Why Face ID Not Working After Repair

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Written By: Phryne

Why Face ID Can Be
So Easily Damaged

INTRODUCTION

As a facial-recognition technology initially launched on iPhone X, Face ID has been applied to latest iPhones, including iPhone XS , XS Max and XR. With this amazing Face ID system, users can unlock their devices by scanning and confirming facial identity. Whether you are wearing a hat, putting on glasses or you are in the dark.
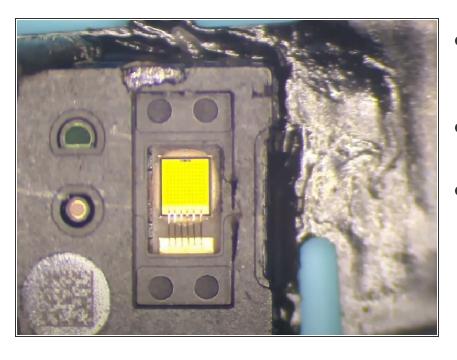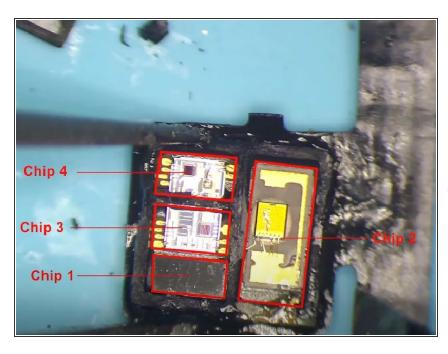
Step 1 — Face ID System

- There are 8 components packed into the front of the phone. Infrared Camera; Flood Illuminator; Proximity Sensor; Ambient Light Sensor; Speaker; Microphone; Front Camera; Dot Projector;

- The infrared camera, the dot projector and the front camera are located on the back glass assembly.

- The flood illuminator, the proximity sensor, the ambient light sensor, the speaker and the microphone are located on the display assembly.

⚠ Please be careful when disassembling or repairing the phone. Damage of any component will cause Face ID failure.

⚠ Please be noted that there is a slot on the display assembly. When assembling the phone, the fold of the speaker flex cable should be placed correspondingly in the slot to prevent the cable from getting broken. Which will also result in the failure of Face ID.

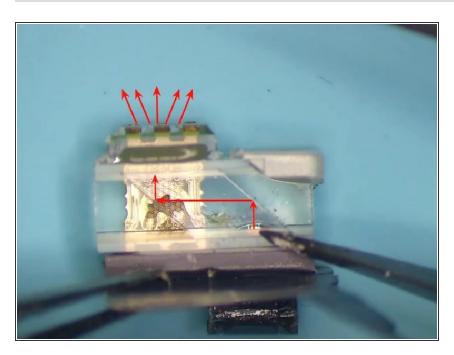## Step 2 — Disassemble The Flood Illuminator Module

- We can see that there are many holes on the flood illuminator that are arranged in a matrix of 11×11.

- The chip is connected to the circuit board with the help of gold wires.

- Once water damaged, these holes can be blocked. And you will be faced up with Face ID failure.

Step 3 — Chips On The Flood Illuminator Module

- Chip 1 is an unencrypted chip.

- Chip 2 is the flood illuminator. Chip 3 and Chip 4 are proximity sensors that are responsible for receiving and transmitting respectively.

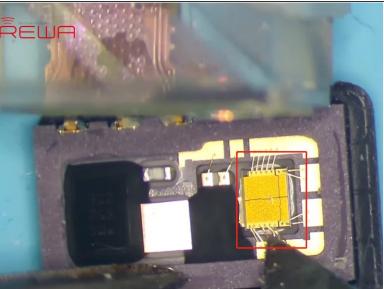- (i) Independent of each other, the three chips are indispensable.

Step 4 — Disassemble The Dot Projector

- The outer layer of the dot projector is sealed with resin and protected by metal welding techniques.

- Pay attention to these welding points. They can easily fall off once the phone is dropped. And once off, they cannot be restored.

- Once the dot projector has been detached, we can see a crystal that looks just like a diamond lens.

- The infrared light is emitted from here. Then reflected by the crystal. Its projection range is determined by the lens afterwards.

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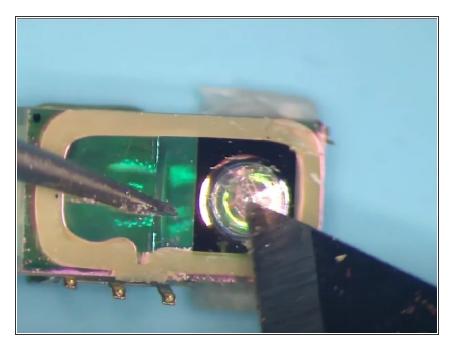© iFixit — CC BY-NC-SA

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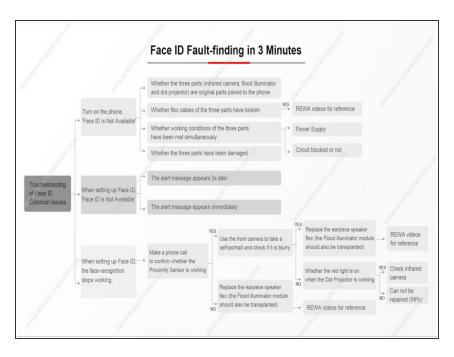## Step 5 — Internal Structure Of The Dot Projector

- The chip on the left is used to store data, whereas the chip on the right side acts just like a projector. We can see that there are thousands of dots arranged here. The infrared light is emitted from here.

- Since necessary power supply is needed for chip on the right side to work normally, once water damaged, circuits here are most likely to get short. Which can also result in Face ID not working.

⚠️ And please be noted that the chip is exposed without black adhesive seal. So it can be easily damaged once water-damaged or dropped. What's more, it also can not be restored once damaged.

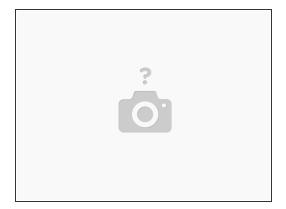## Step 6 — The Crystal Part Of The Dot Projector

- We can see that there is a concave lens and a convex lens on the crystal. And the two are made of glass. Once dropped, Face ID can also be affected.

Step 7 — Face ID Fault-finding

- Judging by what we have learned during the disassembling, main circuits of the Face ID are exposed. Once water damaged or exposed to a relatively humid environment, there might be electricity leakage or short-circuit problem that can result in Face ID failure.

- What's more, most of the Face ID parts are made of glass. Once dropped, Face ID is most likely to be unavailable.

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Step 8

- In summary, Face ID can be easily damaged and hard to be restored. Therefore, please be very careful in daily use. Make sure the phone is protected from water-damage or heavy falling. Repair technicians must exercise caution when repairing the logic board or replacing the display assembly.

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