

INKLOUD iPhone Display Quality Introduction

January 2020

For a long time the iPhone Display market is chaotic with too many different qualities and too many prices.

What is AAA? What is A+? Is “Original” by supplier A means the same “Original” by supplier B? Why same InCell display costs differently by different suppliers?

So many questions! So many headaches!!!

INKLOUD is going to end this situation with its **professional know-how** and **strong supply chain resources**.

It is NOT always original better than after market displays – for old models like 5, 6, the so-called original ones are all refurbished ones which have inevitable aging problems. After market displays like TM, AUO, JDF, GX, etc., which one is better? Is LCD/OLED the only determine factor for quality? What about the solution company for the IC? Do you know how many components a display has? Will the quality the same if only some of the components (backlight, polarizer, etc.) be changed?

There are so many impact factors for iPhone Display Assembly. It is almost not possible to list them all and explain in very details. More importantly, even if we knew all the details, it is not going to help us to get the right products – most of the quality problems cannot be distinguished at first test, it occurs after months’ installation, which is nightmare for repair shops – customers come back not for new business, but for problem. And even products could be distinguished, how to get products without those problems is going to be next challenge - market offers only this kind of products, where to buy the desired good quality products?

Based on all those reasons, INKLOUD choose to offer 3 different Quality

Levels across all iPhone models for displays – there are actually more qualities available for each quality category, however, our principle is to offer the **BEST VALUE** products with **CONTINUOUS STABLE QUALITY**.

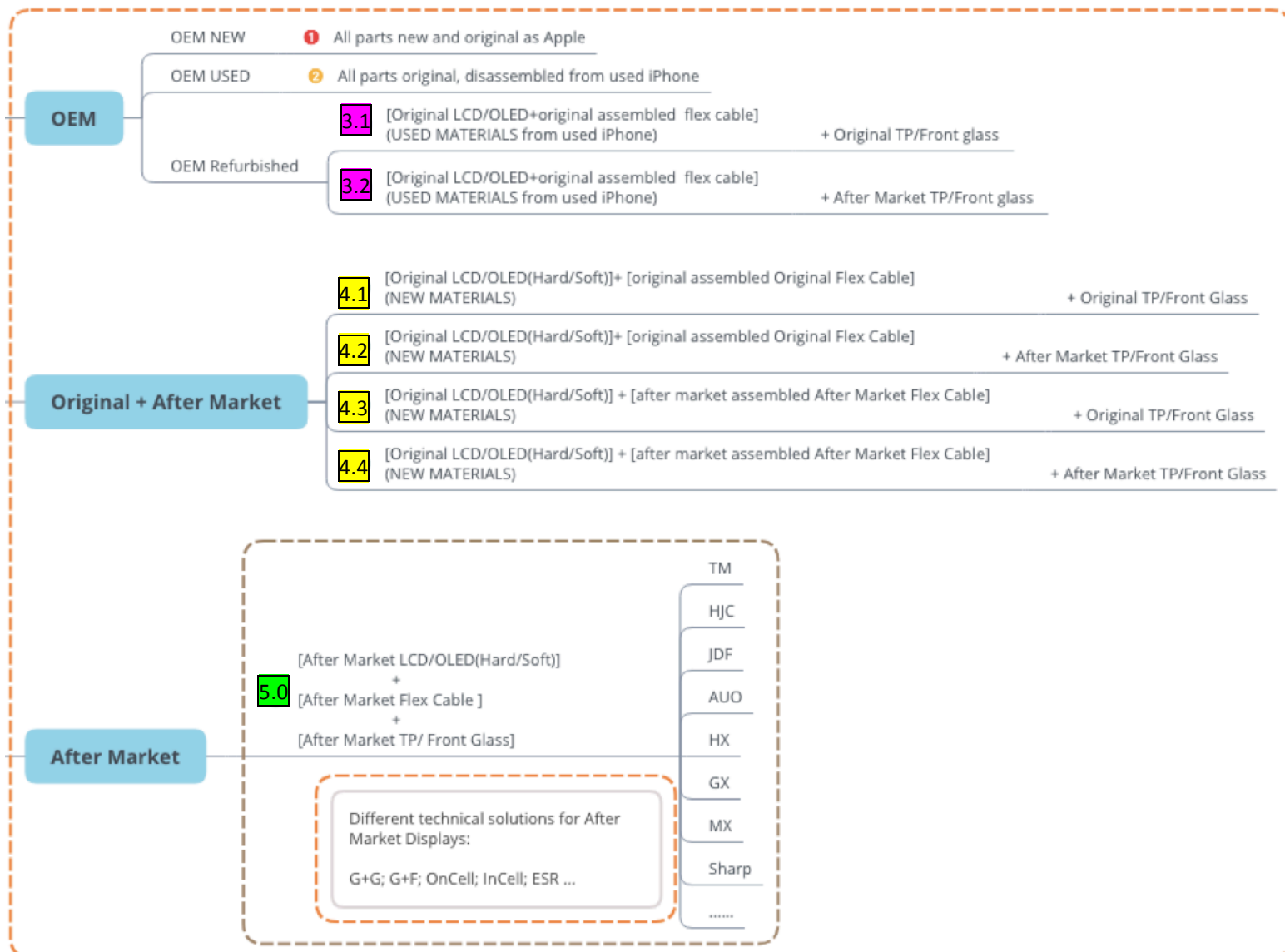
We choose the best quality from each category!

INKLOUD Quality Levels*:

- **Original NEW** = OEM NEW, for models which has no compatible replacements in acceptable quality
- **Ori + Ori** = Original + After Market [Original LCD/OLED (Hard/Soft) + Original Assembled Original Flex Cable + Original TP/Front Glass] (4.1 by **Pic 01**), for models has good compatible replacements with cheaper price and stable sourcing than OEM NEW
- **Master Selected (MST)** = After Market, for models with mature after market compatible replacements, we choose the best from all available ones

WE GUARANTEE THE PRODUCTS WE OFFER HAS THE BEST VALUE FOR ITS PRICE AND CONTINUOUSLY STABLE QUALITY

Pic 01: Classic Quality Classification of iPhone Display at up streaming supply chain:



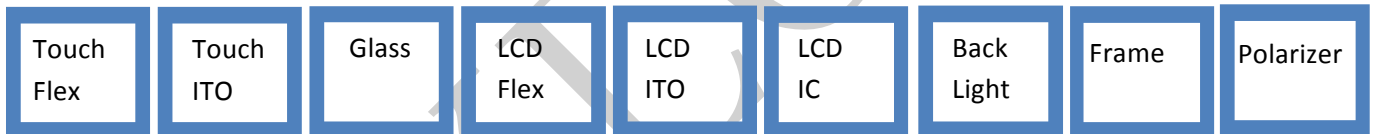
For Your Reference

iPhone Display Assembly Introduction

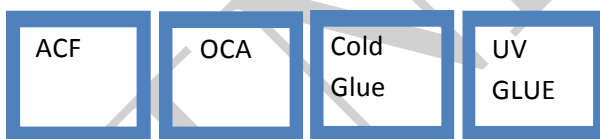


1. iPhone Display - Material

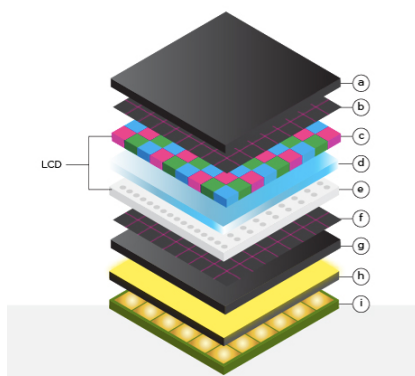
Main Material



Auxiliary Material



Each components has important impact on display quality, one small part change the entire performance (color, function, etc.) of a display.



- a. Top polarizer film
- b. Touch screen panel (TP) ITO layer (OnCell only)
- c. Color filter (CF) glass
- d. LC – Liquid Crystal
- e. TFT array
- f. Integrated touch screen panel (TP) (InCell only)
- g. Bottom polarizer film
- h. Backlight
- i. 3D touch sensor panel (for 3D ready devices)

For Your Reference

2. iPhone Display – Production Procedure

A display contains two modules: LCD/OLED Module & Touch Panel (TP)/ Front Glass Module.

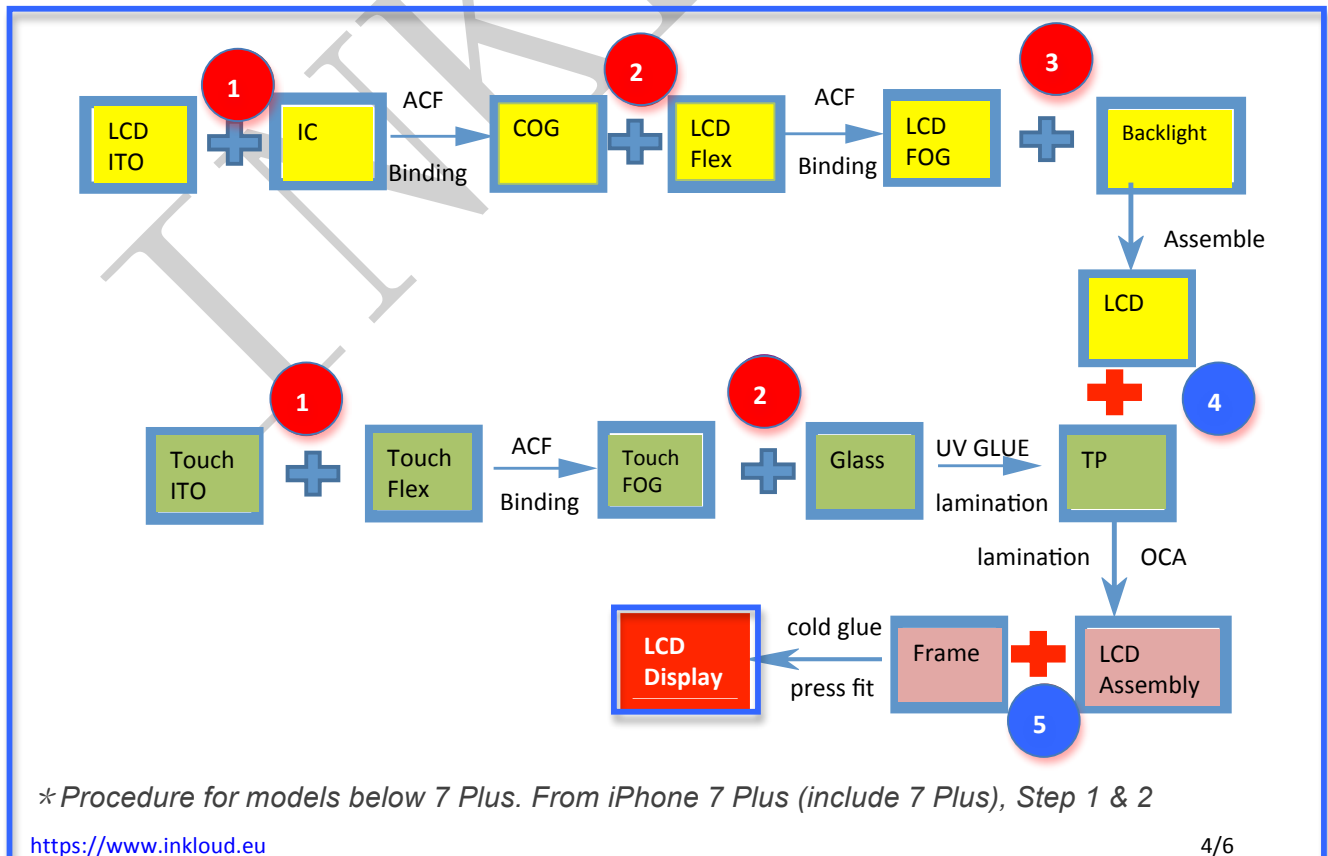
These two modules assembled separately and then combine at step **4**

Depends on the material quality and experiences of assembly factory, displays has different quality.

We give our supplier who is a factory clear instruction about our quality standard, control from raw material quality like backlight, glue, ...etc., to ensure we get continuously stable quality. Also when market has low interest to offer good quality products (because of bad price competition and low margin), we are able to arrange wished good quality products.

All INKLOUD displays are 100% checked by third party with our quality specifications before dispatch from China. And again we do sample check in Europe to make sure each displays has good quality we promised.

*Pic 02: Display production procedure**



integrated in LCD/OLED module, no TP.

For Your Reference

3. Meaning of Different Technical Solutions

G+G (Glass + Glass)

Both G+G and G+F are by far the most common replacement iPhone screen structures. The usage of a digitizer glass instead of film, allows factories to use a high pressure bonding method, which results in a more stable digitizer flex cable, but adds a bit more to the overall thickness of the screen assembly, which can result in the screen being slightly thicker than the chassis.

G+F (Glass + Film)

Both G+G and G+F are by far the most common replacement iPhone screen structures. This structure uses digitizer film (typically using a two layer TSP film), which allows the screen to fit flush with the chassis, however requires a low pressure bonding method, which can result in a less stable digitizer.

OGS (One Glass Solution)

Much thinner than G+G and G+F structures, OGS assemblies often experience stability issues due to the usage of improper equipment and manufacturing techniques. As the digitizer film is not integrated into the LCM, a crack to the outer glass will likely result in loss of digitizer functions.

OnCell

Nearly identical to the InCell structure, OnCell assemblies enjoy both a thin architecture and stable digitizer feature. By integrating a touch screen panel ITO layer within the LCM, the digitizer will continue working even if the outer glass has been broken. As OnCell requires the use of expensive equipment, high quality materials can be expected.

InCell

This assembly choice has been used on every iPhone until the iPhone X (which uses OLED technology, requiring an OnCell structure). Like the OnCell structure, InCell assemblies are both thin and stable. An integrated touch screen panel within the LCM ensures that the digitizer will function, even if the outside glass is broken.

Thanks for your trust. For any questions or supports needed, please feel free to contact us.

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