Arlo Ultra 2 Teardown

A look inside the Arlo Ultra 2 Security Camera.

Written By: Robert Shuler

INTRODUCTION

A look inside the Arlo Ultra 2 Security Camera.

TOOLS:

Phillips #00 Screwdriver (1)
Spudger (1)
Large Needle Nose Pliers (1)
Probe and Pick Set (1)

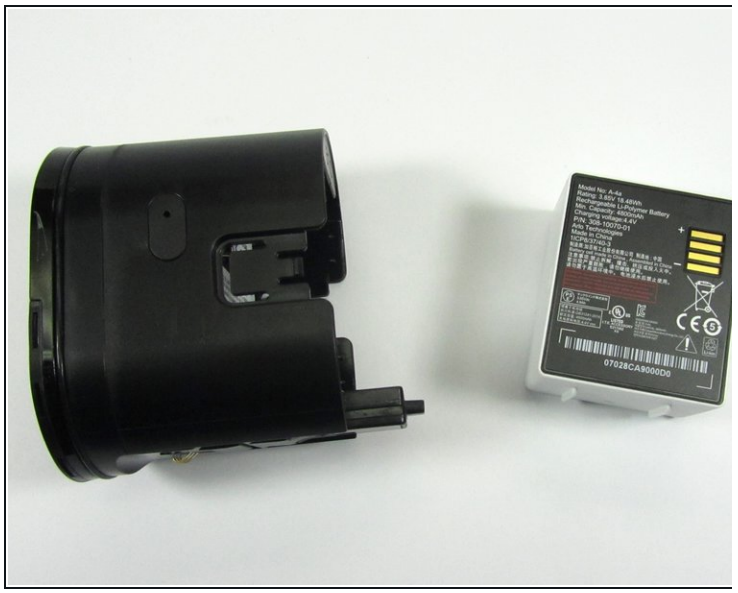
Step 1 — Arlo Ultra 2 Teardown

- Features:
  - 4K Video with HDR
  - Color Night Vision
  - Integrated Spotlight
  - 180° Viewing Angle
  - Crystal Clear 2-Way Audio
  - Weather Resistant
  - Advanced SmartHub

Step 2

- To open the Arlo Ultra Camera, press the Button on the bottom, and pull Camera Face (Camera Body) away from the Camera Enclosure
- Set the Camera Enclosure to the side. It will not be needed for the rest of the Teardown

Step 3

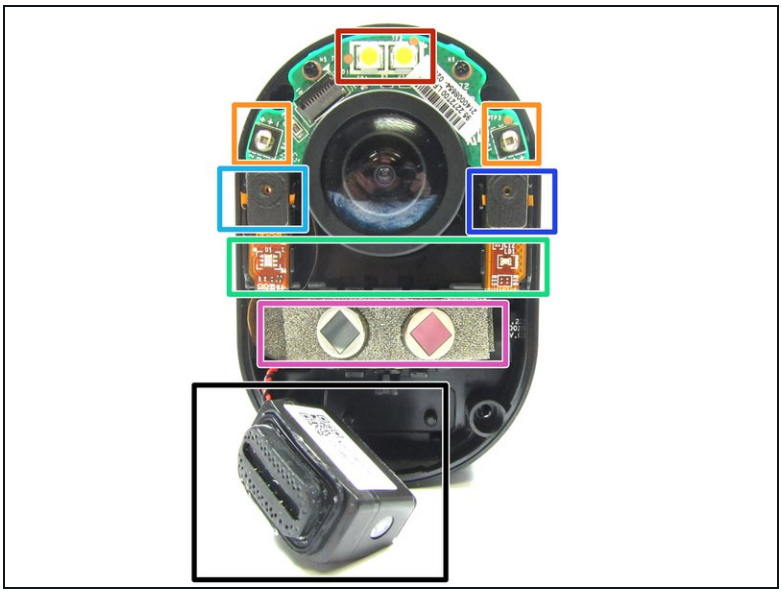


- Remove the Battery from the Camera Body by gently pulling the Battery away from the Camera Body
- The Battery Capacity is 4800mAh

Step 4

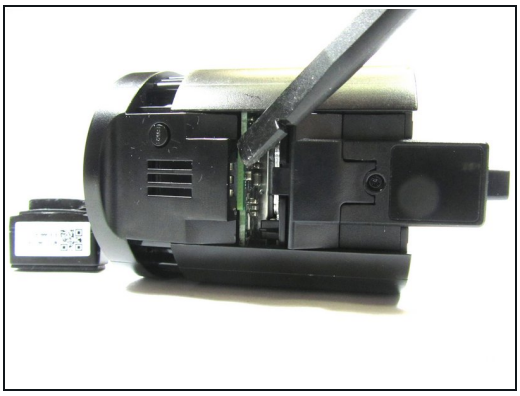
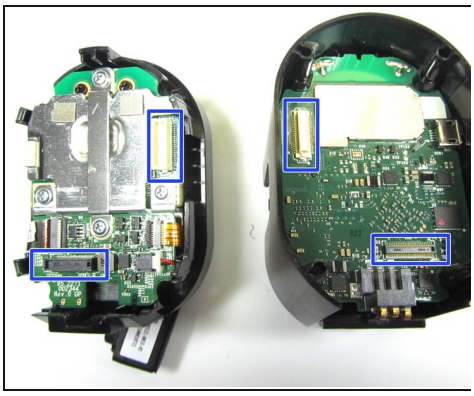
- To remove the Camera Face Plate from the Camera Body, remove the four PH00 screws in the Battery Compartment Area that secure the Camera Face Plate to the Camera Body
- Use the Spudger Tool to pop off the Camera Faceplate

Step 5



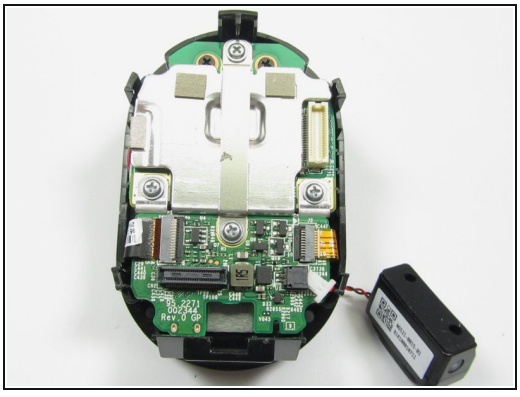
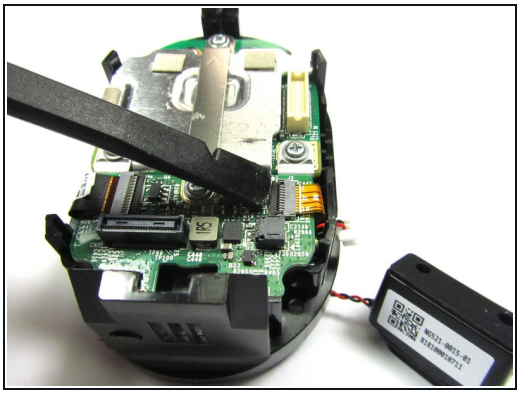
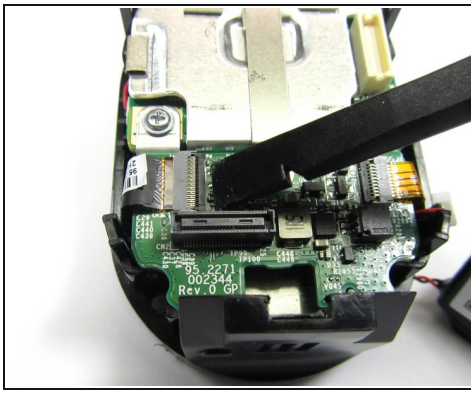
- With the camera face plate removed, we get our first look at some of the components that make up the Arlo Ultra Security Camera
  - Spot Light LEDs (400 lumens)
  - Infrared Light LEDS
  - Vesper VM1010 Wake-On-Sound MEMS Microphone
  - TDK ICS-41350 Microphone
  - Left Side, Light Detector. Right Side, Multi-Color LED
  - PYD1548/7660 Excelites Tech Low Power Motion PIR Sensors
  - Speaker / Siren - NG521-0015-01B18100010711

Step 6

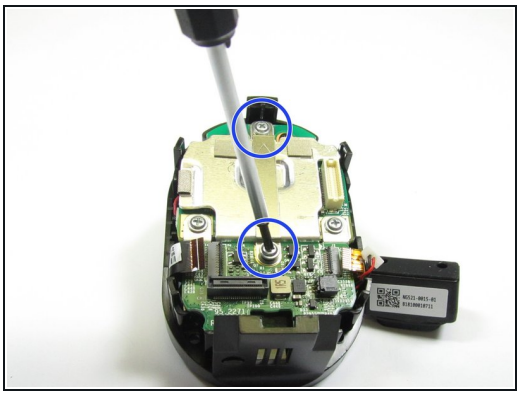
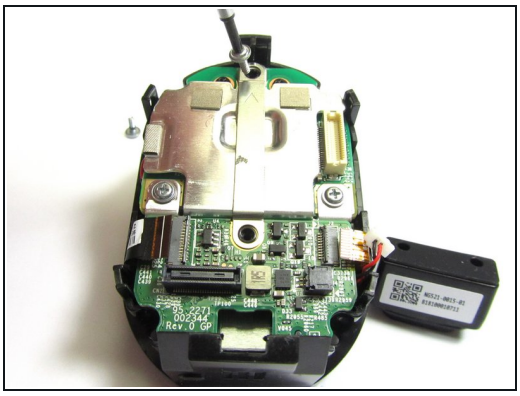
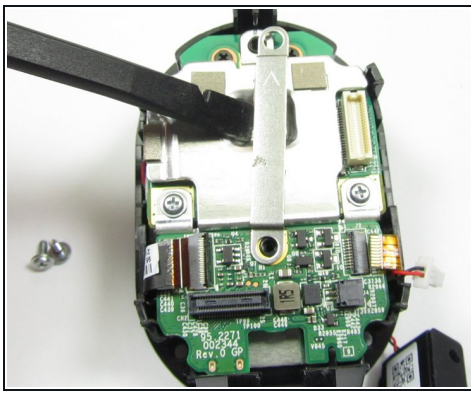
- With the Camera Face Plate removed, use the Spudger Tool to pry the Camera Assembly away from the Camera Body
- Once the Camera Assembly comes loose from the Camera Body, use the Spudger Tool to pry against the two plastic tabs on the bottom of the Camera Assembly that hold the Camera Assembly to the Camera Body PCB (Main PCB)
- Pull the Camera Assembly away from the Assembly Body
- The Camera Assembly is held in place by Zero Insertion Force Connectors to the Main PCB in the Camera Body

Step 7

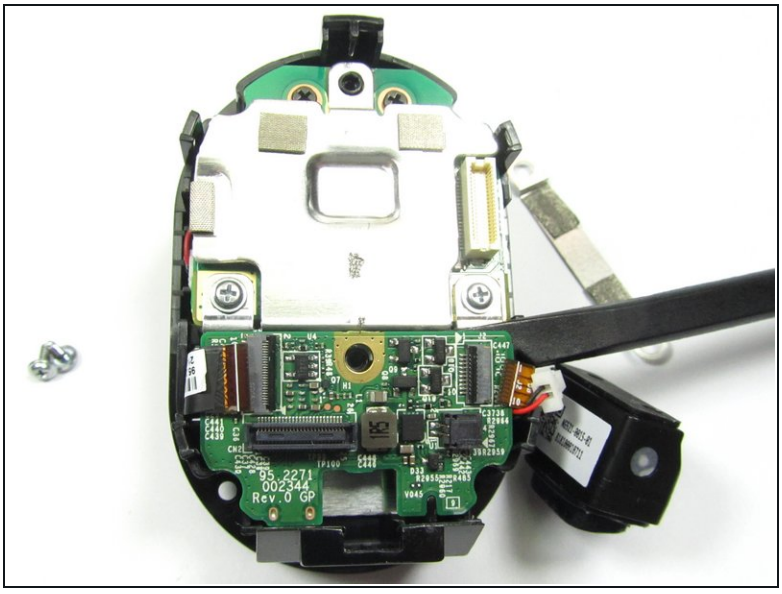
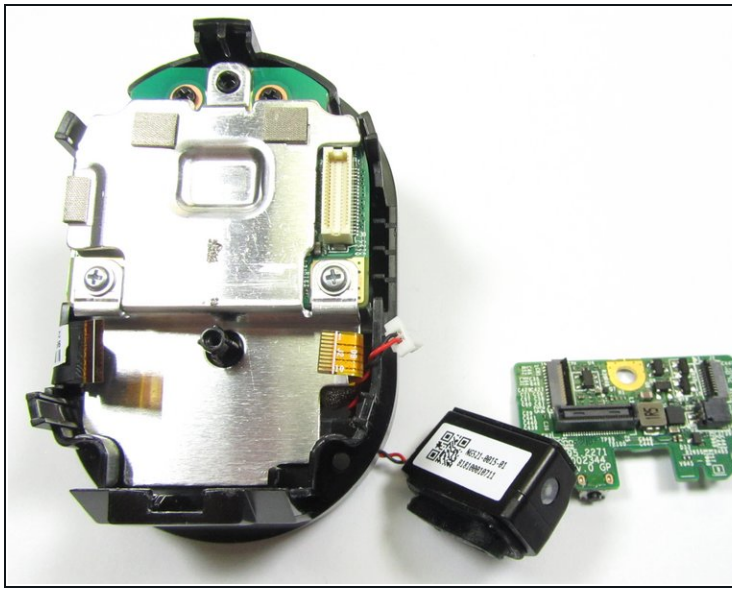
- With the Spudger Tool, pry off the cable to the Speaker / Siren from the Speaker Connector
- With the Spudger Tool, release the Flex Cables attached to the Small PCB on the back of the Camera Assembly

Step 8

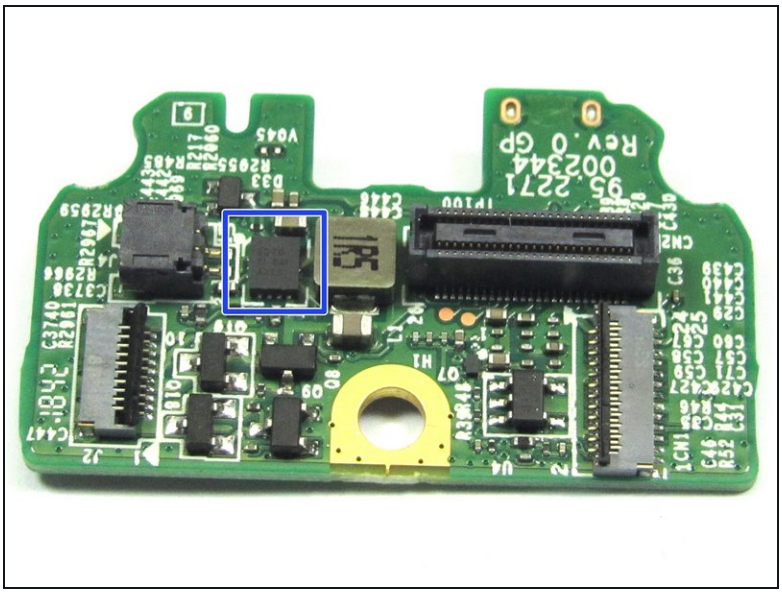
- With the Flex Cables released from the Small PCB on the back of the Camera Assembly, remove the two PH00 screws that hold the Metal Bracket in place
- Use the Spudger Tool to pop off the Metal Bracket

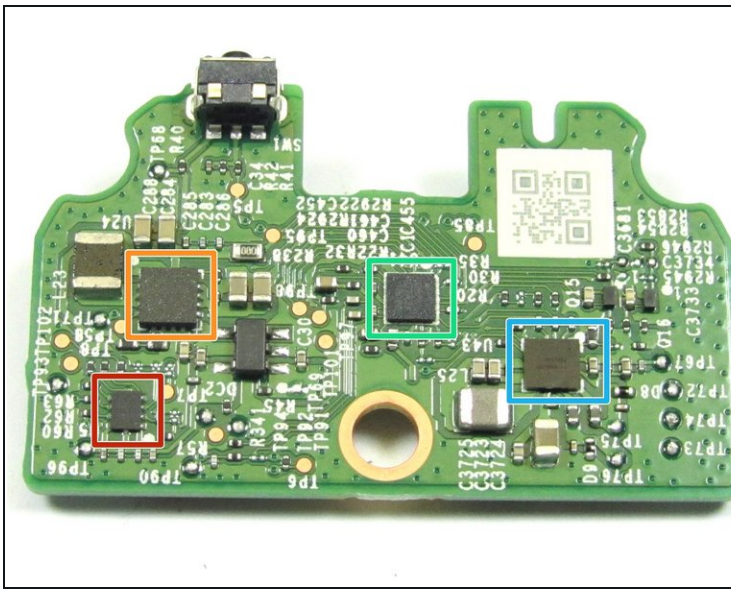
Step 9

- With the Spudger Tool, pry out the Small PCB on the back of the Camera Assembly

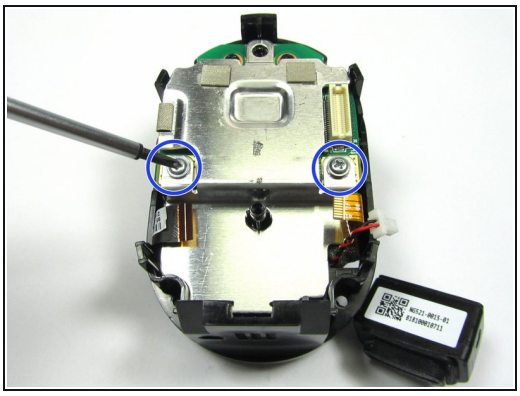
Step 10

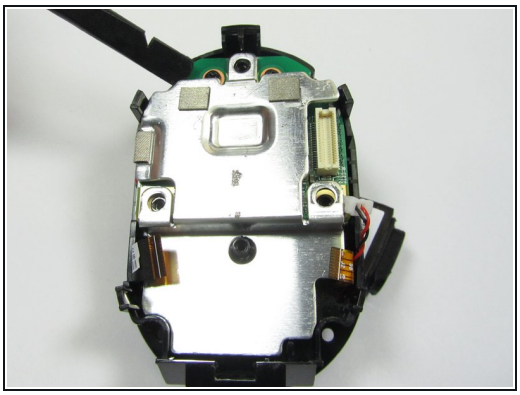


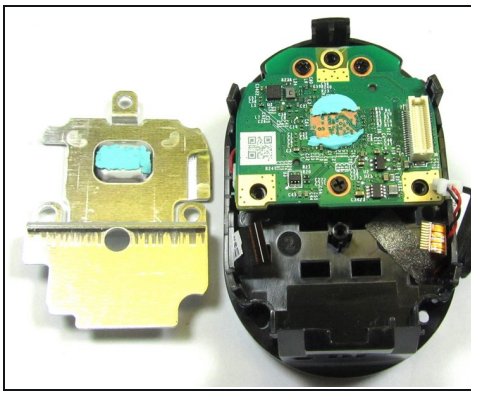


- Now that the Small PCB has been removed, we can review the components on the PCB. Some parts could not be crossed referenced. Please leave a comment if you happen to know a part or parts.
- Small PCB Topside
  - U1 Part Markings: 3070, TI 861, AXLY
- Small PCB Backside
  - U24 Part Markings: PA81, TI 686, A6KS
  - U41 DSP Group D2A3X - Audio DSP
  - U5 Part Markings: 18M
  - U43 TI TAS2560 - 5.6W Class D Mono Audio Amp

Step 11

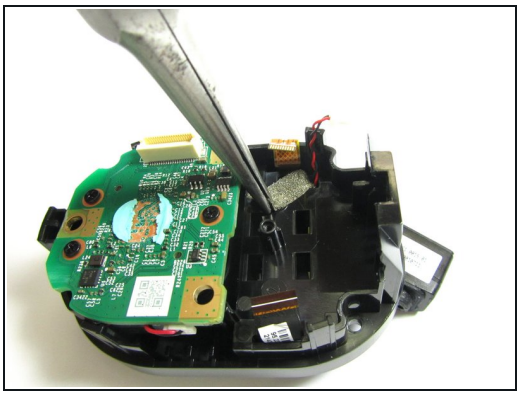


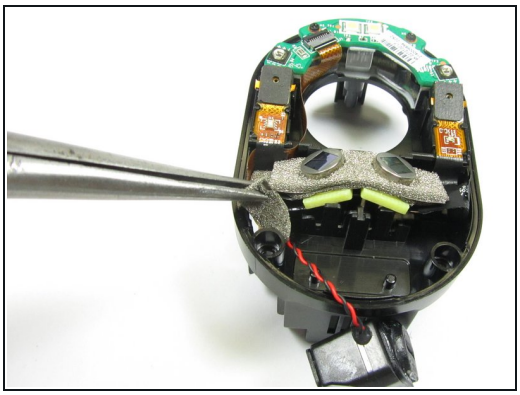


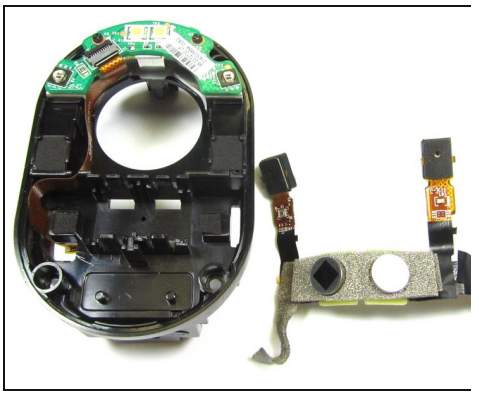


- Remove the Large EMI / Heatsink Shield from the back of the Camera Assembly by removing the two PH00 Screws
- Pry off the Large EMI / Heatsink Shield from the Camera Assemble using the Spudger Tool

Step 12

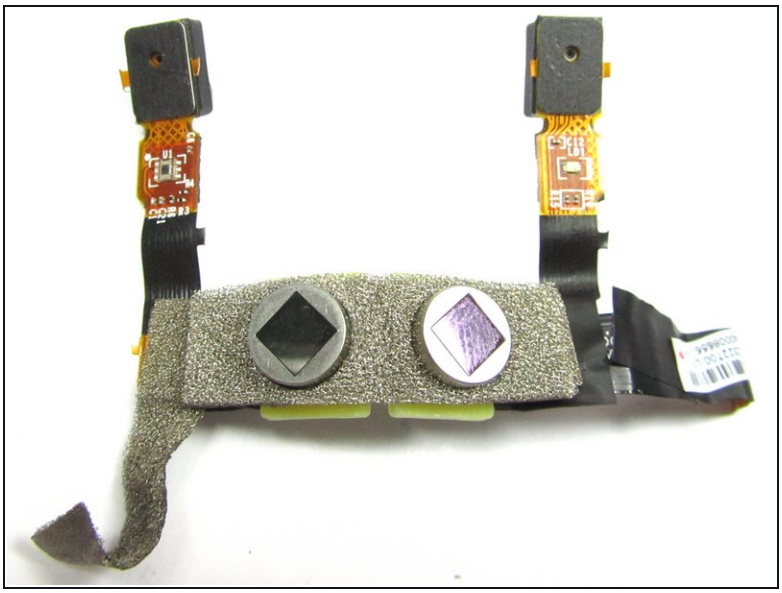






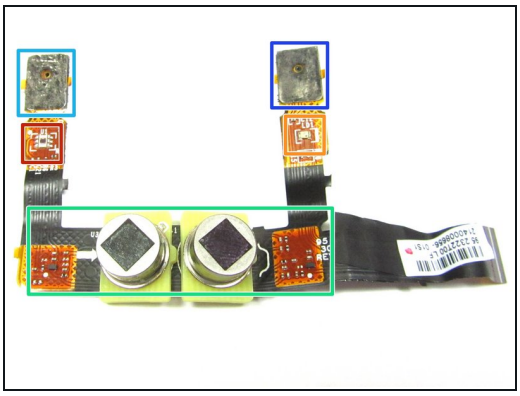
- With the Large EMI / Heatsink Shield removed, we can now remove the Flex PCB that contains the Microphones, Light Detector, Multi-Color LED and PIR Sensor
- Use a pair of Long Needle Nose Pliers to pull the Metal Shield Tape from the backside of the Camera Assemble Body.
- From the frontside of the Camera Assembly Body, pull the Metal Shielding Tape through the hole to the backside of the Camera Assembly Body
- Use the Spudger Tool to gently pry out the Flex PCB. The Flex PCB is held in place by double stick foam tape
- The Speaker / Siren can also be removed after the Metal Shield Tape has been removed by pulling the speaker cable through the hole between the backside and frontside of the Camera Assembly Body that was occupied by the Metal Shield Tape

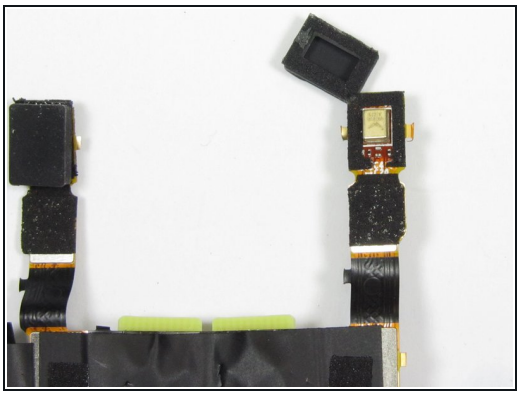
Step 13

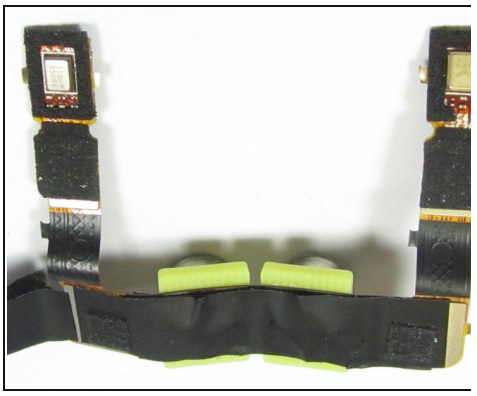


- After removing the the Flex PCB, remove the Metal Shield Tape from the Flex PCB

Step 14

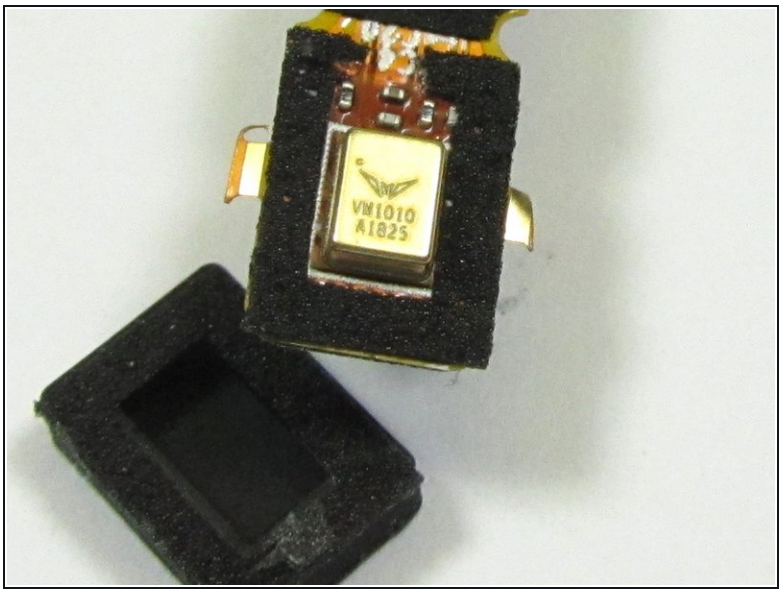


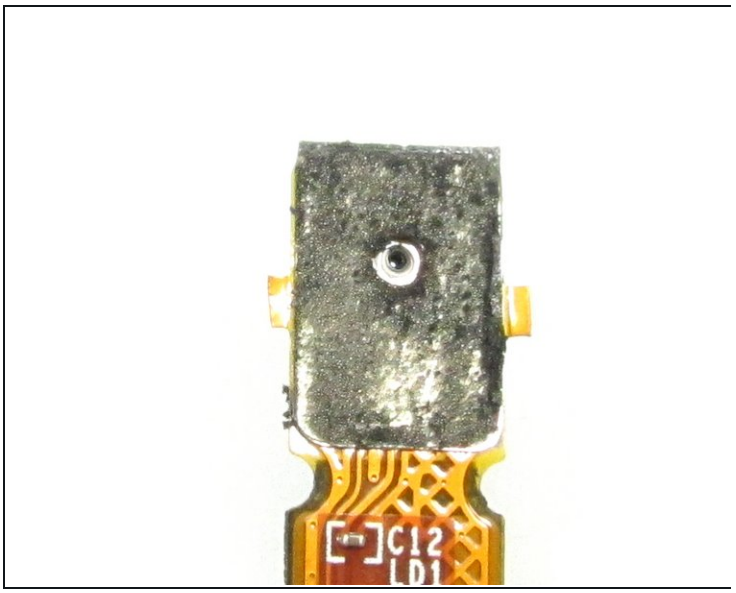




- With the Metal Shield Tape removed and the Foam Tape scraped off, the components on Flex PCB can be reviewed
  - Vesper VM1010 Wake-On-Sound MEMS Microphone
  - TDK ICS-41350 Microphone
  - Light Detector
  - Multi-Color LED
  - PYD1548 Excelites Tech Low Power Motion PIR Sensors
- The Flex PCB has foam tape on both sides, and a Rubber Cavity Cap that surrounds each Microphone. The Foam Tape, and Rubber Cavity Caps can be removed to allow a close up view of the Microphones

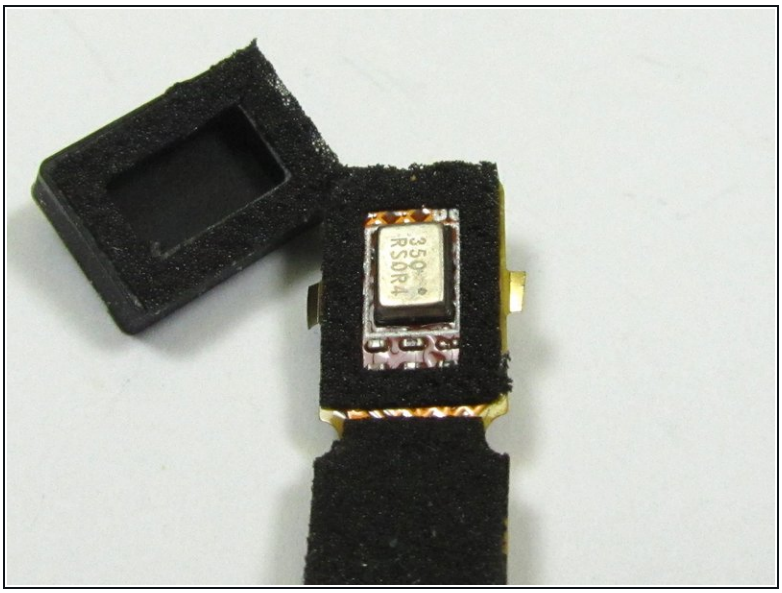
Step 15

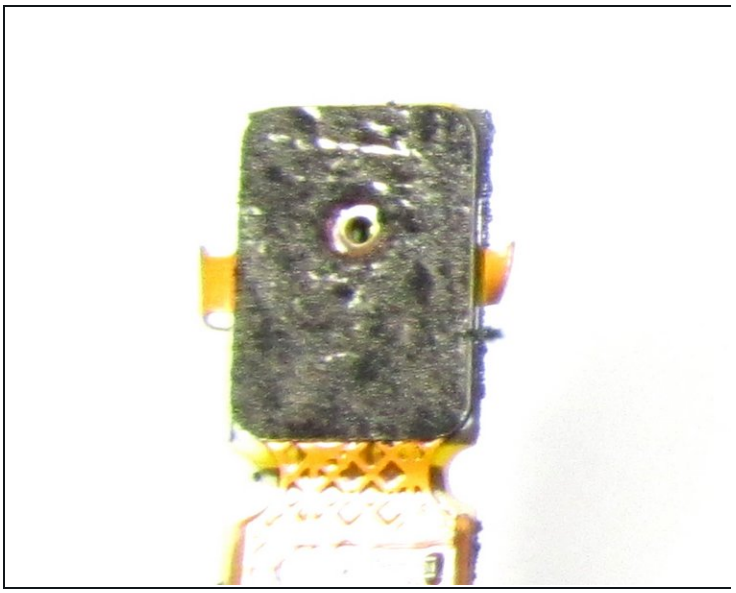




- Frontside and Backside Close up Views of the Right Side Microphone on the Flex PCB
  - Vesper VM1010 Wake-On-Sound MEMS Microphone

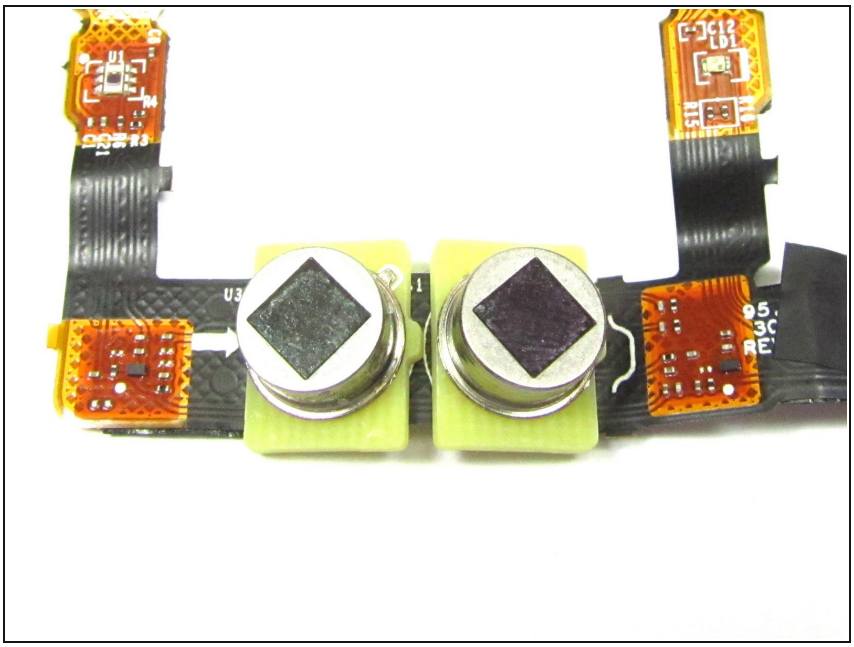
Step 16





- Frontside and Backside Close up Views of the Left Side Microphone on the Flex PCB
  - TDK ICS-41350 Microphone

Step 17

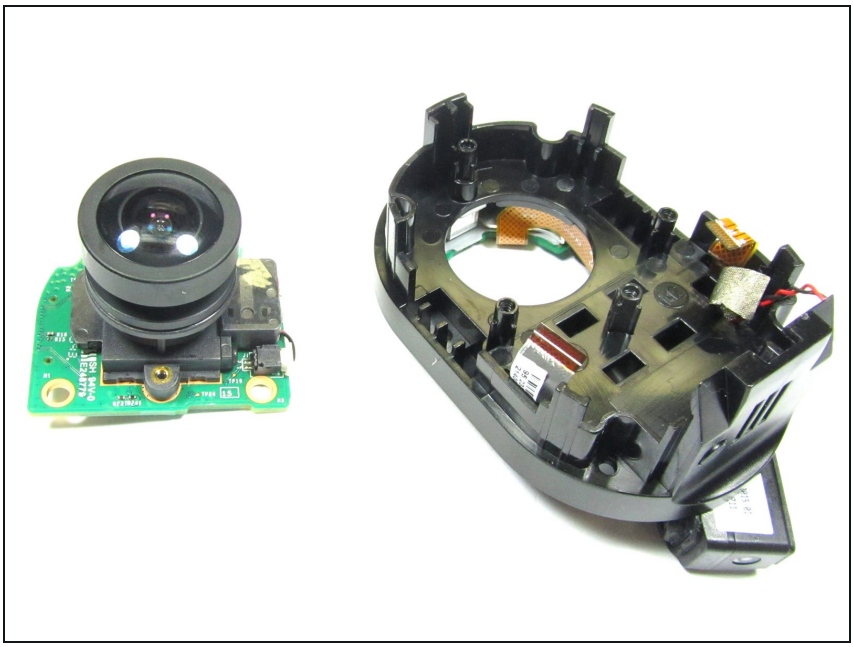


- PIR Sensors, Light Detector, and Mutli-Color LED Close up View

Step 18

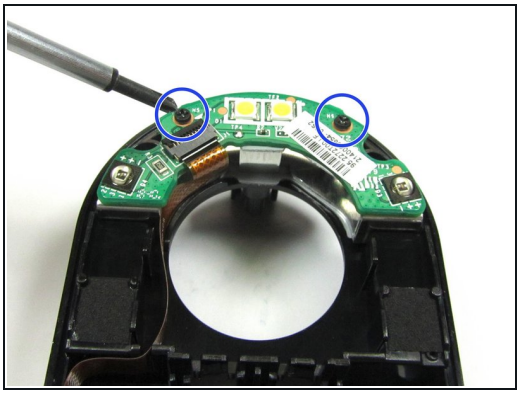
- Close Up View of the Speaker / Siren
  - NG521-0015-01B18100010711

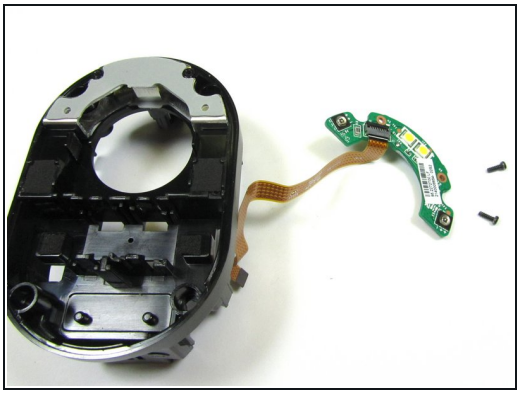
Step 19

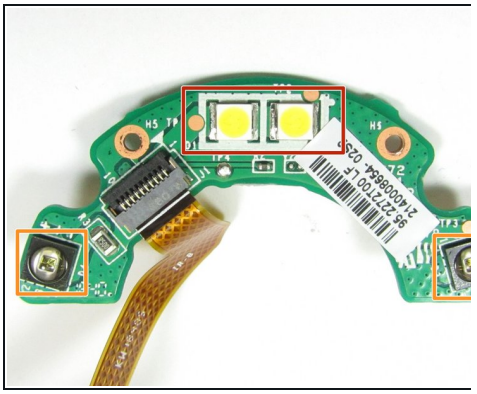


- After the Flex PCB has been removed, the Camera Lens plus Image Sensor PCB can be gently pulled out from the Camera Assembly Body

Step 20

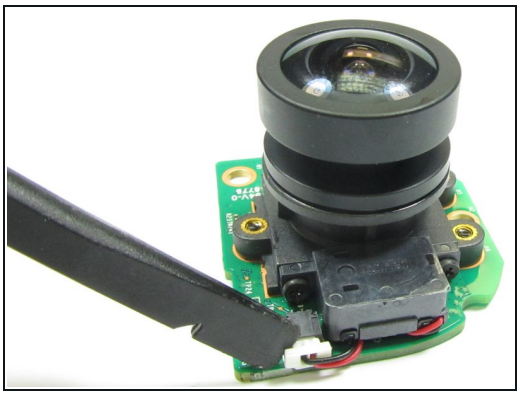


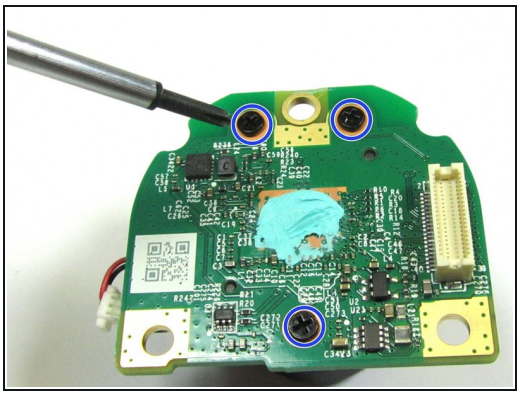


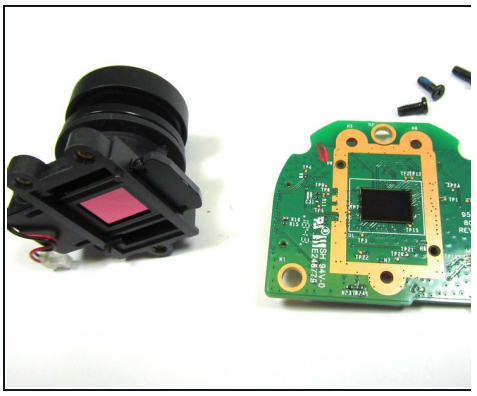


- Use the PH00 Tool, to remove the the two screws holding the the Spot Light LEDs and Infrared Light LEDs PCB to the Camera Assembly Body
- Close up view of the Spot Light LEDs, and Infrared Light LEDs
  - Spot Light (400 Lumens)
  - Infrared Light LEDs

Step 21

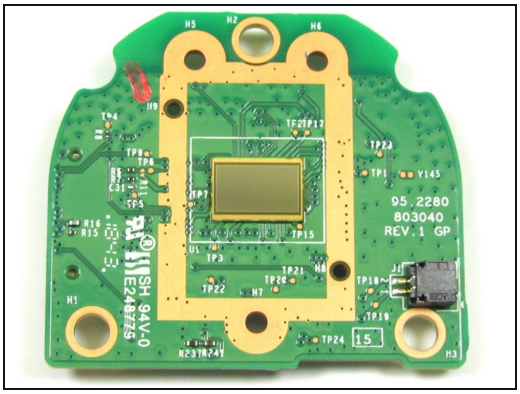


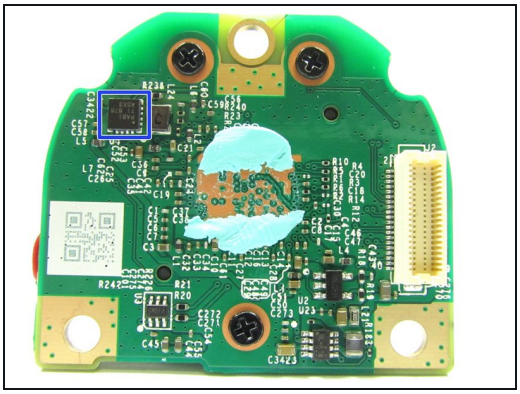


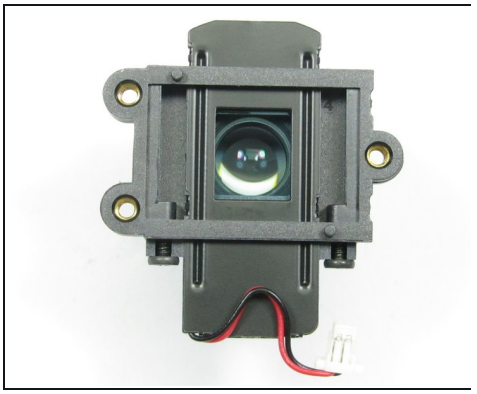


- Use the Spudger Tool to release the Camera's Mechanical Focus Motor Control Cable
- Use the PH00 Tool to remove the three screws holding the Camera Lens to the Image Sensor PCB

Step 22

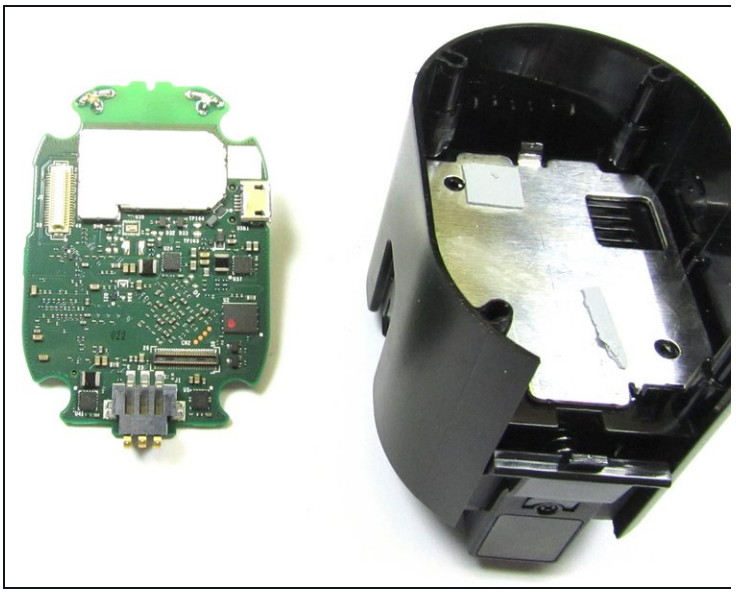






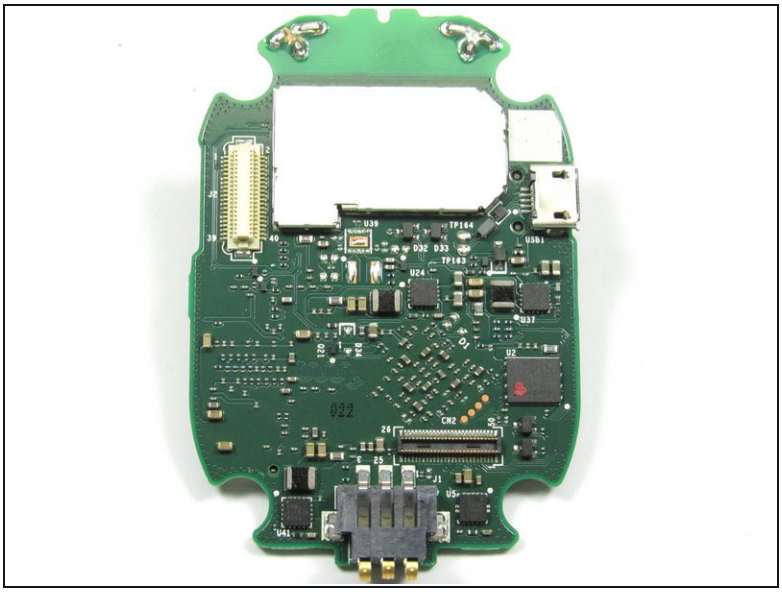
- Close Up View of the 4K Image Sensor PCB. The Image Sensor has no part number that could be cross referenced. Leave a comment, if you know the part number of the Image Sensor.
- Close Up View of the backside of the Image Sensor PCB
  - U4 Part Markings: PA81, TI 878, A5X3
  - Please leave a comment if you know the part number for U4
- Close Up View of the Camera Lens

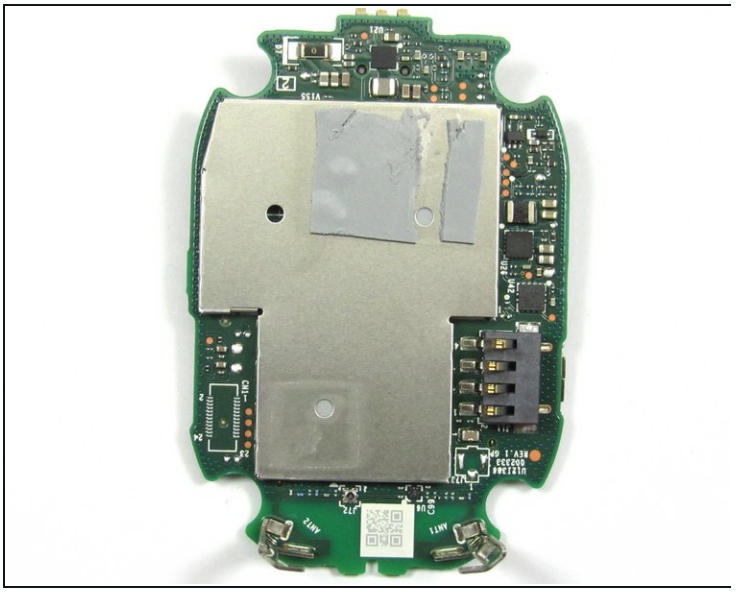
Step 23



- Remove the Main PCB from the Camera Body by gently prying it out using the Spudger Tool

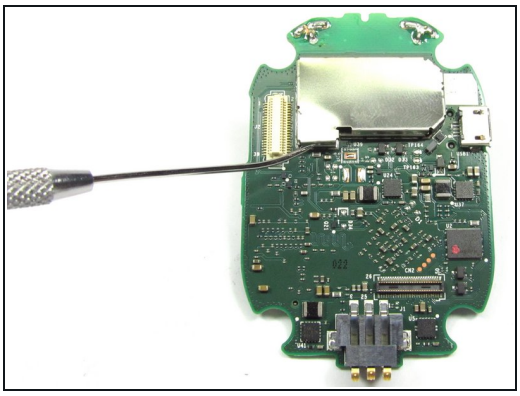
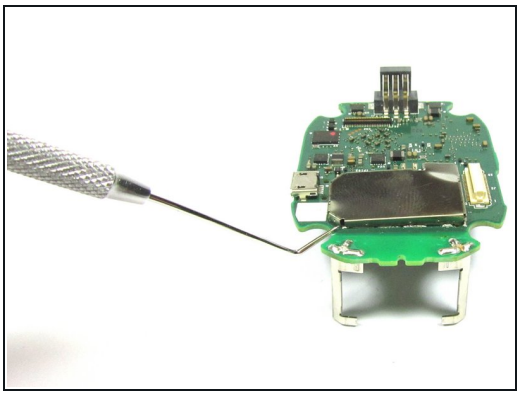
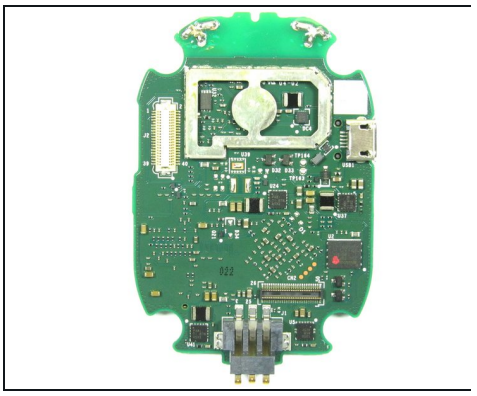
Step 24





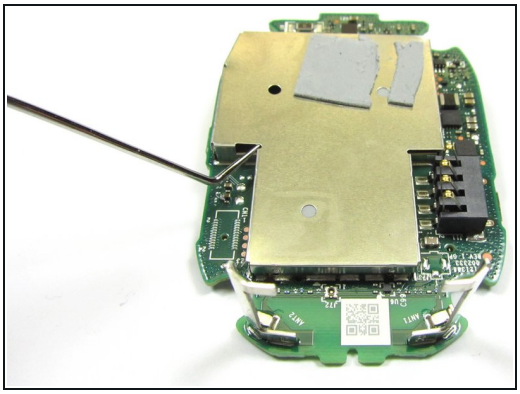
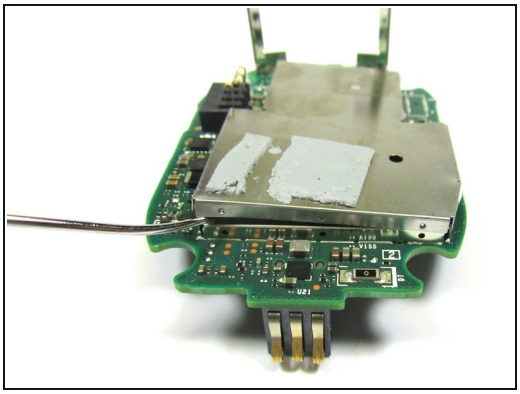
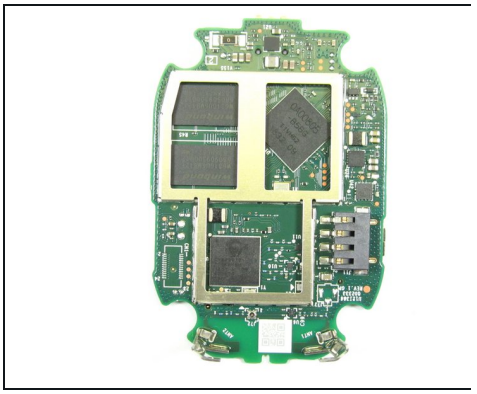
- The Main PCB has EMI / Heatsink Shielding on the frontside and backside

Step 25

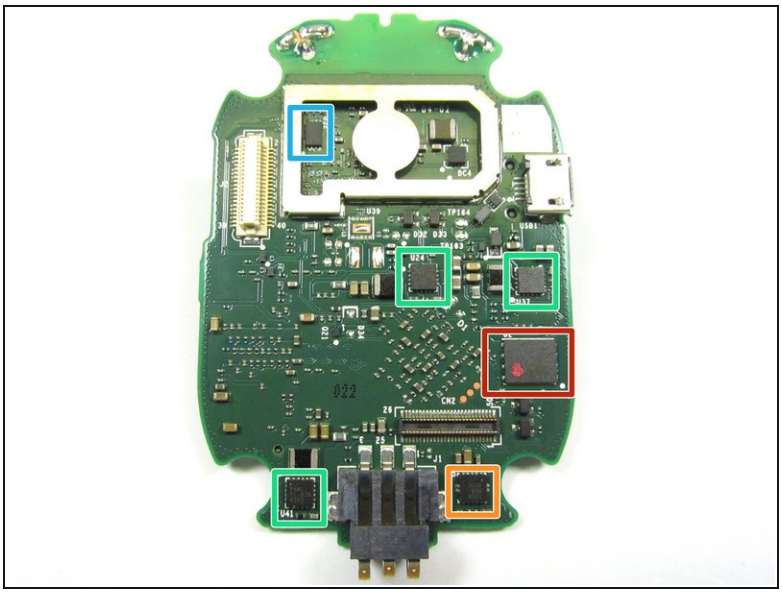
- The Small EMI/Heatsink Shield is not soldered on and can be easily removed with a Dental Pick Tool
- Use the Dental Pick Tool to pry up the sides of the EMI/Heatsink Shield
- Once the EMI/Heatsink Shield has been loosen, it can easily be pulled off the rest of the way

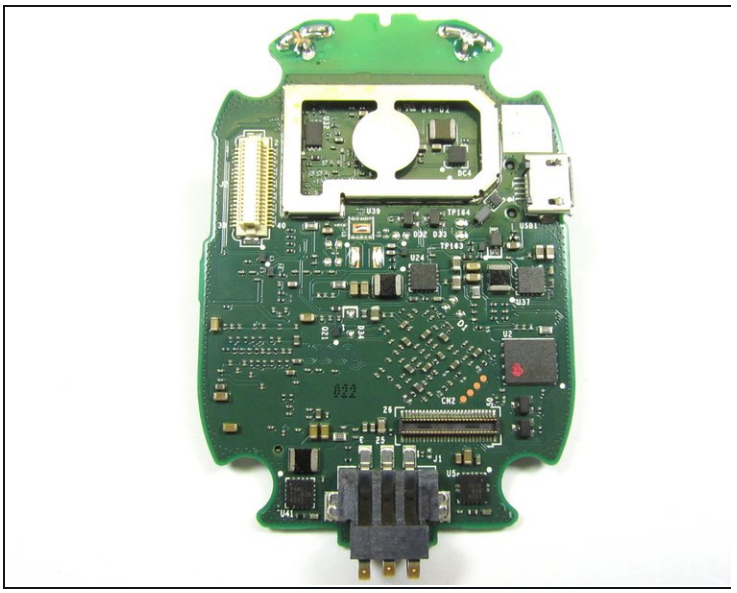
Step 26

- The Large EMI/Heatsink Shield is not soldered on and can be easily removed with a Dental Pick Tool
- Use the Dental Pick Tool to pry up the sides of the EMI/Heatsink Shield
- Once the EMI/Heatsink Shield has been loosen, it can easily be pulled off the rest of the way

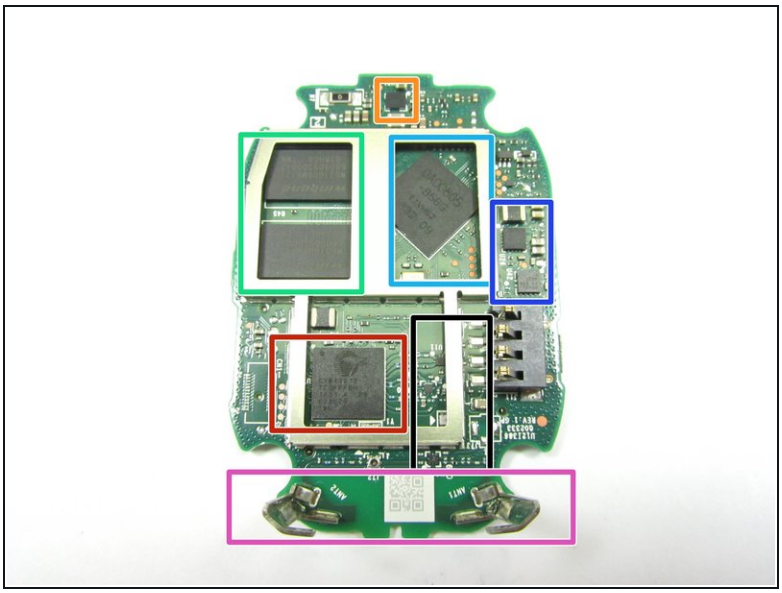
Step 27

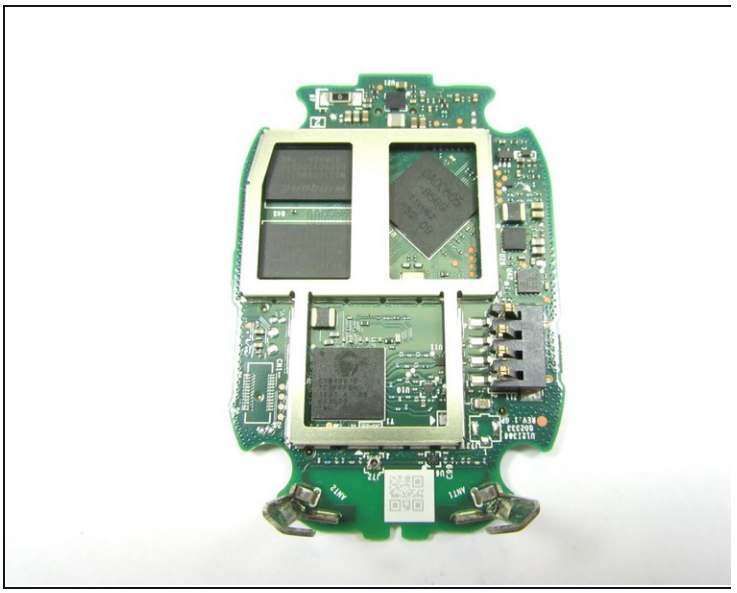




- Main PCB Front Side Close Up View. Please leave a comment if you know information about U5, U41,U37,U24, U32
  - U2 - Winbond 128m-bit SPI Flash, W25Q128FWP6
  - U5 Part Marking: 1200, P68, AC5F
  - U41, U37, U24 Part Markings: PA81, TI 878, A5X2
  - U32 Part Marking: GT, 43, 828

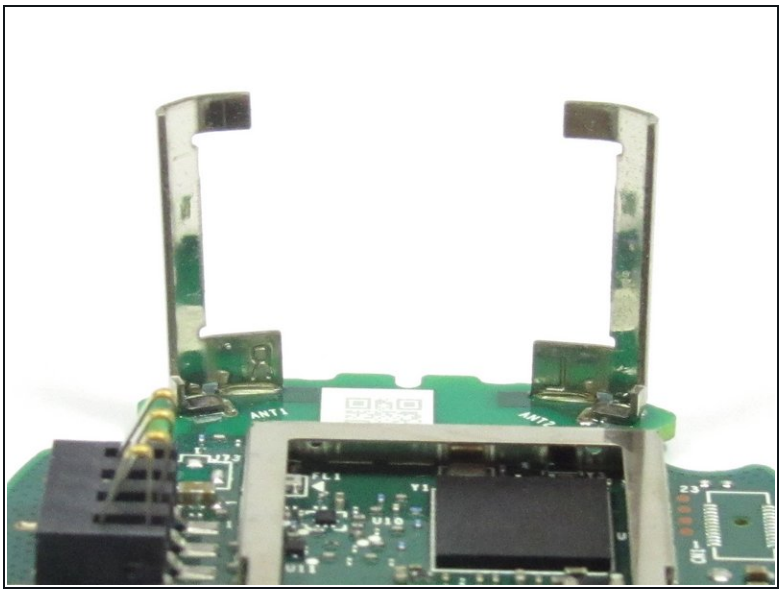
Step 28

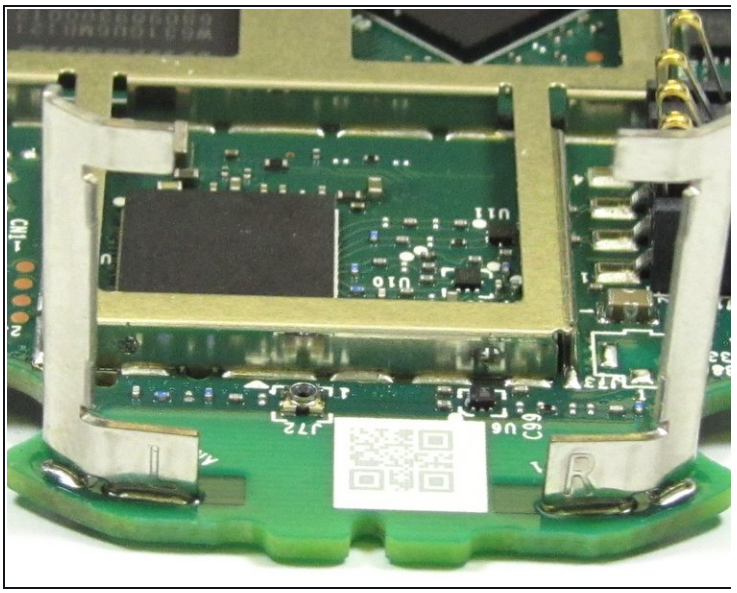




- Main PCB Backside Close Up View. Please leave a comment if you know information about U1, U26, and U42
  - U21 - I2C Single Cell 3A Charger, TI BQ25898
  - Winbond 8M x 8 Banks x 16 Bit, W631GU6MB121
  - U1 Part Markings: OA00805-B56G, TIVH62. Appears to be the video image processor
  - U7 - Cypress Ultra-Low Power, 802.11a/b/g/n WiFi/BLuetooth 5.0 Controller
  - U26, and U42 Part Markings: PA61, TI 871, A241, and 851DD, TI 838, A827
  - RF Front end with RF Switches, RF Bandpass Filter, and possible a RF PA
  - Dual WiF / Bluetooth Antennas

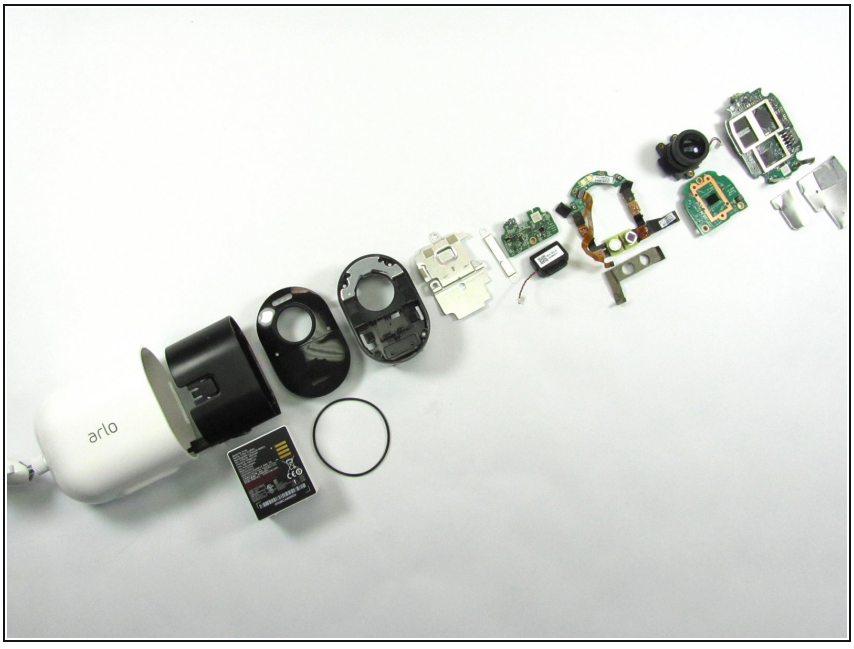
Step 29





- Close Up View of the WiFi / Bluetooth Antennas

Step 30



- Teardown Exploded View of the Arlo Ultra 4K Wire-Free HDR Security Camera