Mechanical Assembly Guide

## Intel® Aero Platform for UAVs

October 2016

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Contents of Compute Board

1. Compute board (PCBA)
2. 80-pin accessories connector cable
3. WiFi antenna x2
4. USB 2.0 OTG cable
5. Power and Console UART cable
6. AC-DC power adapter

1

6

5

4

2

3

www.Intel.com/aero/compute-board
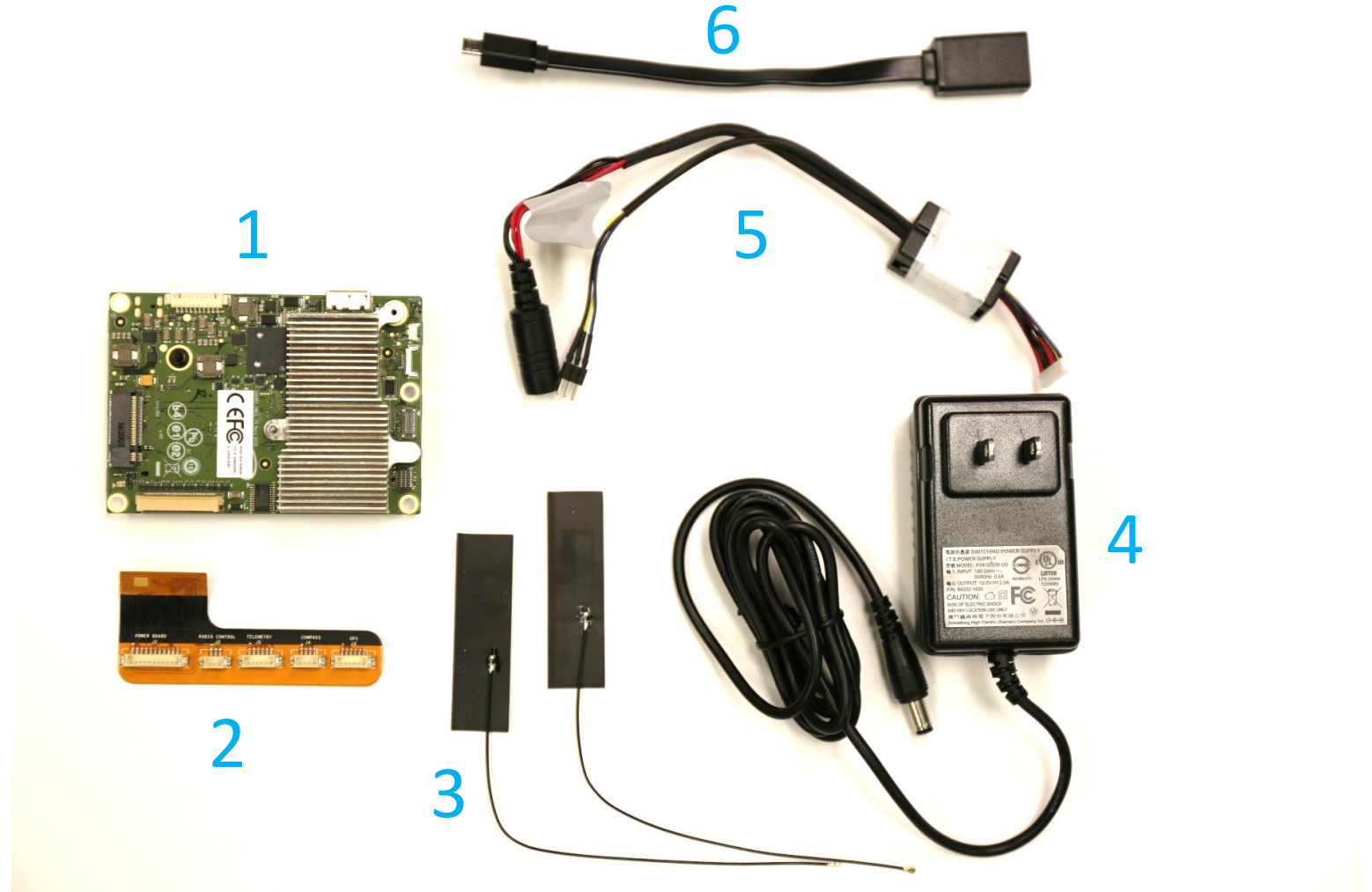
Compute Board Features

Powered by the Intel® Atom™ x7-Z8750 processor
2.56 GHz burst, quad-core, 2M cache, 64-bit

|	
1	Power and Console UART connector
2	32GB eMMC
3	USB 3.0 OTG
4	Reset / force shutdown
5	Interface for Intel® RealSense™ camera (R200) [1]
6	4 lane MIPI* interface for high res camera [1]
7	1 lane MIPI* interface for VGA Camera [1]
8	4GB LPDDR3-1600
9	Flexible I/O connector supports 3rd party flight controller and accessories (I2C, UART, GPIOs) [2]
10	microSD* Memory Card Slot
11	Intel® Dual Band Wireless-AC 8260
12	Altera® Max® 10 FPGA
13	M.2 Interface for PCIe SSD
14	Micro HDMI port
R	RESERVED for future use

* Other names and brands may be claimed as the property of others.
[1] Included in the Vision Accessory Kit (sold separately)
[2] Basic expansion cable included.

Contents of Vision Accessory Kit (optional)
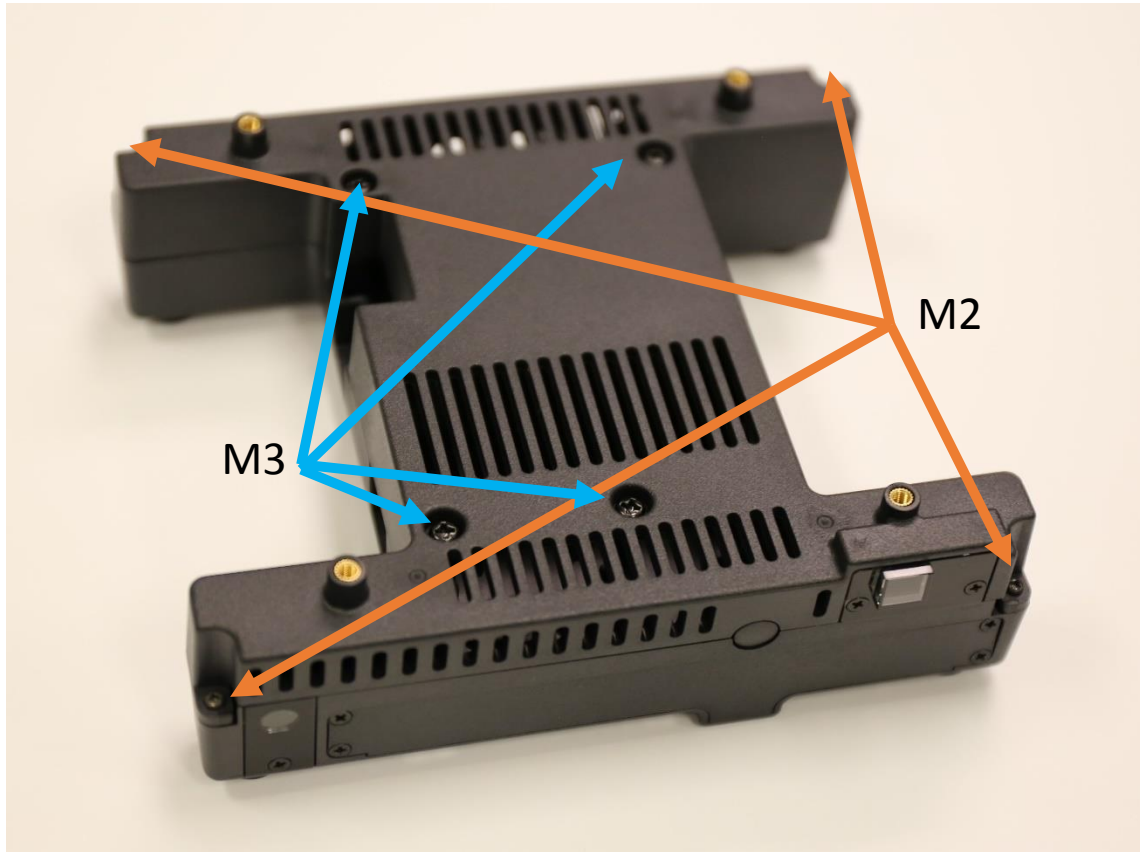

www.intel.com/aero/vision-kit
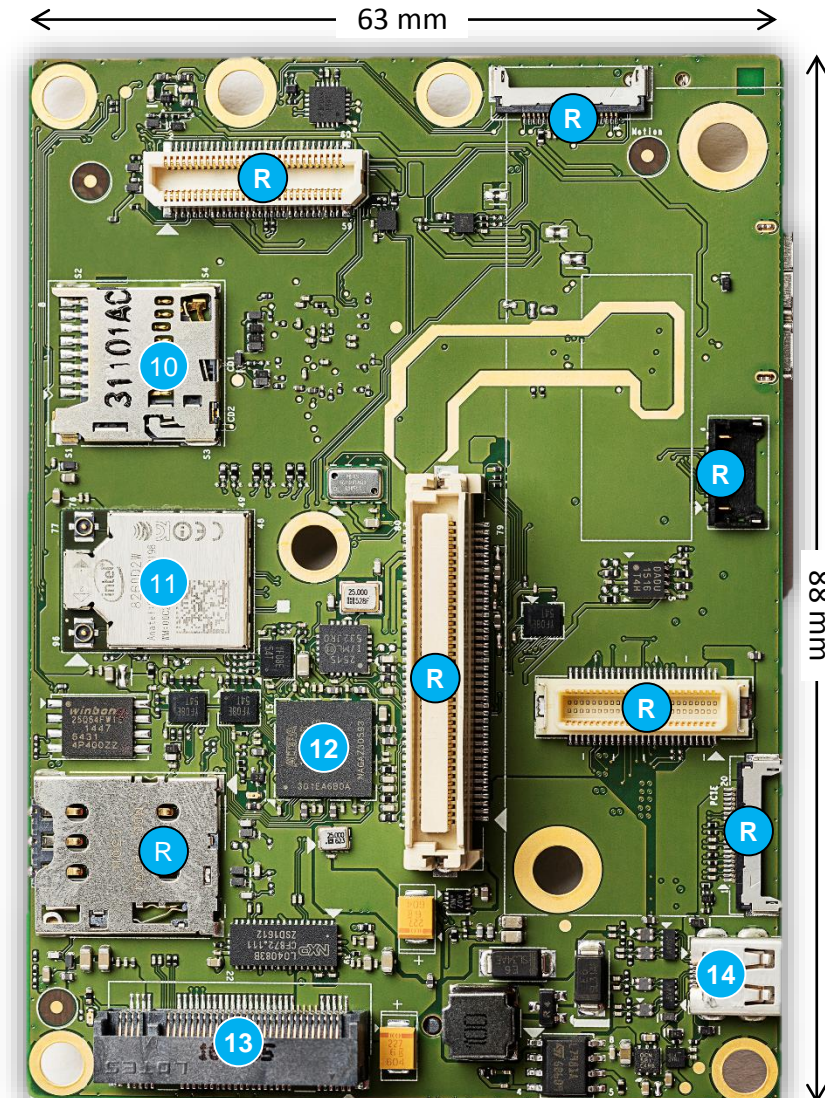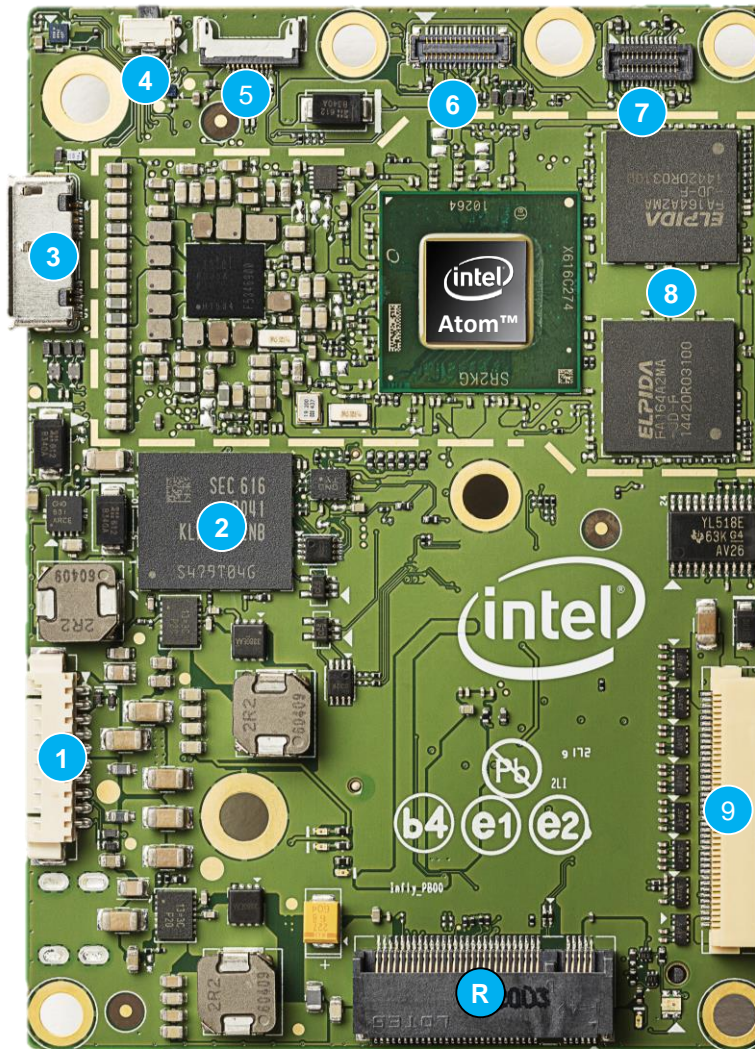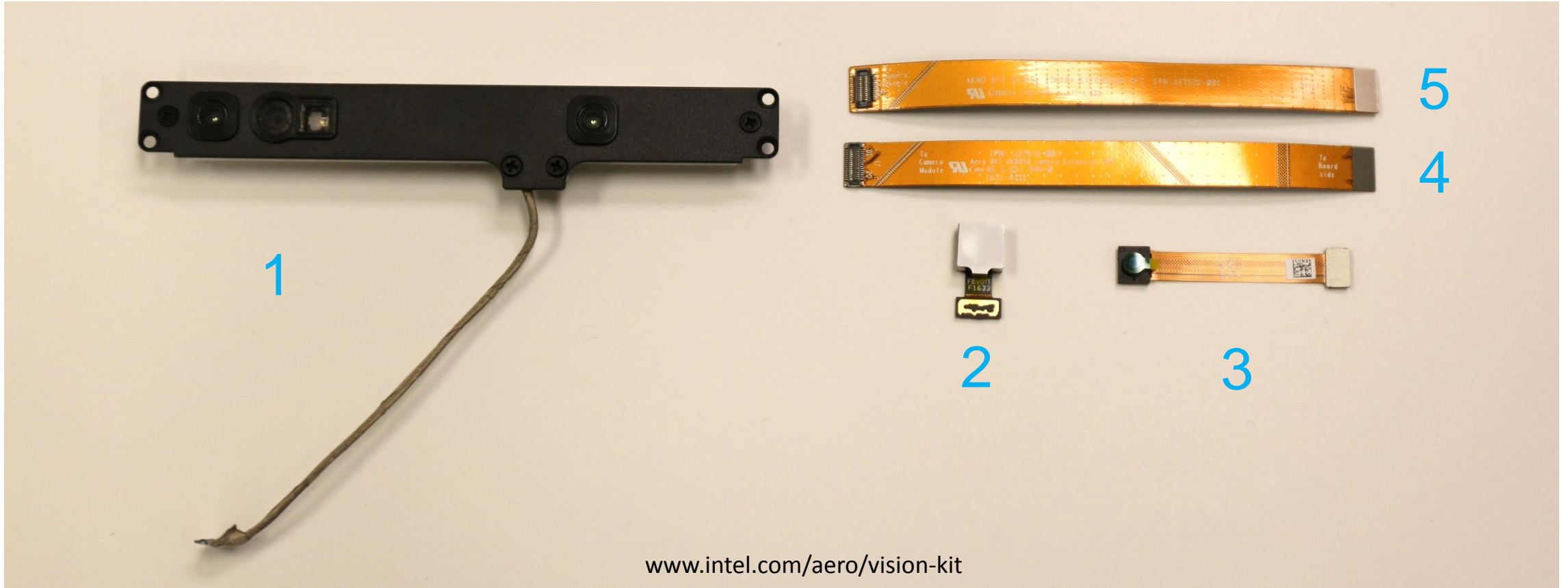
1. Intel® RealSense ™ Camera (R200) with cable
2. 8MP RGB camera (OV8858)
3. VGA camera with cable (OV7251)

4. Extension cable for 8MP RGB camera
5. Extension cable for VGA camera (not required for assembly in Enclosure Kit)

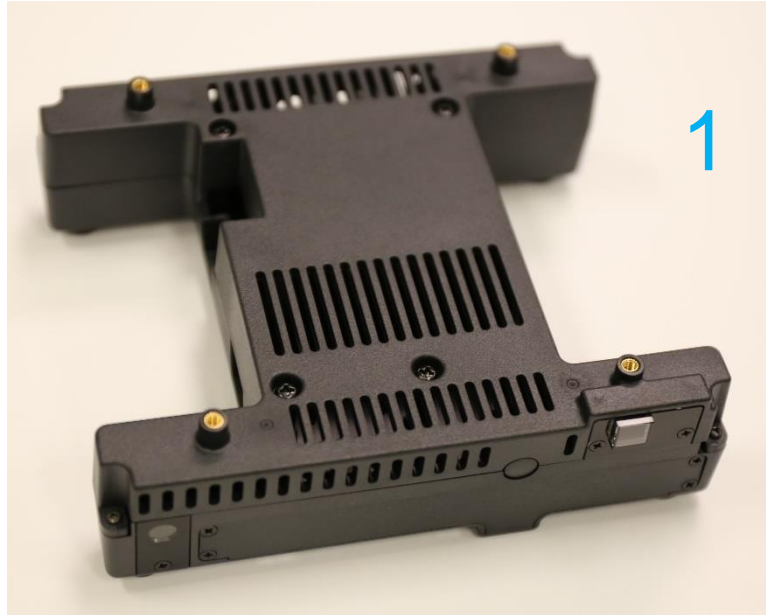# Contents of Enclosure Kit

Top of Enclosure

Bottom of Enclosure

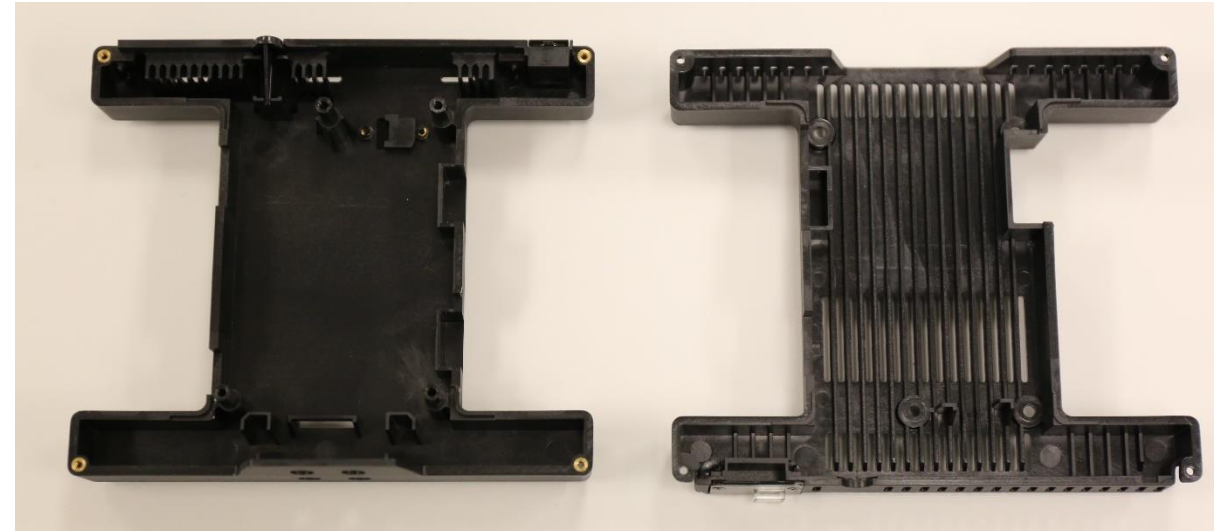Torque for M2 screws: 0.17 N-m Max
Torque for M3 screws: 0.60 N-m Max

www.intel.com/aero/enclosure

Stage 1: Opening Enclosure Kit
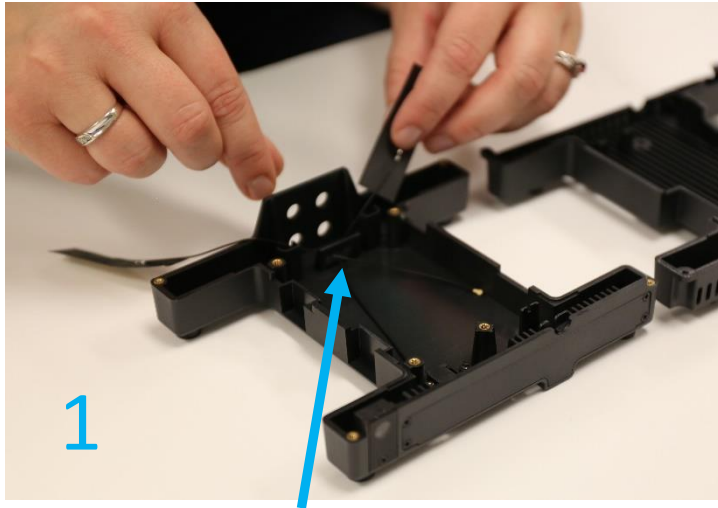
Bottom Cover

Top Cover

Step 1: Unscrew the M2 (x4) and M3 (x4) screws from top of enclosure and save them for Stage 7.
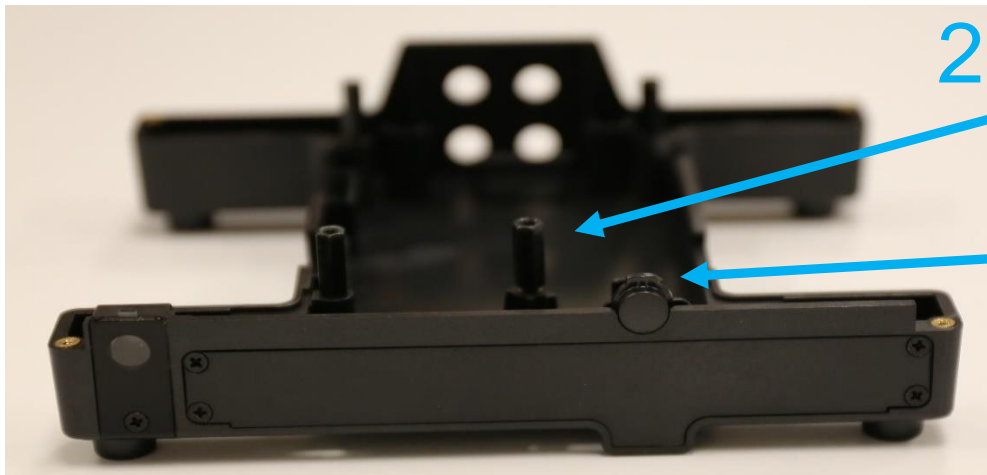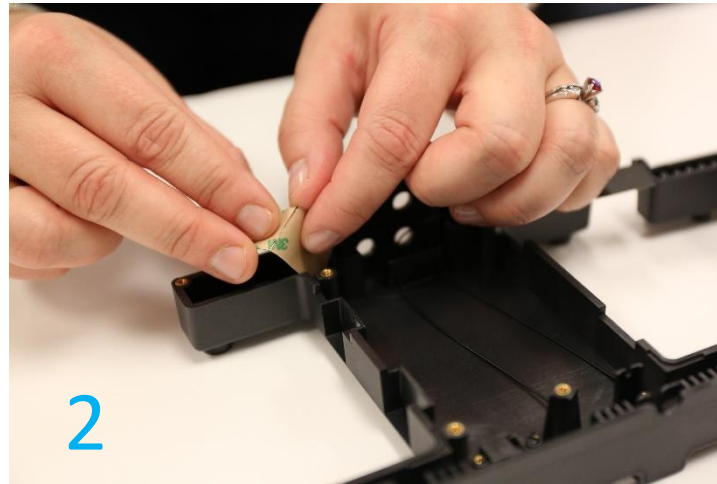

Step 2: Remove 4 hex standoffs (spacers) and save to attach the PCBA in Stage 7.
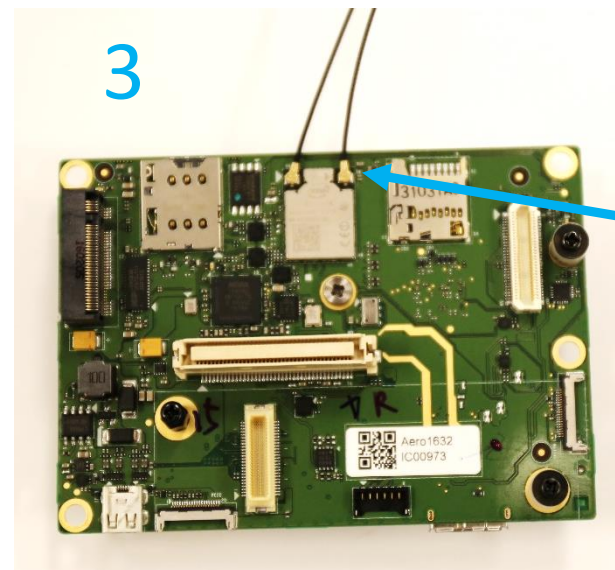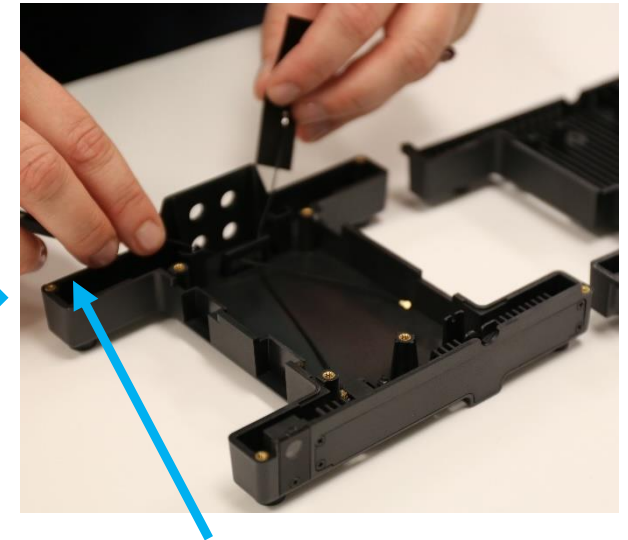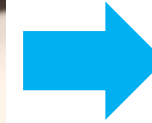
Save the power button for Stage 7.

Stage 2: Installing WiFi Antennas

1

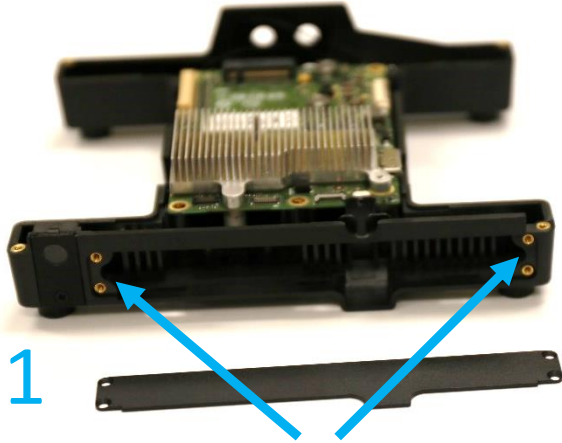Step 1: Pass antenna cables through cutout inside enclosure.

2

Step 2: Remove protective paper from WiFi antennas and stick antennas horizontally to the inside of the outer wall of enclosure.
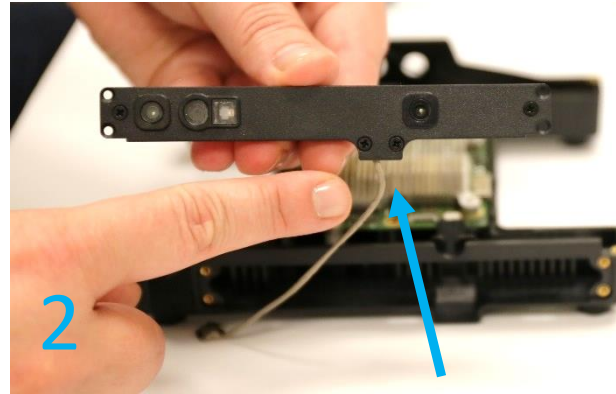

3

Step 3: Connect the 2 WiFi antenna to the corresponding connectors on the WiFi module on the bottom side of the PCBA.
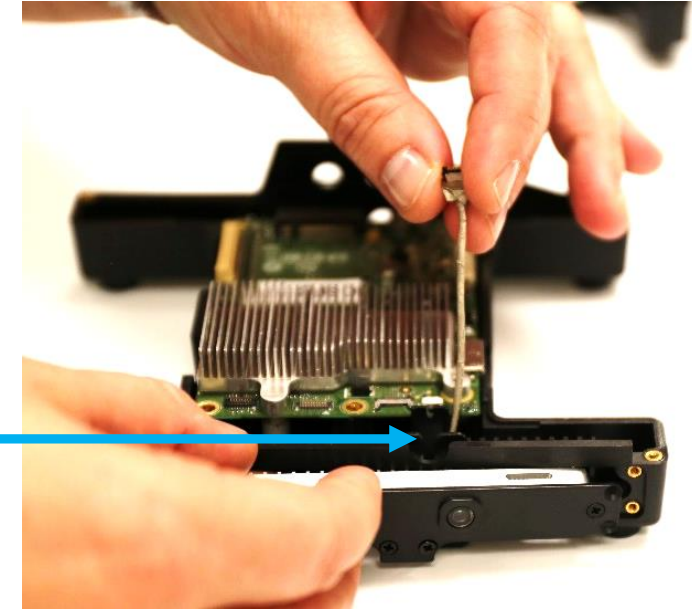
Stage 3: Installing Intel® RealSense™ Camera (R200)

1

Step 1: Unscrew dummy cover and save the screws to attach camera to enclosure (Step 3).
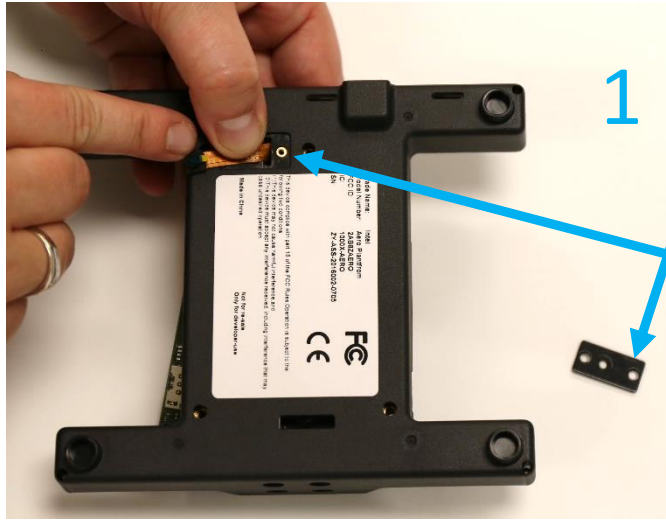
2

Step 2: With the cable attach point on the camera oriented downward, feed the cable through opening inside the camera compartment.

3

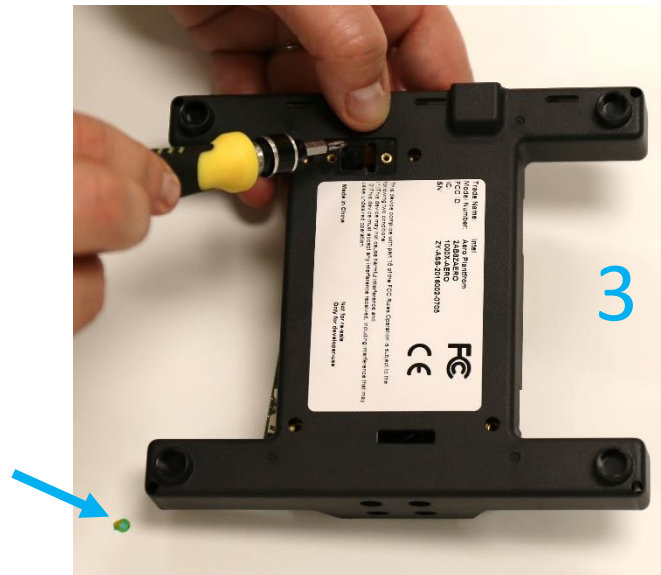Step 3: Screw the camera onto the enclosure with the 4 screws saved from Step 1.

Stage 4: Installing VGA Camera Module (OV7251)

1

Step 1: Remove plastic lens cover from bottom of enclosure. Save the screws for Step 3.

2

Step 2: Insert the connector end of camera cable into the housing through the opening in the outside enclosure. Set the camera module into the camera compartment.
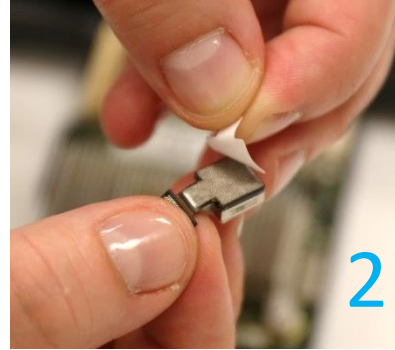

3

Step 3: Remove protective sticker from the camera lens. Screw lens cover back on the enclosure using the screws saved from Step 1.

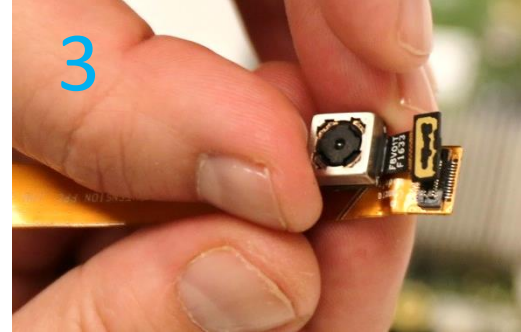protective sticker for camera lens

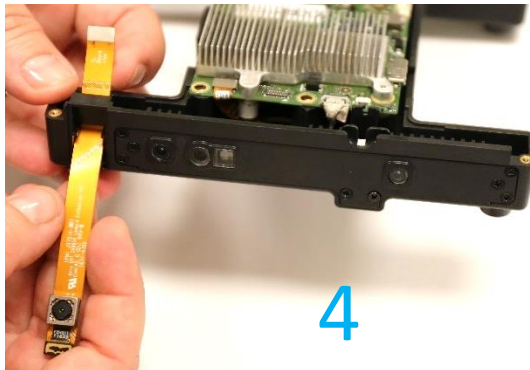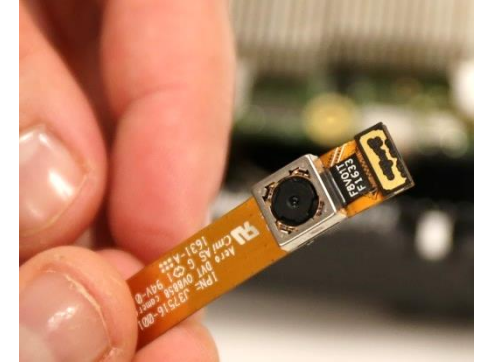# Stage 5: Installing 8MP RGB Camera Module (OV8858)

Step 1: Remove front lens cover for the 8MP camera. An opening in the camera compartment will be visible. Save screws for Step 5.

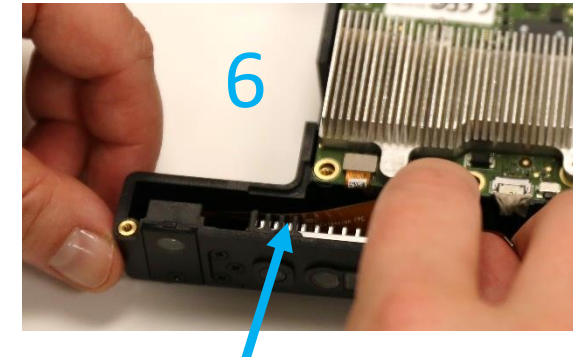**Step 2:** Remove camera adhesive and protective camera cover

Step 3: Connect the extension cable for the 8MP camera to the camera

Step 4: Thread cable with camera through hole in enclosure with camera oriented as shown in picture
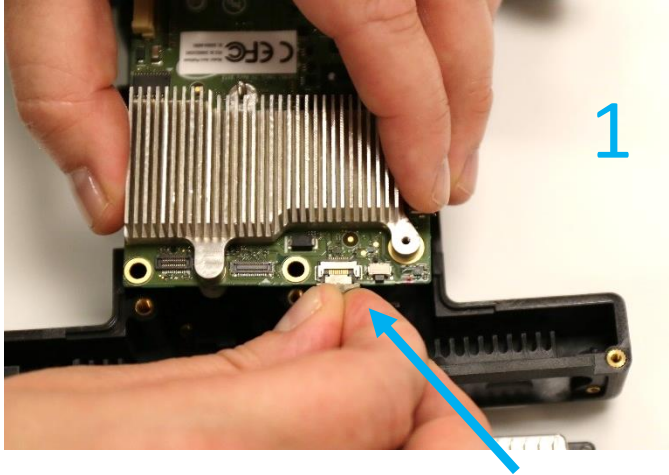
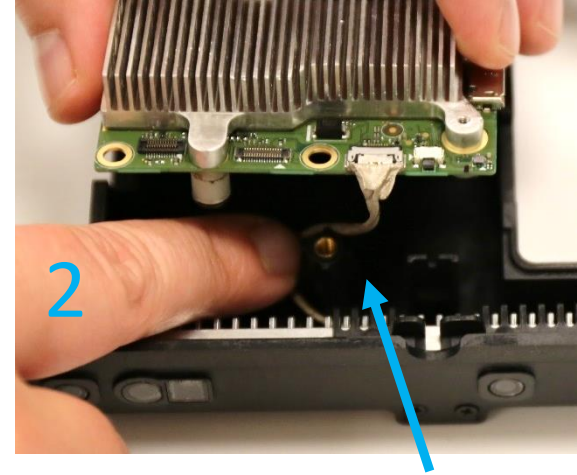**Step 5:** Screw the lens cover back to the housing with the same screws from Step 1.

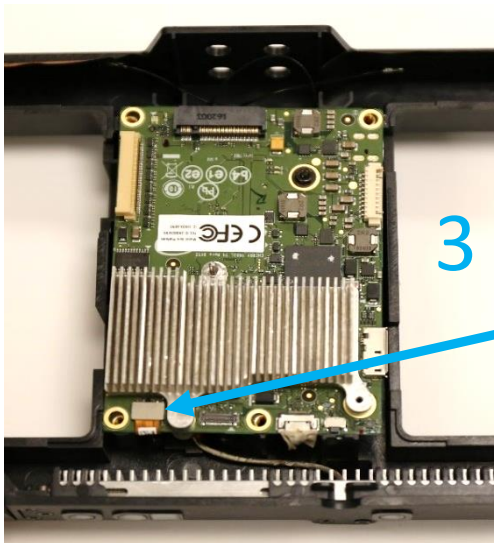**Step 6:** Fold cable and push down into the enclosure

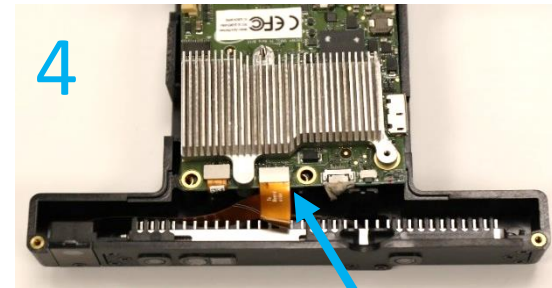# Stage 6: Connecting Vision Kit Cameras to Compute Board

Step 1: Attach Intel® RealSense™ camera module cable to right most connector on the PCBA.

Step 2: Manage the cable by routing it behind the bottom cover boss (post) under the PCBA.
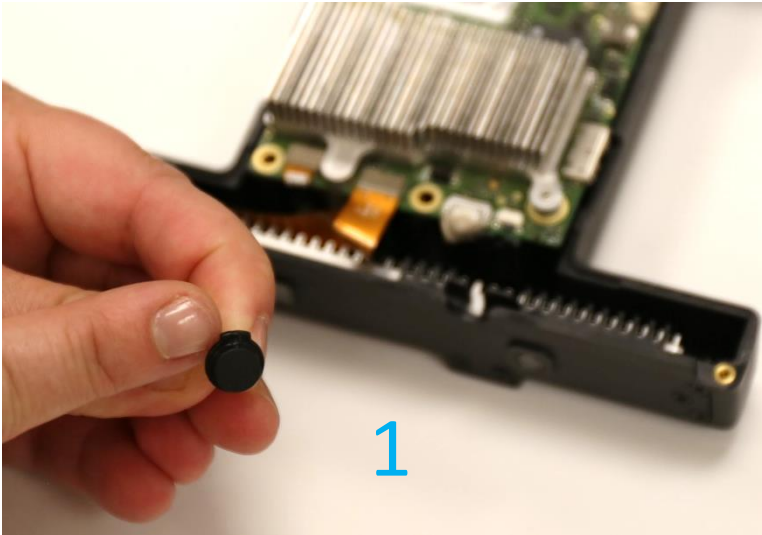

Step 3: Attach VGA camera module cable to the left most connector on PCBA.
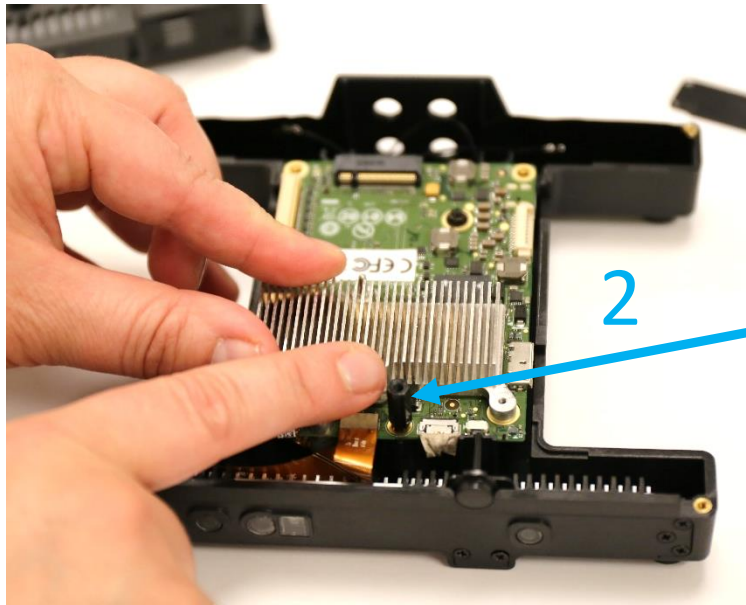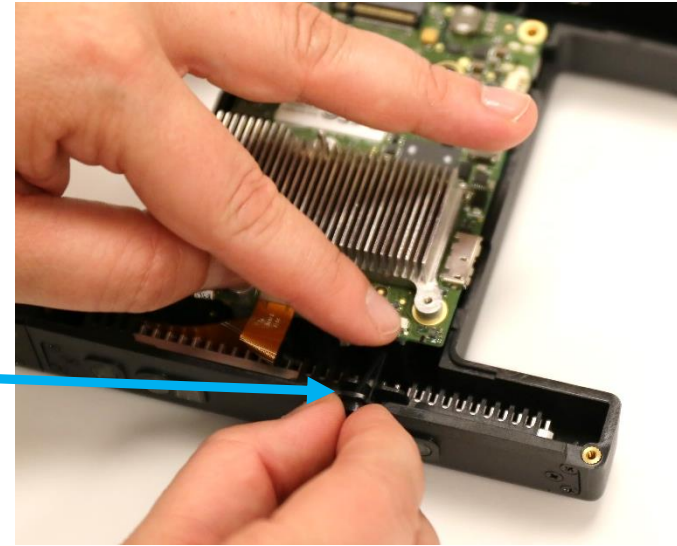

Step 4: Connect 8MP camera cable to the center connector on the PCBA.

Stage 7: Installing Power Button and Reassembling Enclosure

Step 1: Place the power button in its slot on the bottom cover with the alignment tab pointing upward.
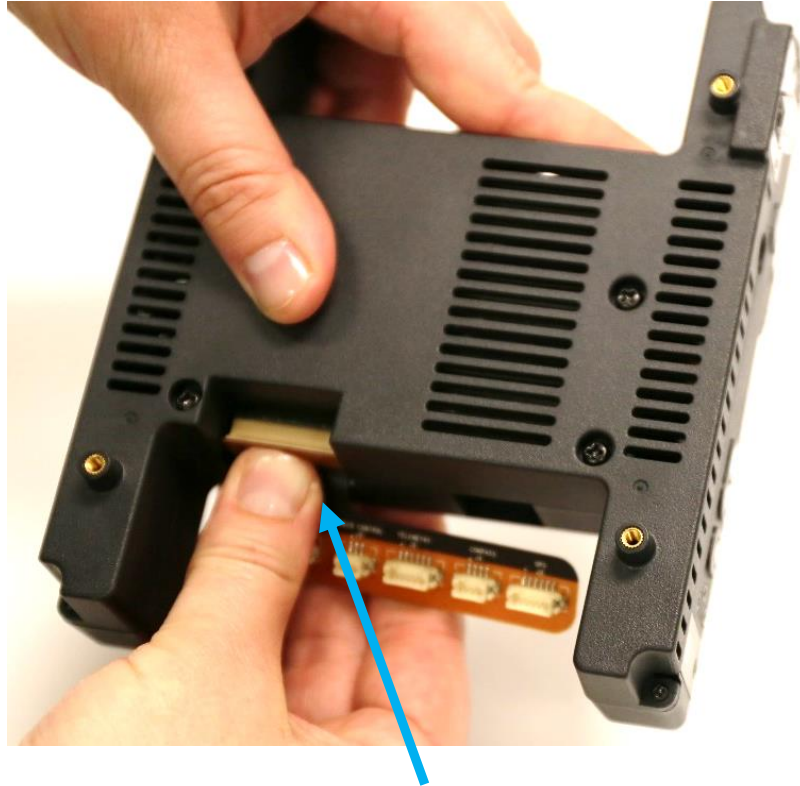

Step 2: Secure PCBA to the bottom cover by screwing the 4 hex standoffs (from Stage 1) through the holes in the PCB onto the screw bosses in the cover. Ensure WiFi antennas (Stage 2) are tucked underneath the PCBA.
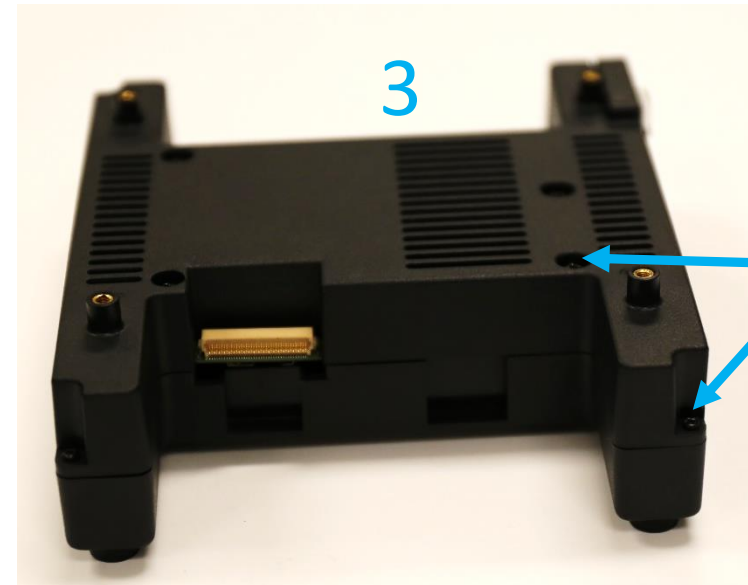
Step 3: Assemble top cover to bottom cover with the M2 (x4) and M3 (x4) screws saved from Stage 1.

Refer to Enclosure Kit contents page for torque specifications.

Stage 8: Attaching 80-pin Accessories Connector Cable

CAUTION: When removing the accessories connector cable, pry along the long edge of the connector housing. Do NOT pull from the flexible cable.
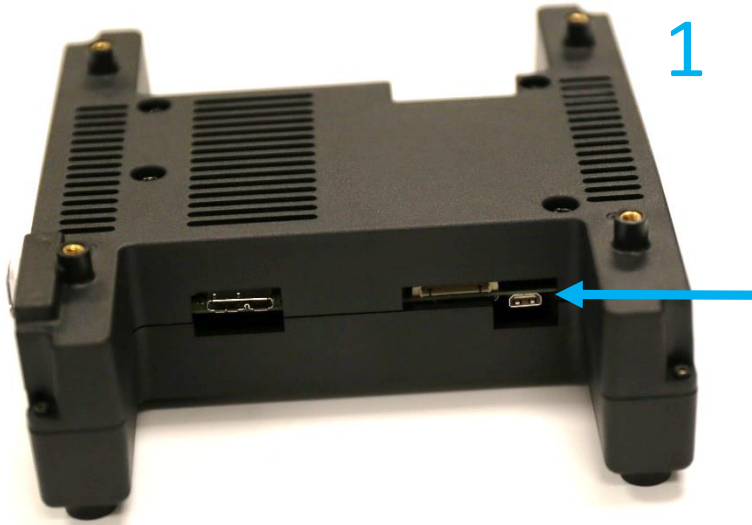
Step 1: Attach the accessories connector cable to the 80-pin connector through the hole in the enclosure with the top of the enclosure facing up and the cable oriented as shown in the picture.
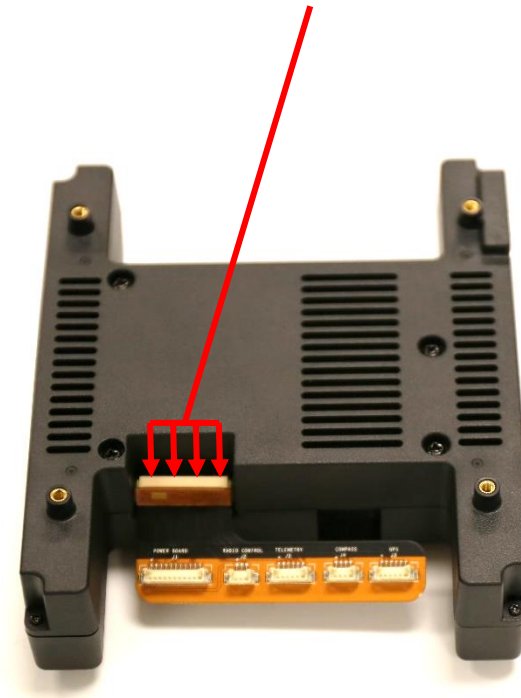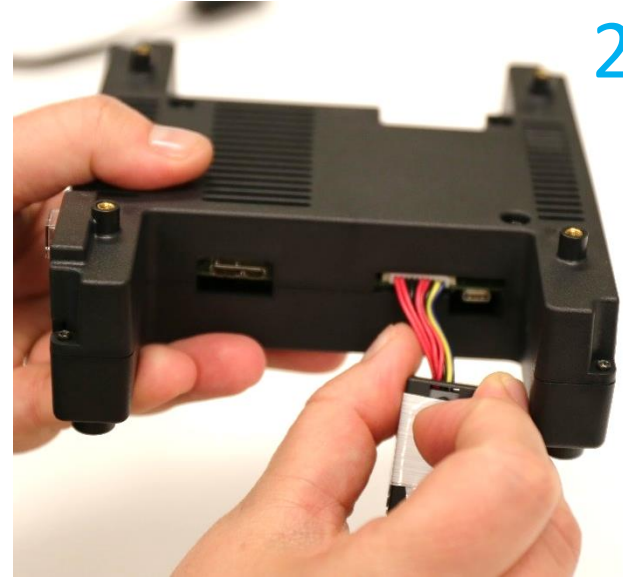
Stage 9: Powering Up
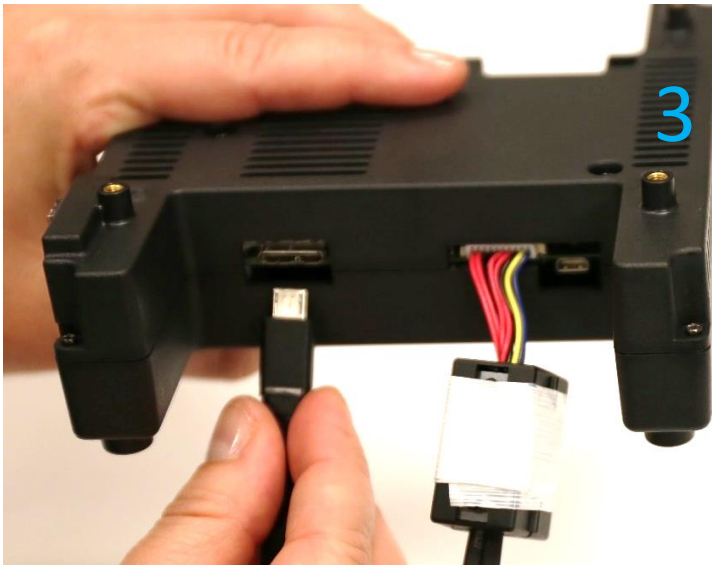

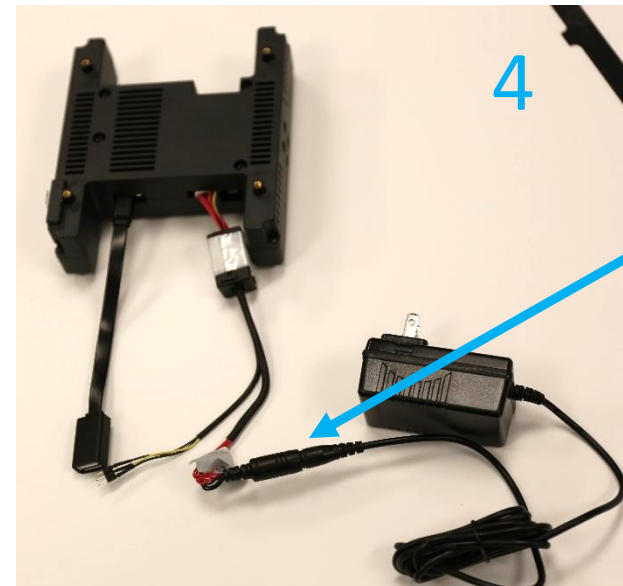Step 1: Connect to an HDMI display using the micro-HDMI port (cable not included).

Step 2: Before connecting to the wall adapter, connect the supplied power cable to the Power & Console UART connector.

Step 3: Connect the USB cable to the USB OTG port. Then attach USB keyboard and mouse using a USB hub.

Step 4: Connect AC-DC power adapter to the barrel connector on the power cable.

Plug power adapter into the wall. Linux shell will automatically appear on HDMI display.

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