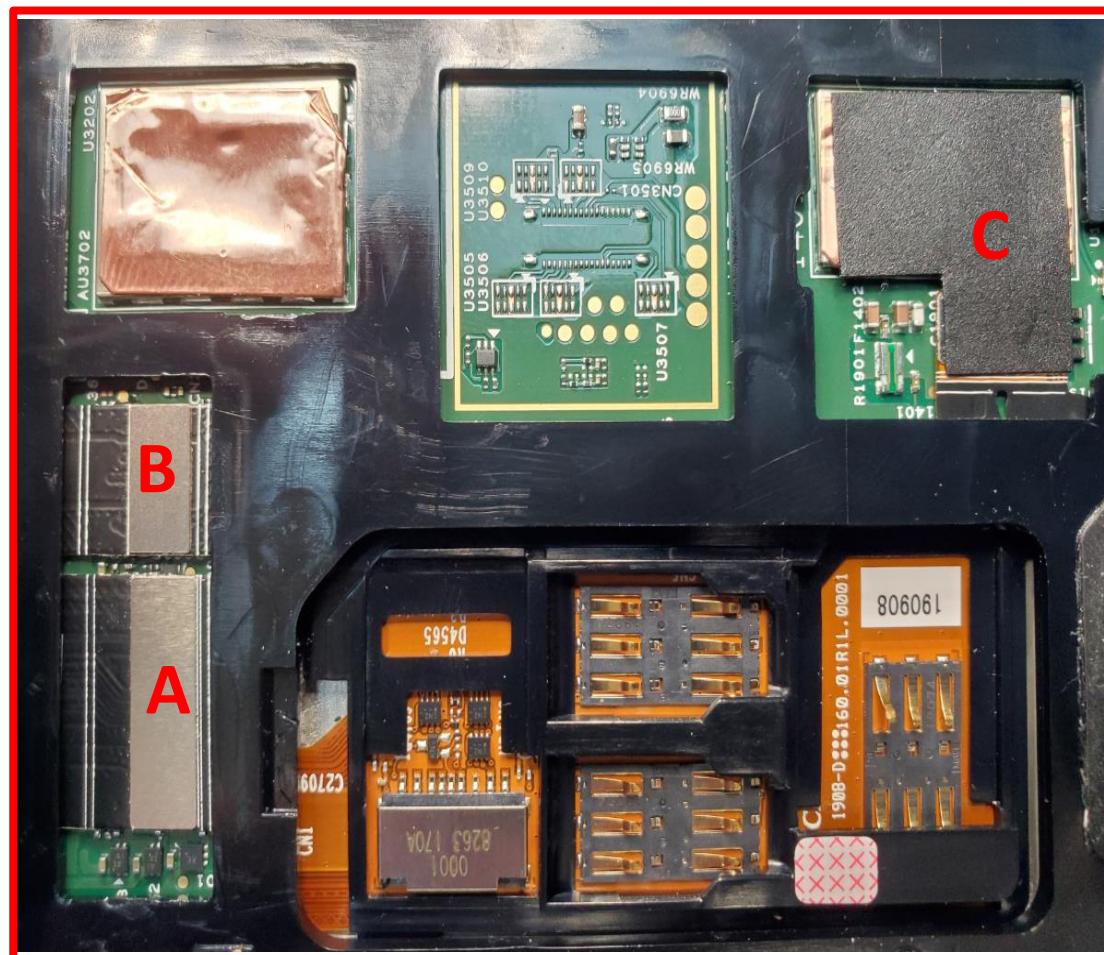


Assembly Process

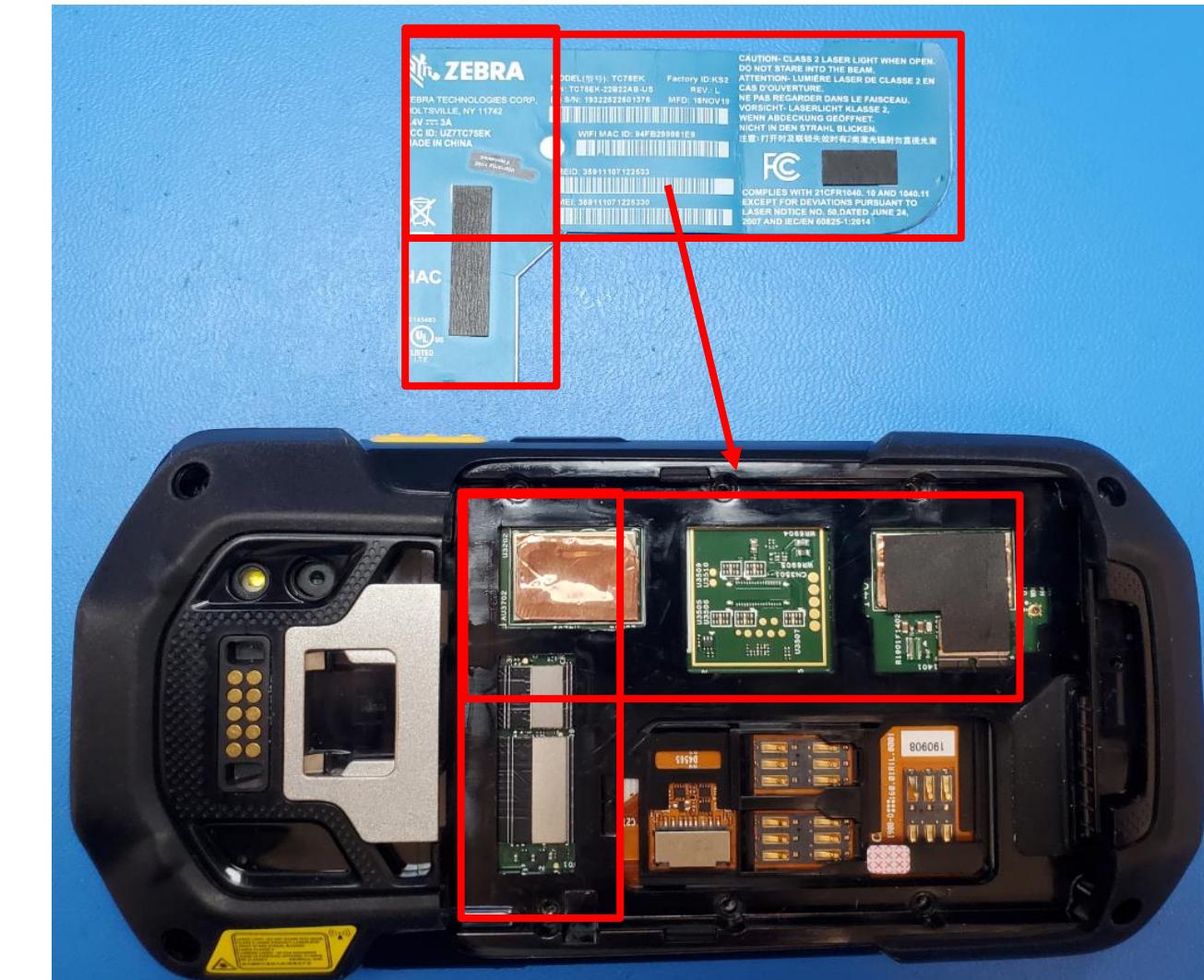
Recheck Housing Connection and install LBL L QP200

Caution: Please make sure all housings Connections are connected

- A. IO Connector.
- B. POGO Connector
- C. Battery Connector and kapton tape



Step 44: Install LBL L_WATER PROOF-3, QP200



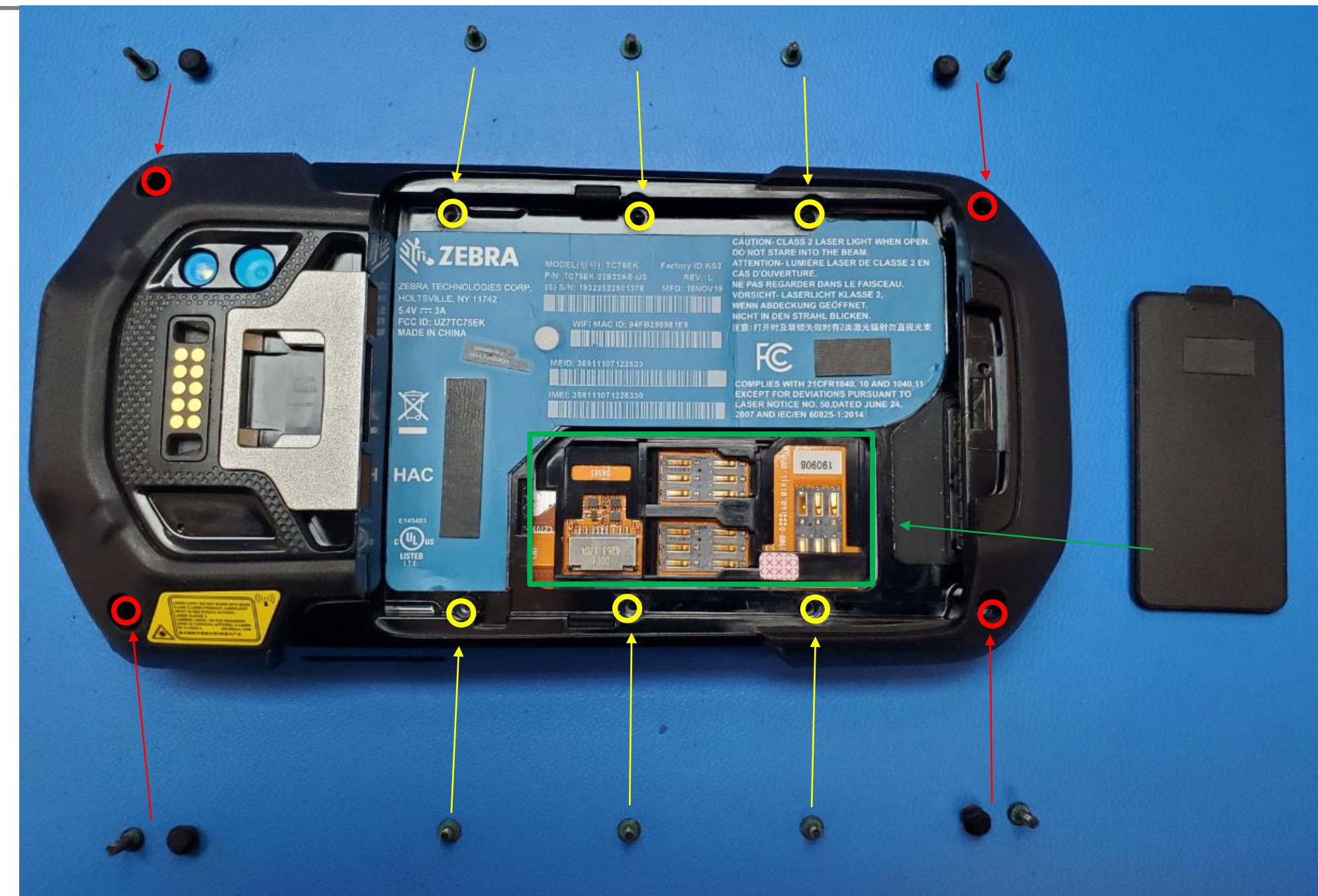
Assembly Process

Install SIM card plastic cover, rubber pad and screw

Step 45: Install (6) screws to the middle of housing.
(Marked in yellow color.)

Install the (4) screws form upper and lower
housing secure the rubber pad on top.
(Marked in red color.)

Install SIM card plastic cover.



Assembly Process

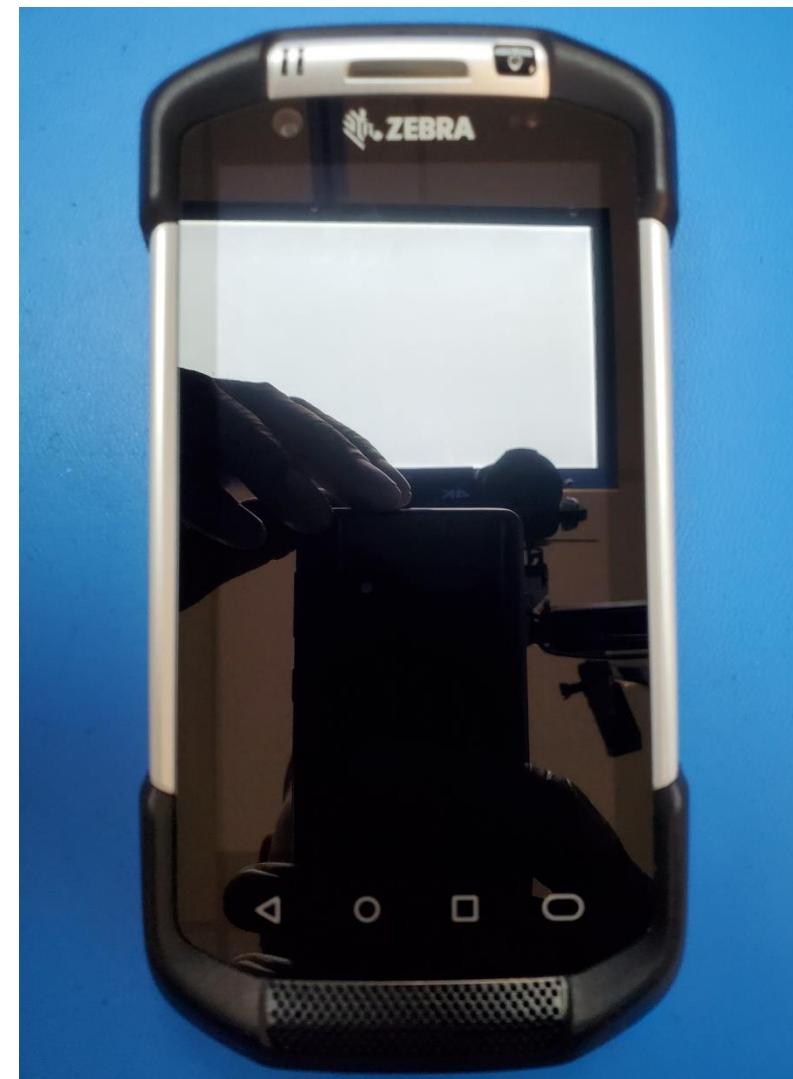
Install Hand Strap and Battery

Step 46: Install the battery by pressing the battery latches in until the battery is connected. Put back hand strap by pushing forward to insert the clip back.



Assembly Process

Step 47: Turn on the device and perform SMART / CTDI test.



Appendix

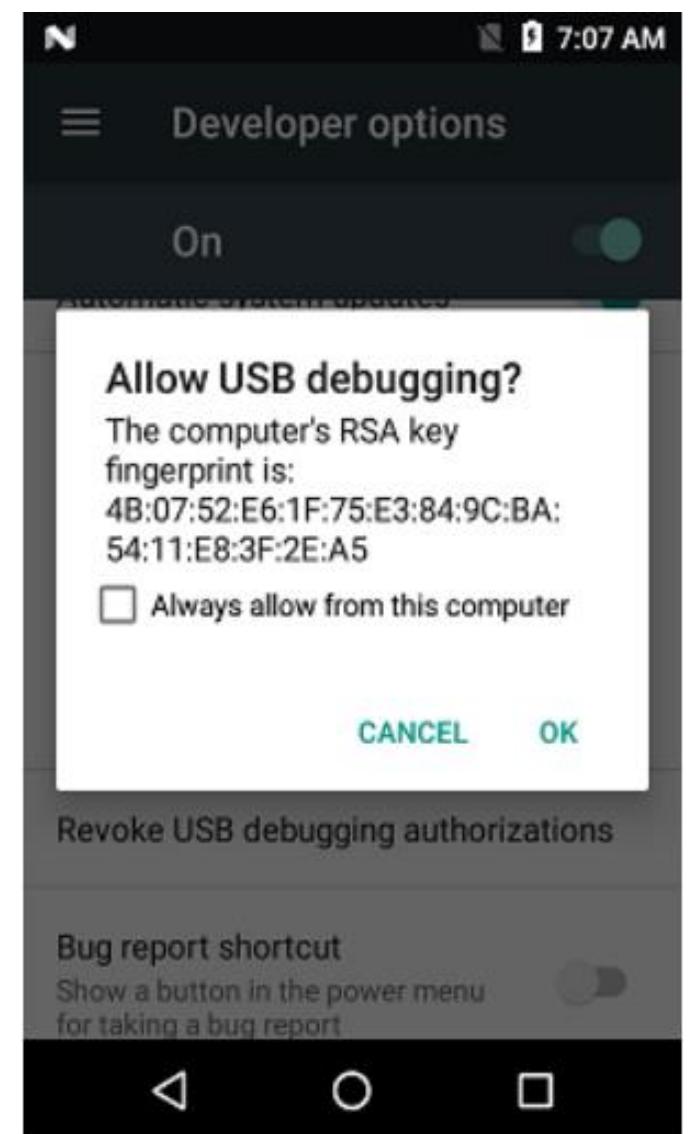
TC 70X Device able to prompt the allocation for USB debugger mode or unable to detect the device on computer.

- In windows search bar type CMD.
- In Command window type **adb kill-server** press Enter.
- This will kill the adb file and then restart the adb server using command.
- In Command window type **adb start-server** press Enter.

```
Wiersz polecenia
Microsoft Windows [Version 10.0.17134.1069]
(c) 2018 Microsoft Corporation. Wszelkie prawa zastrzeżone.

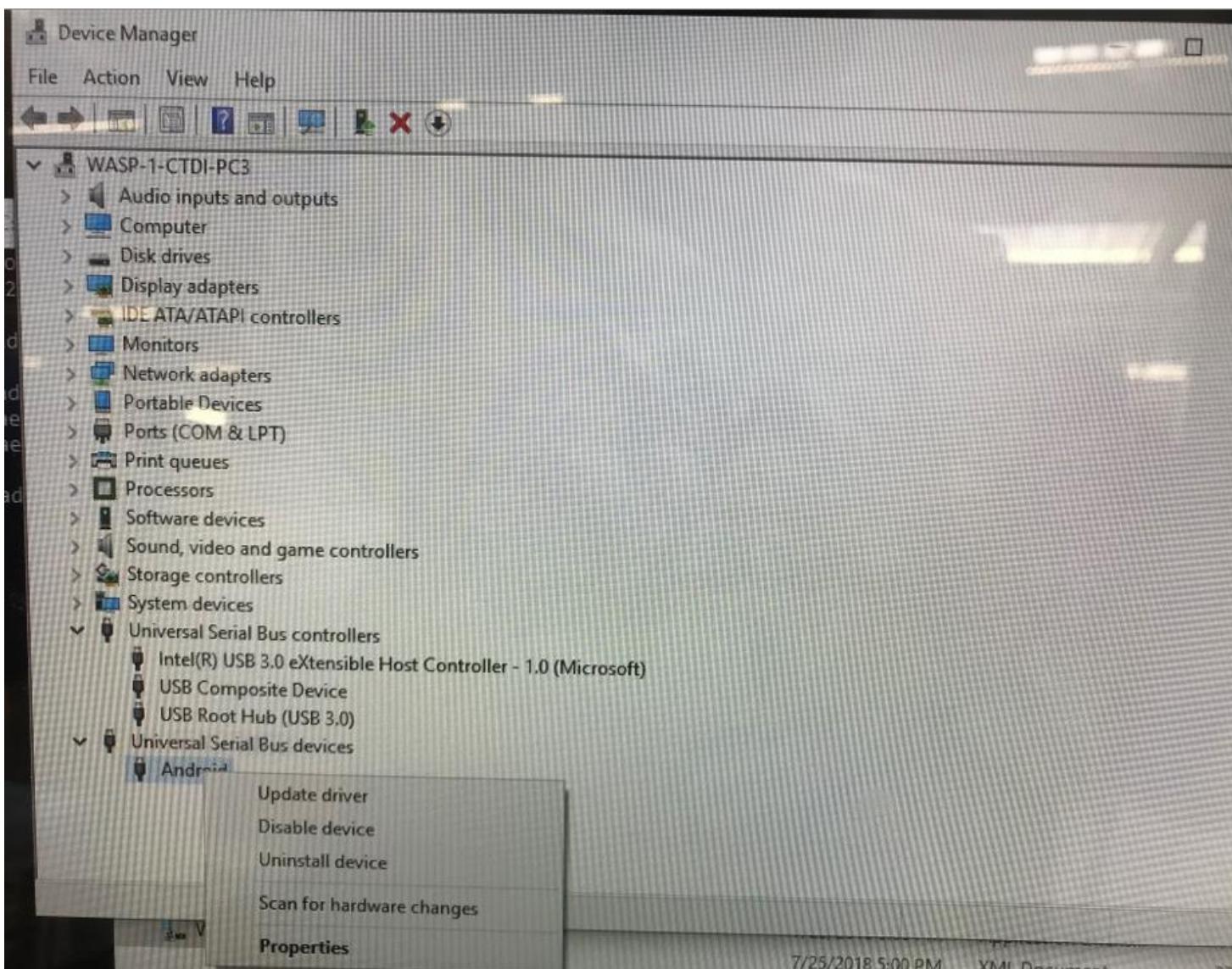
C:\Users\dwojtuch>adb kill-server
C:\Users\dwojtuch>adb start-server
* daemon not running. starting it now on port 5037 *
* daemon started successfully *

C:\Users\dwojtuch>
```



TC 70X Device able to prompt the allocation for USB debugger mode or unable to detect the device on computer.

- If the device is not recognized after adb server restart then go into the device manager and check if the USB device is selected as Android right click to update the drivers.



TC 7X Frozen Screen Issue.

- Frozen Screen appears more than 5 min then please check the front or rear camera.
- Removing the camera and installing back again will solve this issue.
- If the camera is not installed properly it will not allow device to boot or start.

Note: Front and rear camera belongs to same circuit so any lose contact will give you this issue.



Remove camera and install back on.



Global Engineering, Repair & Logistics

THANK YOU