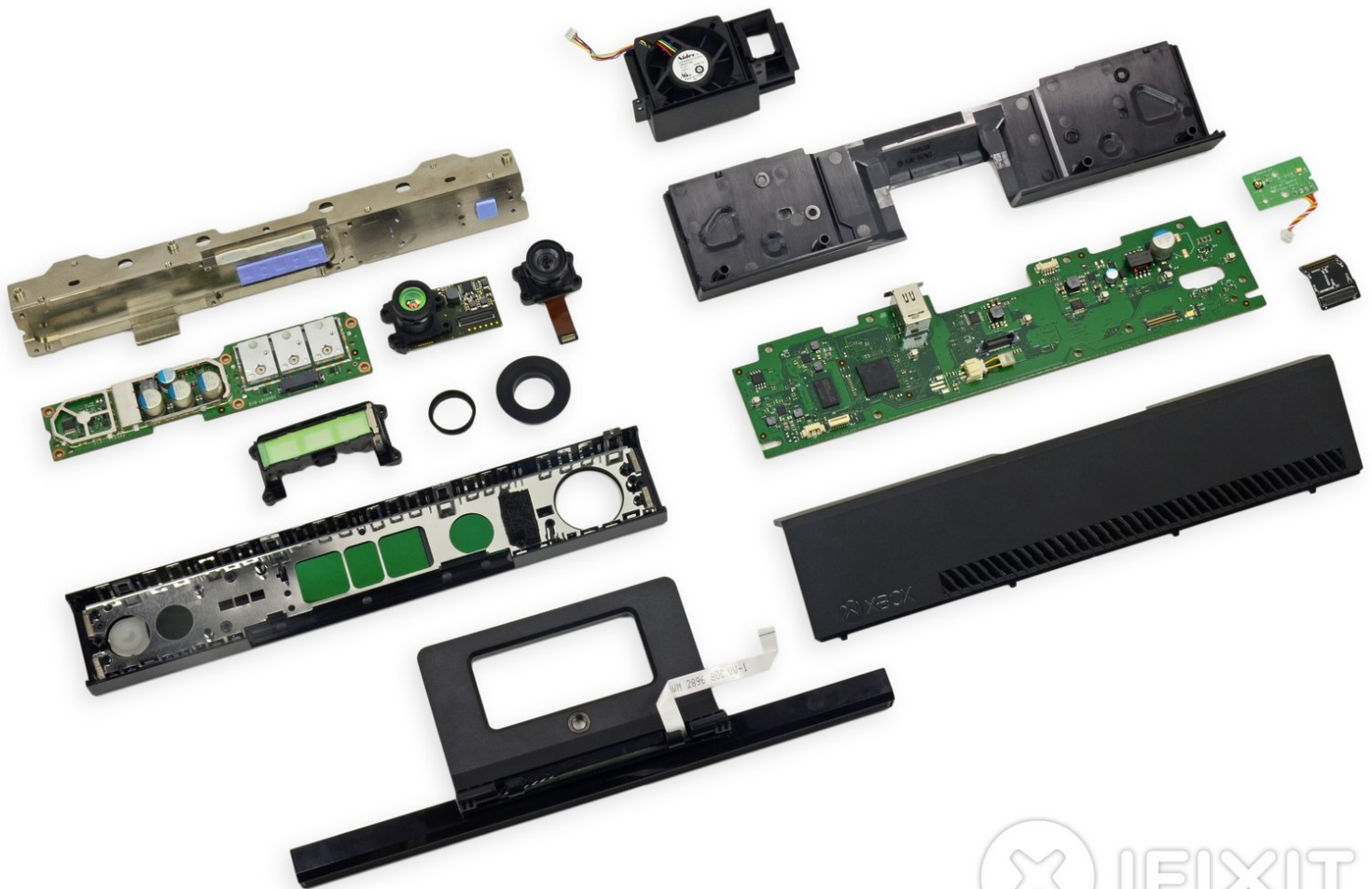




Xbox One Kinect Teardown

Xbox One Kinect teardown, created 11/21/13.

Written By: Walter Galan



INTRODUCTION

Hot on the heels of our [Xbox One teardown](#), we're cracking open the Kinect 2.0, the fully re-engineered next-gen version of Microsoft's voice, vision, and motion control accessory. Intel on all the innovative innards is inbound from our teardown team in New Zealand!

You'll find loads more items of interest on our [Instagram](#), tasty tidbits on [Twitter](#), and of course, friendly fellowship on [Facebook](#).

[video: <https://www.youtube.com/watch?v=O7pGEnrGces>]



TOOLS:

- [TR10 Torx Security Screwdriver](#) (1)
- [Phillips #0 Screwdriver](#) (1)
- [T6 Torx Screwdriver](#) (1)
- [Soldering Iron](#) (1)
- [iFixit Opening Tools](#) (1)
- [Spudger](#) (1)
- [Metal Spudger](#) (1)

Step 1 — Xbox One Kinect Teardown



- Oh, did you need to be more Kinected? Microsoft has you covered with some impressive upgrades to the Kinect lineage:
 - 1080p HD wide-angle camera
 - Active infrared camera for sight in the dark
 - Multi-microphone array with noise cancellation and voice command
 - Processing capability of 2 gigabits of environmental data per second

Step 2



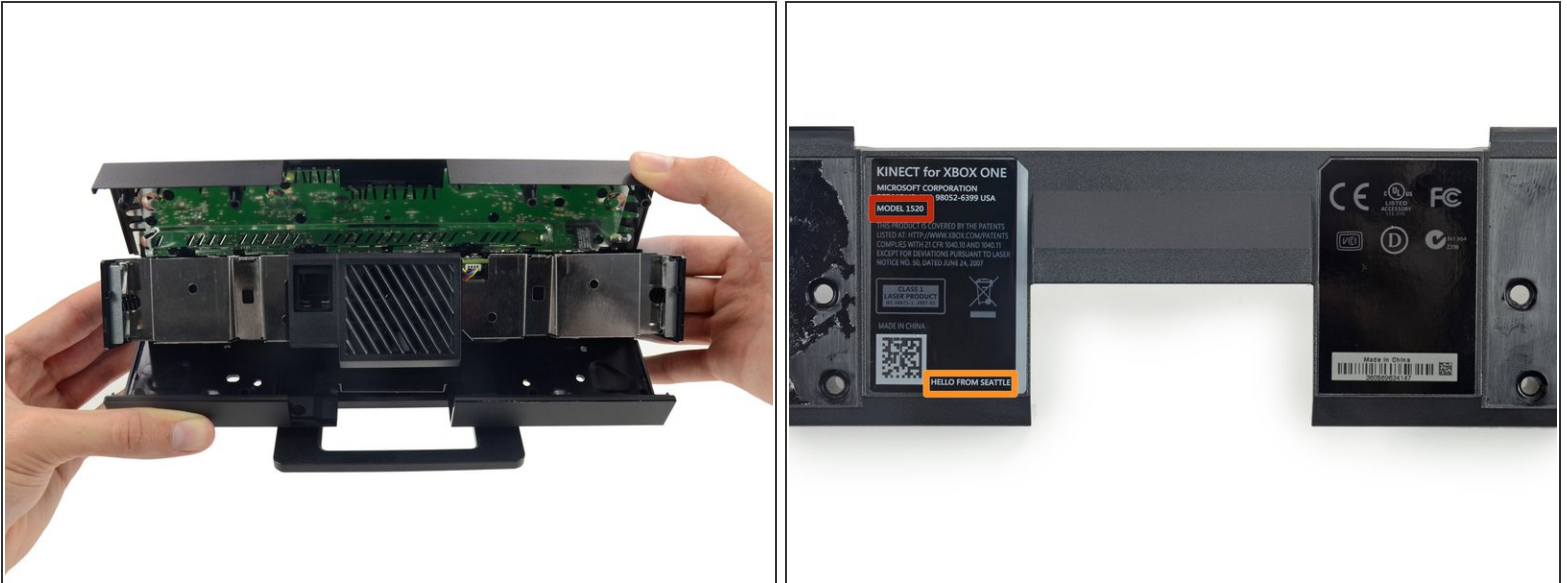
- This cable comes fully connected—very solidly—to the Kinect's brainstem, making removal harder than expected.
- *Xbox, disassemble.*
- Apparently, that [voice command](#) isn't live, yet. We'll have to do this teardown the old-fashioned way...

Step 3



- It's time to seek some hidden screws.
- Beneath the goops of adhesive, we root out and dispatch two long T10 Security Torx screws and two short T10 Torx screws.
 - This adhesive has Microsoft written all over it, literally.
- Our Pro Tech Screwdriver Set makes screw removal kinetically pleasing.
- With a few twirls of the driver—and then a few twirls of ourselves around the room, just [in case the hokey pokey really is what it's all about](#)—we bypass the outer case and start rummaging around inside.

Step 4



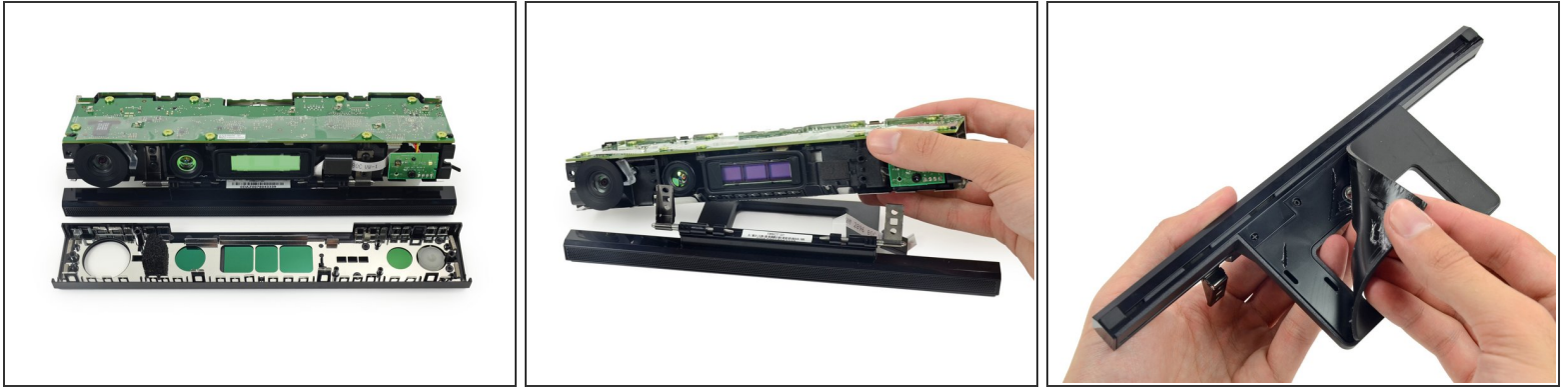
- With the screws out of the way, we can finally open the Kinect and leer inside.
- Microsoft has designated the Xbox One Kinect as model 1520.
- [Once again](#), Microsoft sends a friendly greeting from its headquarters in Seattle.

Step 5



- The fan assembly requires minimal disassembly. We scatter the grille, cowling, and fan as we go.
- The 5 volt DC [fan](#) is manufactured by Nidec and is labeled as U40R05MS1A7-57A07A.
- Little kids get excited about presents under the Christmas tree; we get excited about components under plastic casings. Out of the way, wrapping paper! It's time for some goodies.

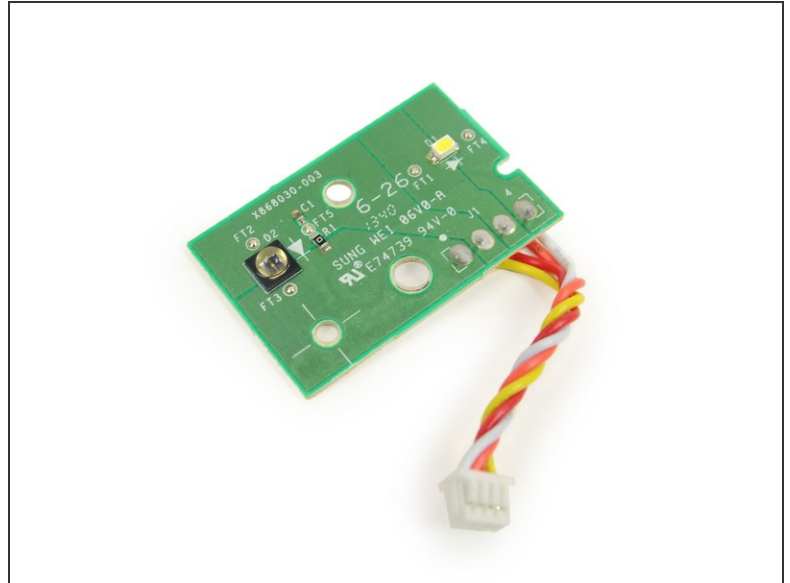
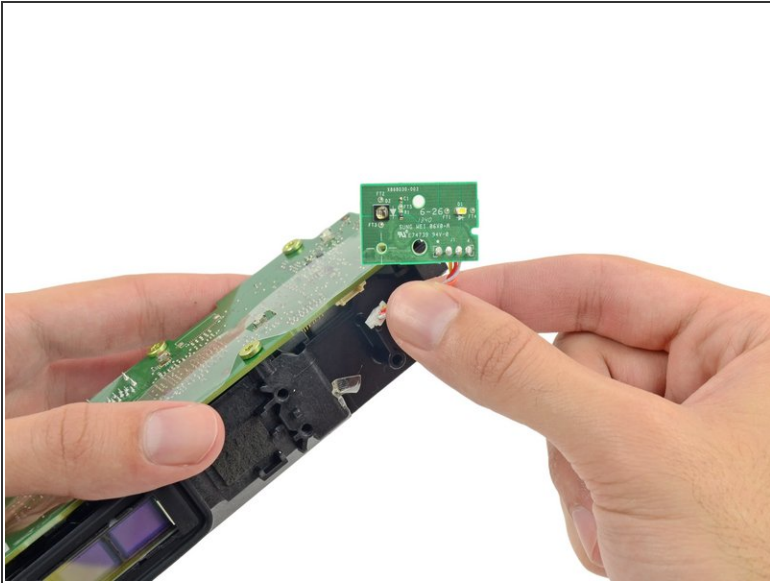
Step 6



- With the casing gone, we catch glimpses of green. As tempted as we are to grasp and pry, we go about removing components the right way.
- Starting at the foundation—well, the foot anyhow—we remove the camera assembly from its stand, hoping to catch it off guard.
- We peel back some rubber padding, revealing some wily screws, but quickly find ourselves at a dead end.

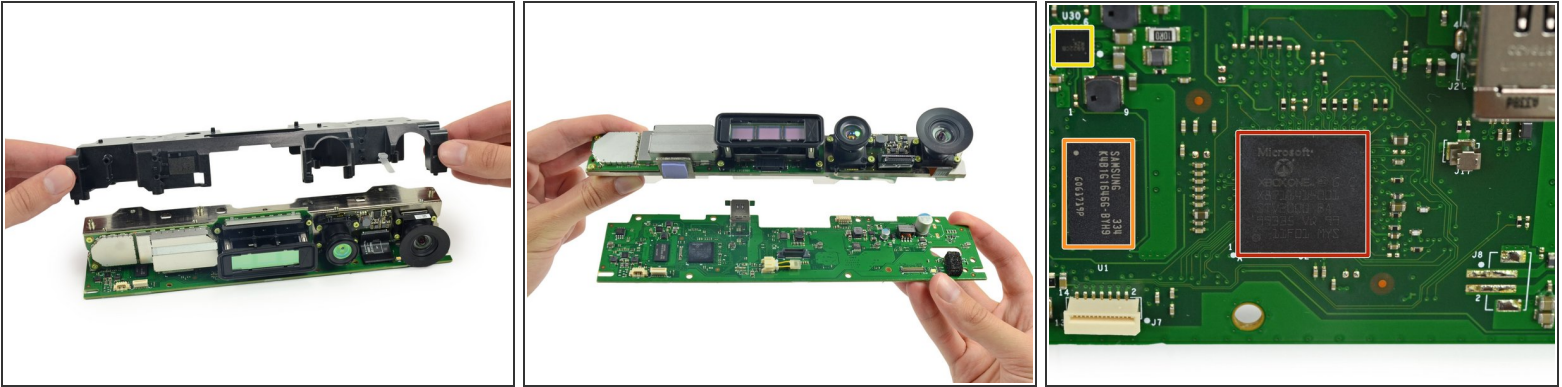
 It's time to resort to Plan B...

Step 7



- We reach for the office chainsaw, but the boss steps in and shoots down that idea...
- Plan C: we dis-kinect this little light board.
- Small but important, this board plays host to an LED and a sensor.

Step 8



- We remove *another* layer of cowling standing between us and teardown glory.
- ⓘ That face! How can you say no to that face? Microsoft seems to have taken the old [triclops](#) in for some plastic surgery; this year's model has moved the IR projector, making for a more human-esque two-eyed robot.
- IC U too!
 - Microsoft X871141-001 - Per our honored cohorts at [Chipworks](#), this "replaces the Prime Sense chip used in the first Kinect. By the look of the font and package codes it's from STMicroelectronics"
 - ⓘ Likely a STMicroelectronics STV2000 I2C Deflection Processor/RGB Preamplifier
 - Samsung [K4B1G1646G-BYH9](#) 1 Gb (128 MB) DDR3 SDRAM
 - ON Semiconductor [NCP6922](#) Power Management


Step 9



- This teardown is beginning to feel a bit like playing Operation...
 - *Carefully remove the camera.*
 - *And now the lens. Don't shock him!*
 - We set aside the robot monocle and examine the camera.
- i* If you don't speak [ASL](#), here is what your [Kinect is looking for](#).
- i* Be careful what you say around your Kinect—it may be able to detect lies! Allegedly, "[the Kinect literally reads the pulse in your face](#)."

Step 10



 Modular cameras make us smile, reminding us a little bit of [another robot](#).

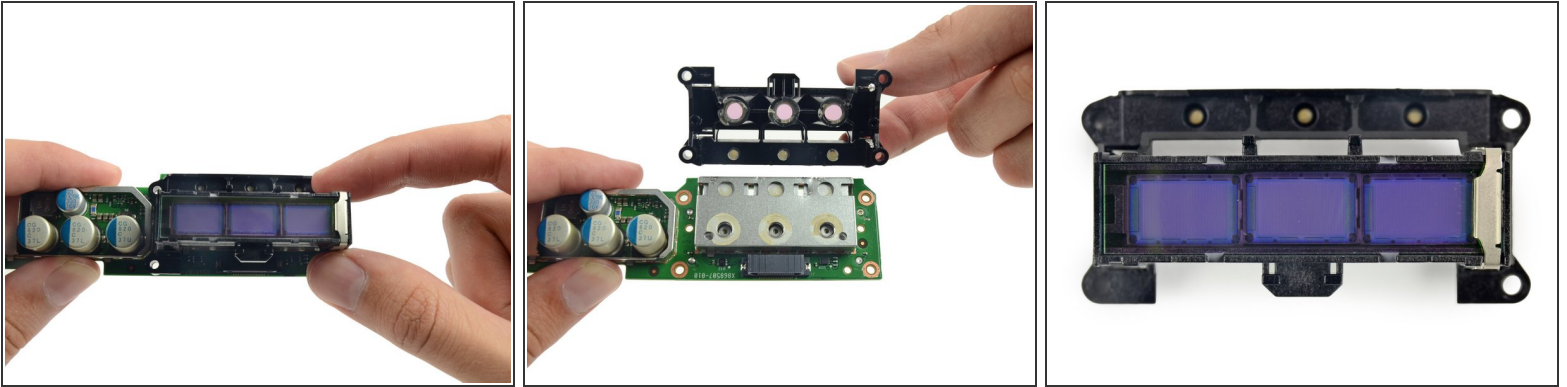
- The back side of the second camera has the following labels:
 - S/N: S1337573123
 - P/N: X861135-001
 - A/N: 1337-MS2802-09
- The front side has a bit more circuitry. Among that circuitry we find:
 - Texas Instruments [TPS54325](#) - Per the evil geniuses at [Chipworks](#), this is an adaptive on-time D-CAP2™ mode synchronous [buck converter](#).

Step 11



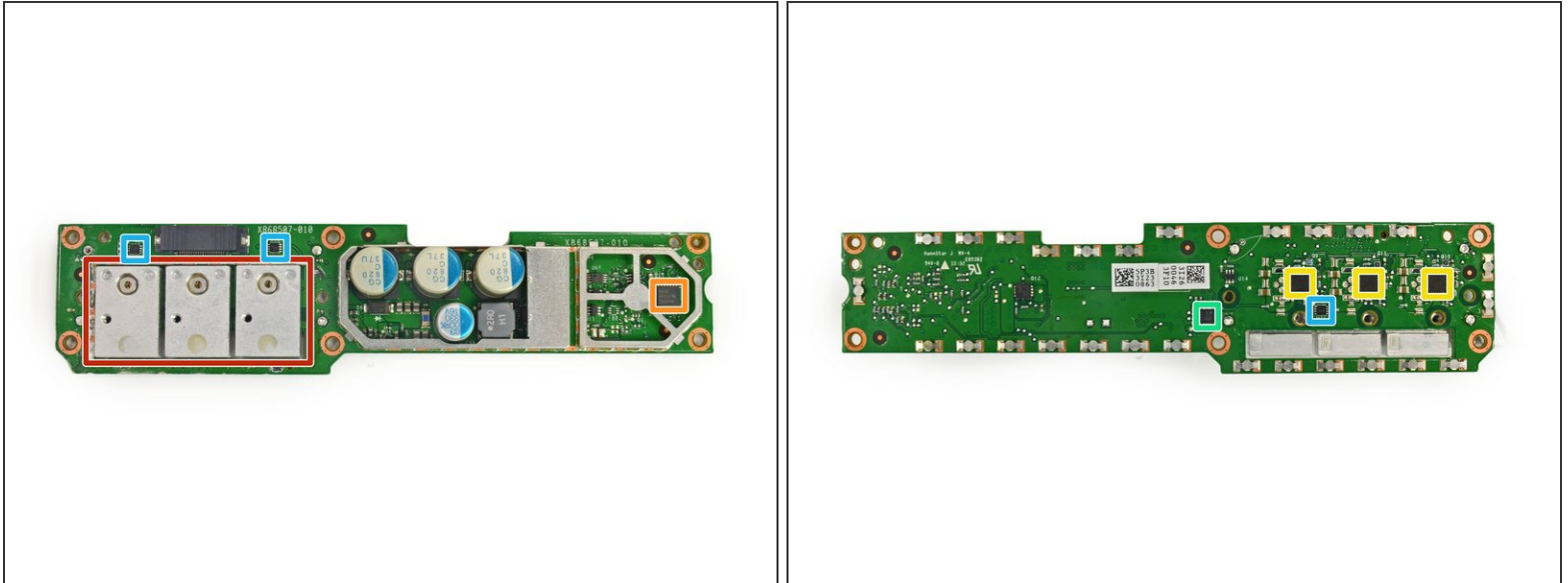
- Brace yourself; this frame bracket is coming out.
- Layers of metal add rigidity to the Kinect, while leaving room for components.
- *Function over form*—this bracket also serves as a heat sink, as evidenced by the adhered thermal pads.

Step 12



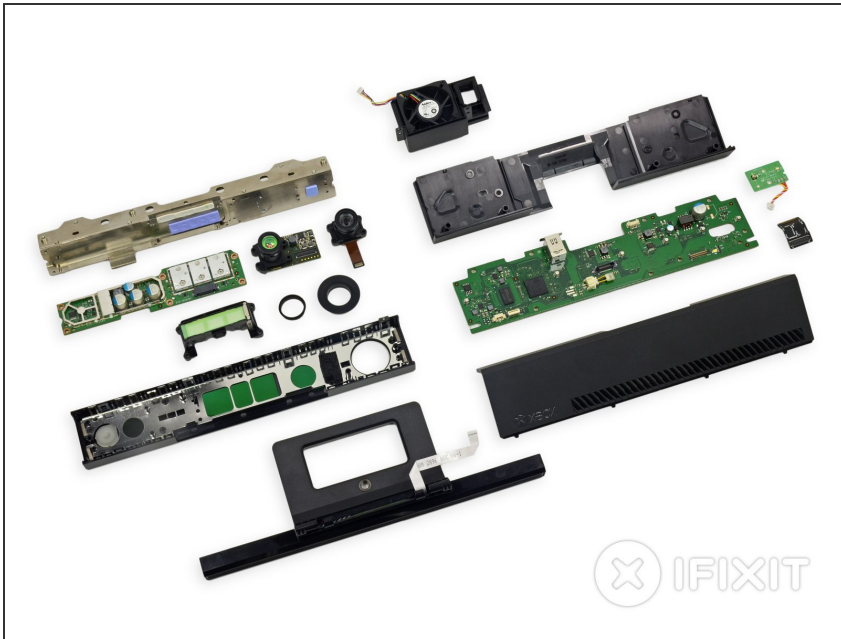
- Pretty purple filters cover what appear to be the three IR blasters. If humans could see in infrared, we're guessing this would be pretty psychedelic.
- As it stands, you'll have to settle for [invisible IR magic bathing your living room](#), such as only your Kinect can see.
- ❗ Microsoft is claiming three times the fidelity of the previous Kinect. We shall deem this technology Tri-Fi.
- Microsoft also claims new Active IR technology, enabling your Kinect to see you in the dark—which seems the same as the night vision mode on every camcorder since the 90's.

Step 13



- All a'board!
- Suspects 1-3 for the IR projectors
- We'd like some more silicon with our teardown, please!
 - TI [LMV339](#) Low-Voltage Comparator
 - Intersil ISL58302 Triple Output Laser Diode Driver (likely)
 - ON Semiconductor NB3L14S LVDS Fanout Buffer
 - ON Semiconductor [NCT75](#) Temperature Sensor

Step 14



- Xbox One Kinect Repairability: **6 out of 10** (10 is easiest to repair).
 - It's super easy to replace the fan once you get inside.
 - While there isn't much to fix inside, most components are modular and held in place with screws. If you need to replace one of the eight million cameras, you can...
 - ...but, not so much the three little IR blasters in the center of the sensor bar. Those are held in place with soldered-in straps, because Microsoft.
 - Screws hidden under tamper-evident tape and tricky clips make it tricky to get inside.
 - The same screw types from the original Kinect are back, (still) including one repair-inhibiting T10 Security bit.

To reassemble your device, follow these instructions in reverse order.