



Google Pixel Buds 2 Teardown

Google Pixel Buds 2

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INTRODUCTION

A look inside the Google Pixel Buds 2



TOOLS:

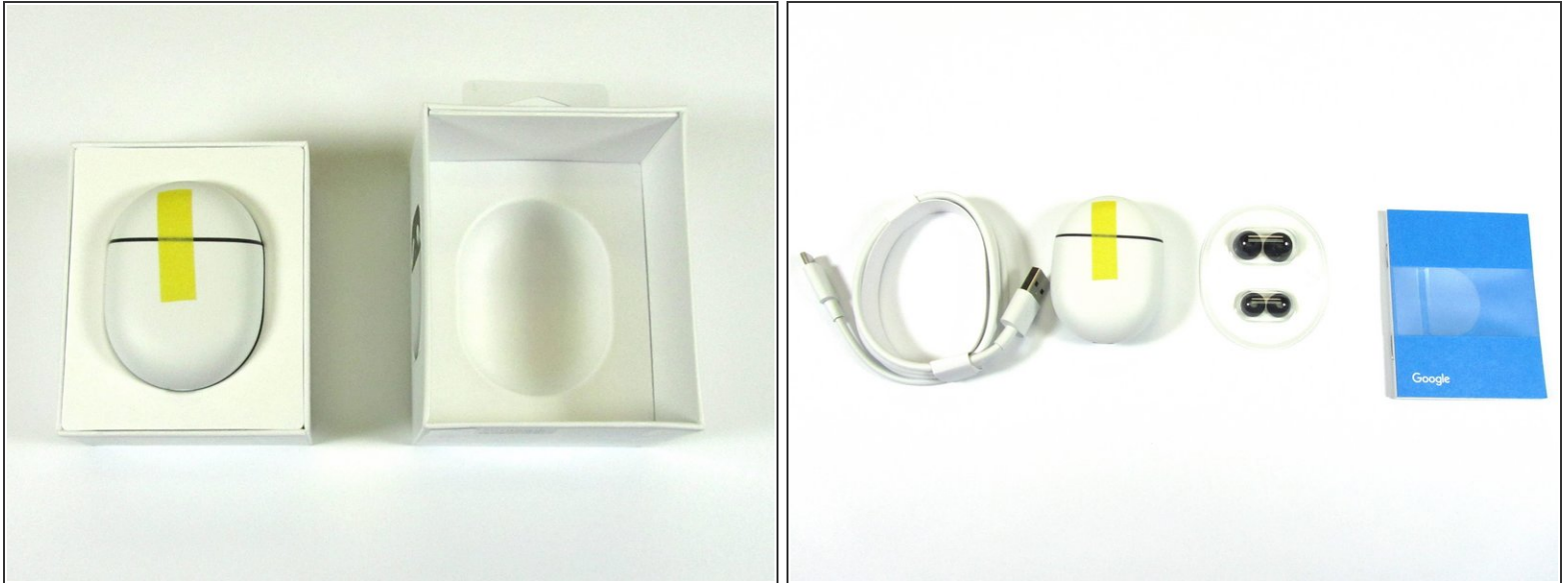
- [Technician's Razor Set](#) (1)
IF145-323-1
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Step 1 — Google Pixel Buds 2 Teardown



- Features:
 - Sweat and Water Resistant
 - Bluetooth® 5.0
 - Spatial vent for in-ear pressure reduction and spatial awareness
 - Dual beamforming microphones / Voice detecting accelerometer
 - Up to 5 hours of listening time and up to 2.5 hours of talk time
 - Capacitive touch sensors / Dual IR proximity sensors

Step 2



- What is in the box:
 - Buds Carrying / Charging Case
 - USB 'C' Cable
 - Ear bud rubber tips for different sizes of ears
 - User's Manual

Step 3



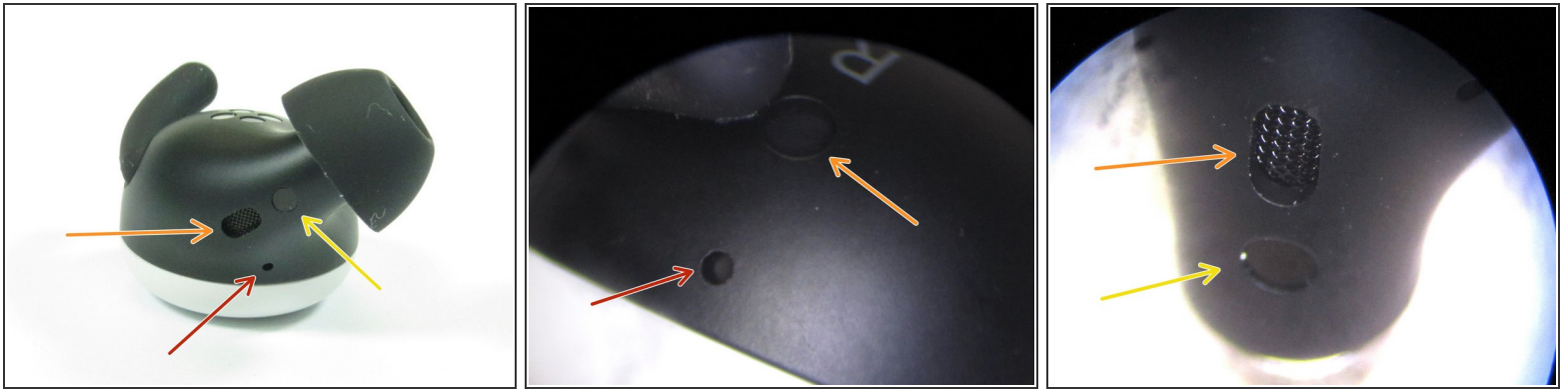
- Open the Google Pixel Buds Charging / Carrier case to locate the Buds
- Once the Google Pixel Buds have been removed, and we can get a closer look at the Buds.

Step 4



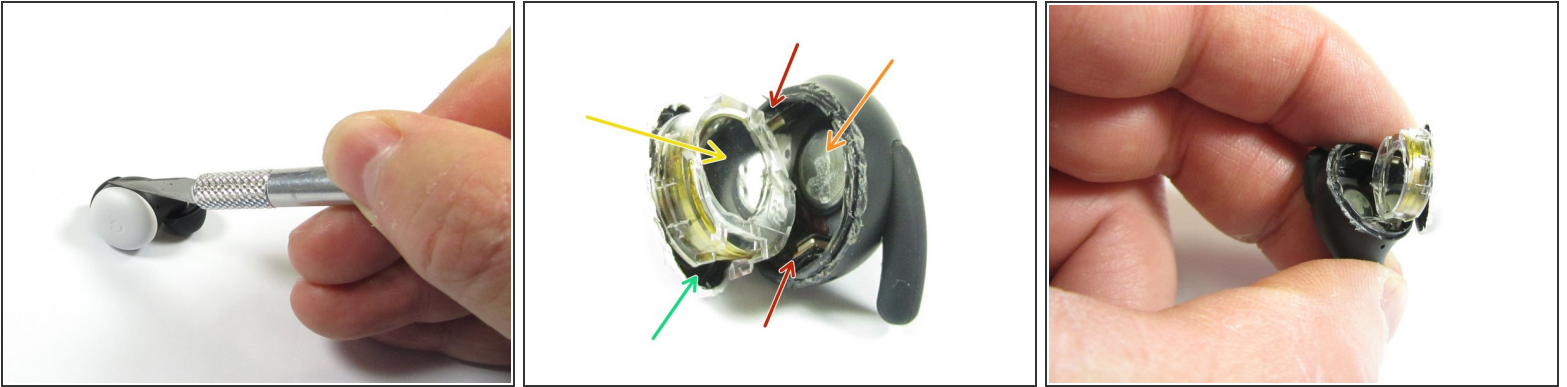
- Back View of the Buds
 - Spatial Vent
 - Connectors for Charging the Battery when in the carrier / charging case
 - IR Detector for detecting when the buds are in the charging case or in the ear
 - IR Detector for detecting when the bud is in the ear
 - Grounded Metal Grid sound chamber cover
- Closeup view of the Grounded Metal Grid

Step 5



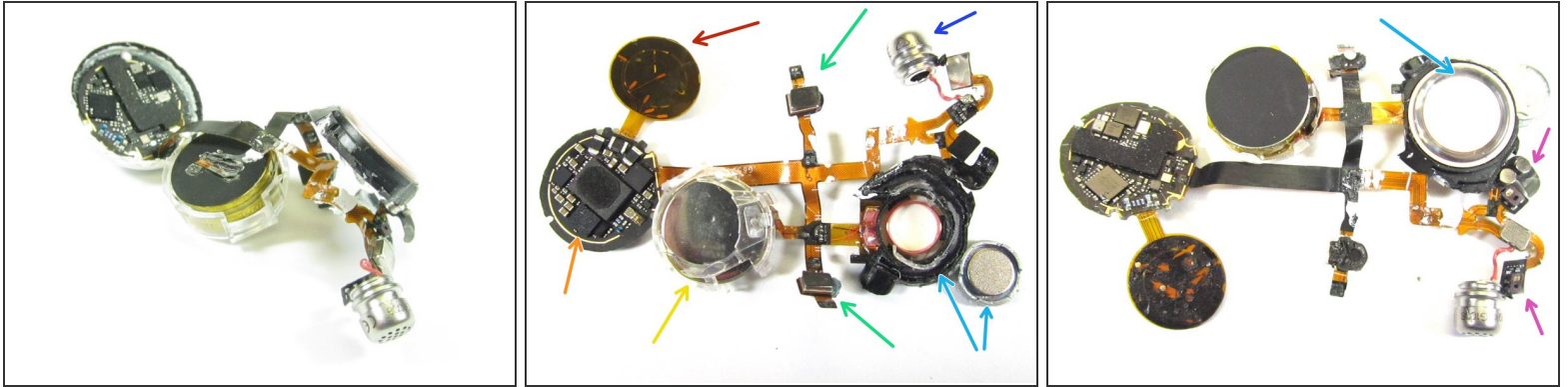
- Microphone port. One on each side, and opposite one another.
- Spatial vent / grounded mesh
- IR Detector for in ear detection

Step 6



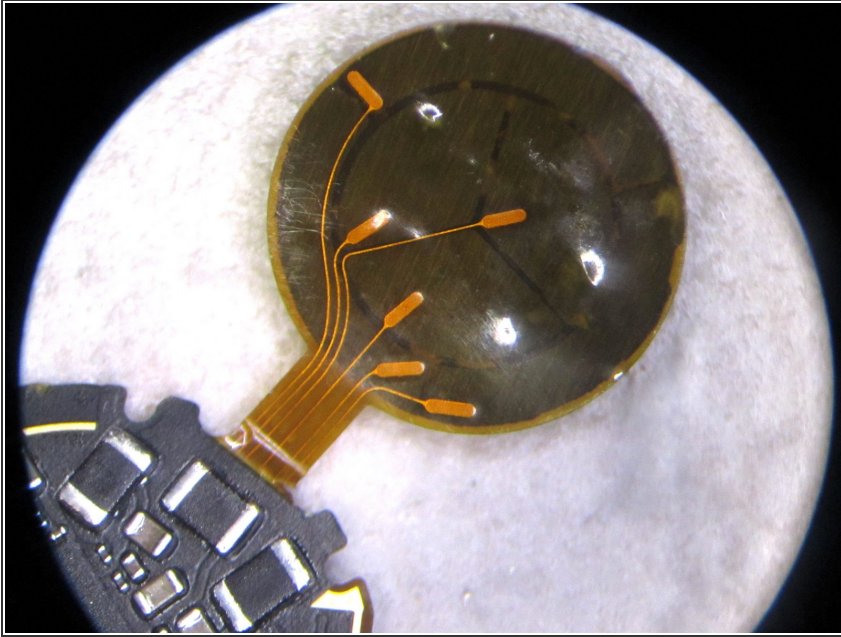
- Since the Google Pixel Buds are made of plastic and are glued together, the only way in was to cut into the Google Pixel Bud. **This is a destructive teardown**
- Once in, we are able to get our first look at the Google Pixel Bud's electronics. The stack up the Google Pixel Bud is as follows:
 - Touch Sensor
 - Main Circuit board
 - Battery
 - Speaker
 - Microphones
 - Charging and in Ear IR Detectors (not shown)

Step 7



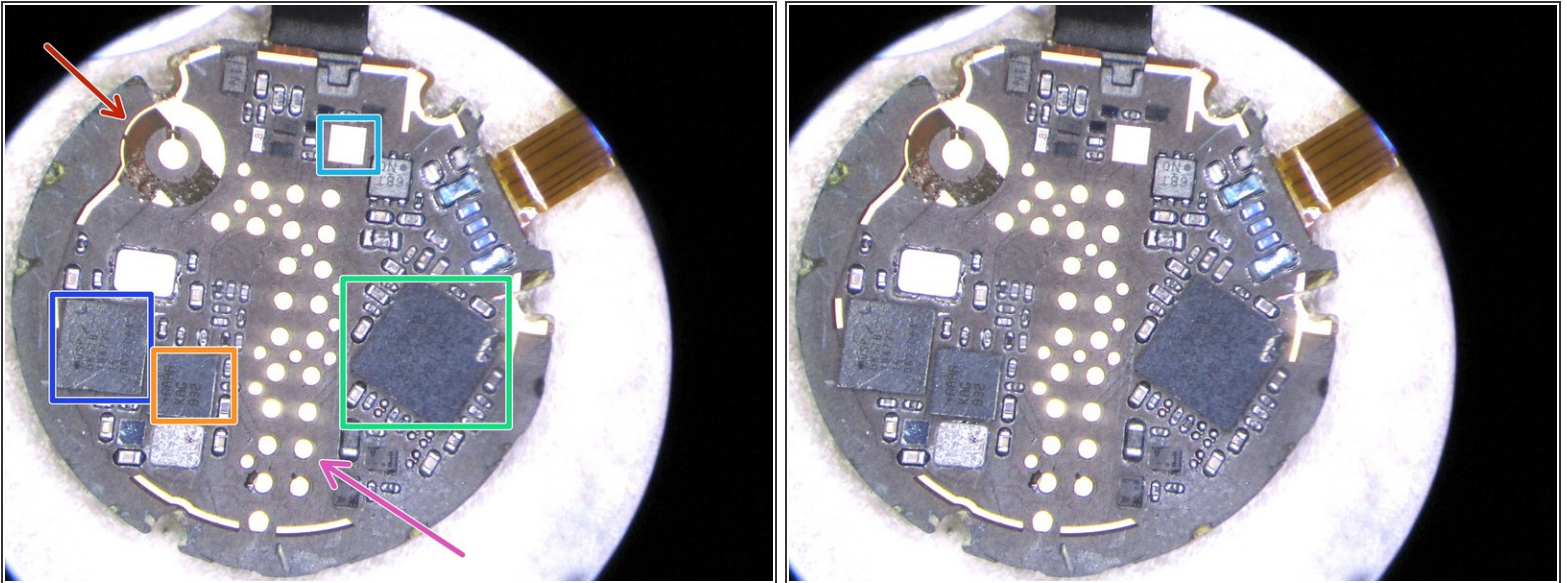
- View of the electronics when removed from the Google Pixel Bud Enclosure
 - Flex PCB based Touch Sensor
 - Main PCB. Contains MCU, Bluetooth Radio, Audio Processing, Power Management, and Sensors
 - Battery
 - MEMS Microphones
 - Speaker Coil, Speaker Magnet, and Speaker Diaphragm.
 - Grounded metal grid sound channel cover
 - IR Detector for in ear detections

Step 8



- Closeup view of the Touch Sensor Flex PCB

Step 9



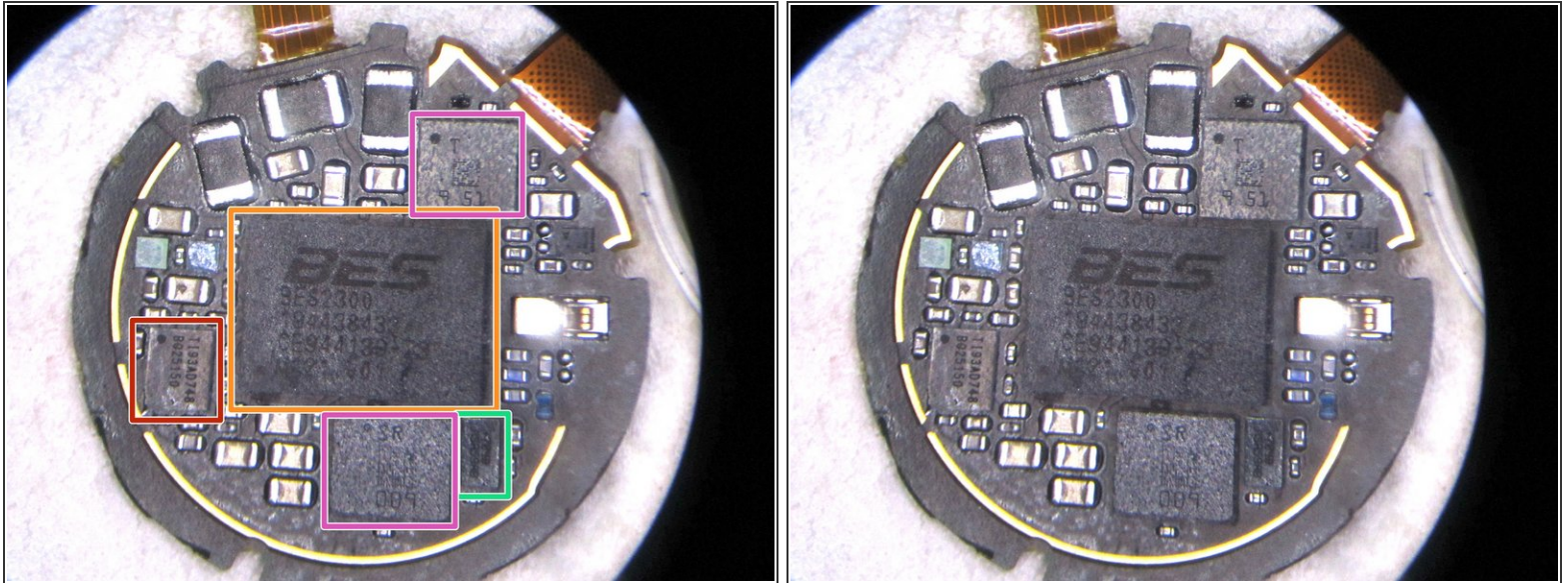
- Closeup view of the bottom side of the Main PCB
 - [DSP Group - DS18B - Audio DSP](#)
 - [Maxim Audio Amplifier - most likely MAX98502](#)
 - [ST Micro - STM32L431RC6 - MCU](#)
 - Unknown component. Labelled "ix6". Please leave a comment if you happen to know this component
 - Programming Interface and test points. Looks to be the standard ARM 20 Pin connector layout.
 - Bluetooth Antenna. Runs around the outside of the Main PCB - Top and Bottom

Step 10



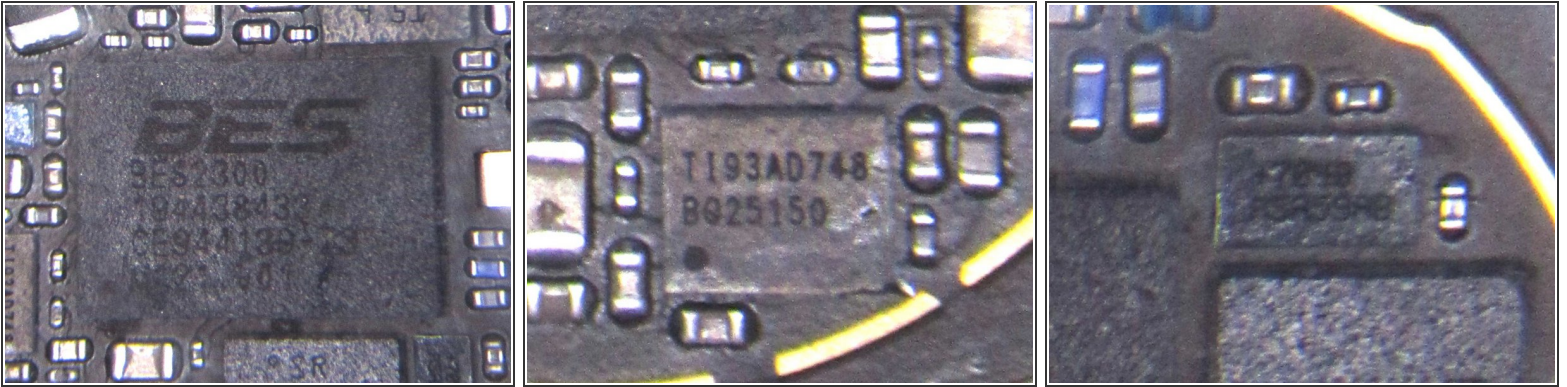
- Closeup view of some of the components on the bottom side of the Main PCB
 - [DSP Group - DS18B - Audio DSP](#)
 - [ST Micro - STM32L431RC6 MCU](#)
 - [Maxim Audio Amplifier - most likely MAX98502](#)

Step 11



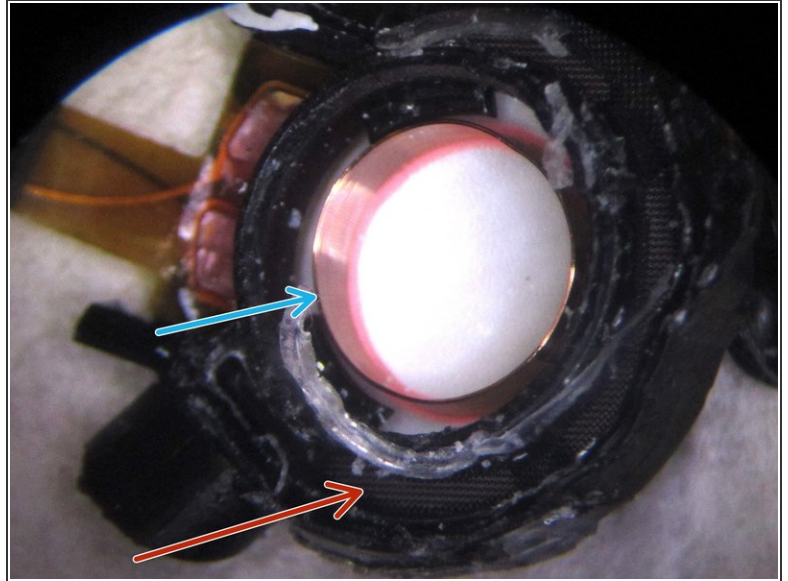
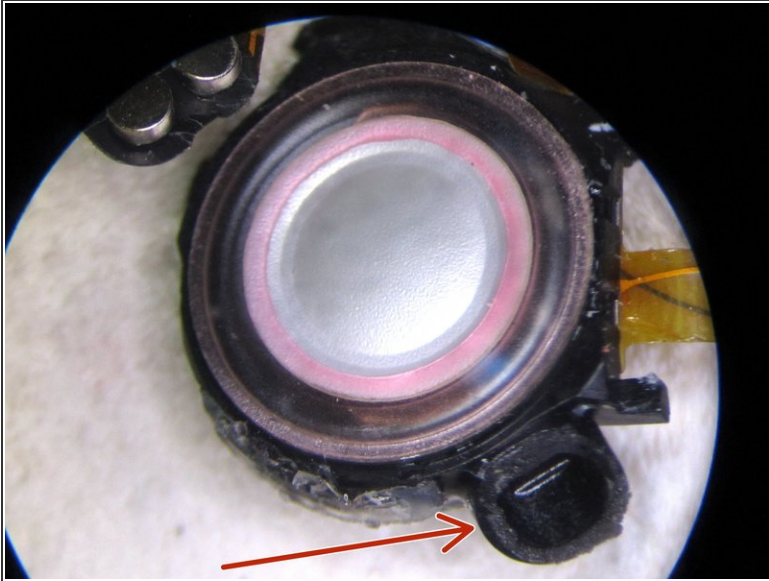
- Closeup view of the top side of the Main PCB
 - [TI - BQ25150 - Battery Charge and Power Management](#)
 - [BES Technic - BES 2300 - Bluetooth Radio](#)
 - Unknown Device - +7048/A5A59AB - May be the Accelerometer and Gyroscope used for voice detection. Please leave a comment if you know this device
 - Unknown Device - T 9 51 - Could be Flash Memory or RAM. Please leave a comment if you know this device
 - Unknown Device - SR 009 - Could be Flash Memory or RAM. Please leave a comment if you know this device

Step 12



- Closeup view some the components on the top side of the Main PCB
 - [BES Technic - BES 2300 - Bluetooth Radio](#)
 - [TI - BQ25150 - Battery Charge and Power Management](#)
 - Unknown Device - +7048/A5A59AB - May be the Accelerometer and Gyroscope for voice detection. Please leave a comment if you know this device

Step 13



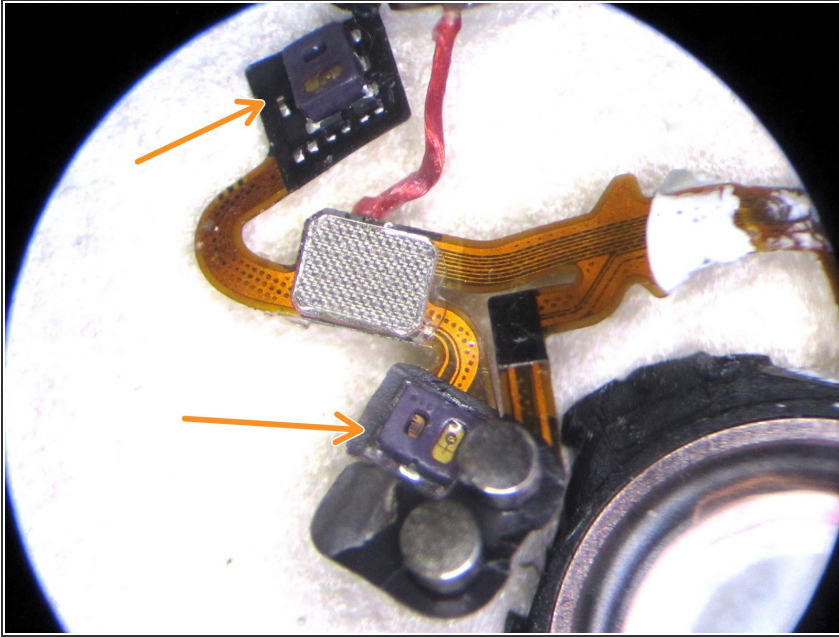
- Closeup view of the speaker Diaphragm
- Speaker Coil with Speaker magnet removed
- Speaker is ported to increase bass. Port area wraps around the outside of the speaker

Step 14



- MEMS Microphone
- Could not cross reference the Microphone Part Number, but it appears to be a Goertek Part. Please leave a comment if you happen to know this component

Step 15



- Closeup view of the IR Detectors. Could not cross reference part numbers to a manufacture. Please leave a comment if you happen to know this component
- IR Detectors are used to detect when the Bud is in the ear or in the charger

Step 16



- Closeup view of the Battery
- Varta, CP1240 A3, Li-Ion 3.7V, 0.2Wh

Step 17



- Closeup view of the magnet that holds the Bud in the charger. The magnet located is below the speaker in the sound chamber area

Step 18



- Teardown Exploded View of the Google Pixel Buds 2
 - Before and After