



Anatomy of a Typical TFT LCD

DCL presents the inner workings of a typical TFT LCD.

After the LCD cell itself, the films, light guide and backlight system are the most critical materials that produce the image we see on an LCD module.

At DCL, we modify these materials, to improve the optical performance of a display for applications that will be used outdoors in sunlight for example.

We also build custom LCD modules from LCD cells. This is one of the best methods to build a display that specifically meets your requirements and de-risk supply chain as we qualify multiple LCD cells in each LCD module design.

Contact DCL to discuss your display requirements and let us show you how we add the right value for your project and company.



Anatomy of a Typical TFT LCD



1. Rear Chassis

- Typically, metal, could be plastic

2. Interior Film Stack

- Light diffusers to improve light uniformity across the LCD
- Reflector Films
- Brightness Enhancement Films

3. Light Guide

- Plastic material, embossed with a pattern that direct light from the backlight source thru the front of the LCD

4. Sub-Chassis

- Typically, a plastic sub-frame that supports the films, LCD cell and often the backlight rail
- The Front and rear chassis frames typically clip to and around this frame

5. Backlight Rail

- LEDs mounted to a PCB or flexible substrate in quantities and combinations that produce level of brightness thru the LCD cell

6. LCD Cell

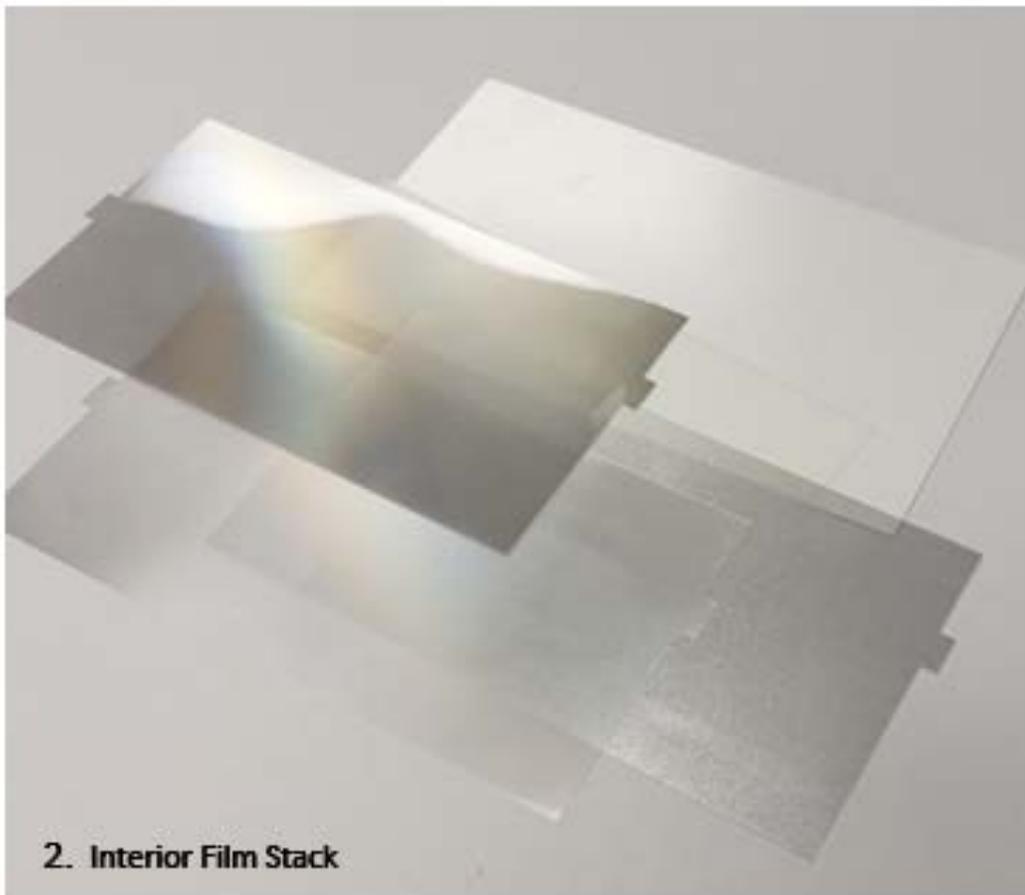
- TFT cell consisting of two thin glass substrates with:
 - a. Thin film transistor structures for each pixel.
 - b. Color filter / Two polarizer films
 - c. Liquid crystal fluid
 - d. Chip on glass timing controller / driver IC

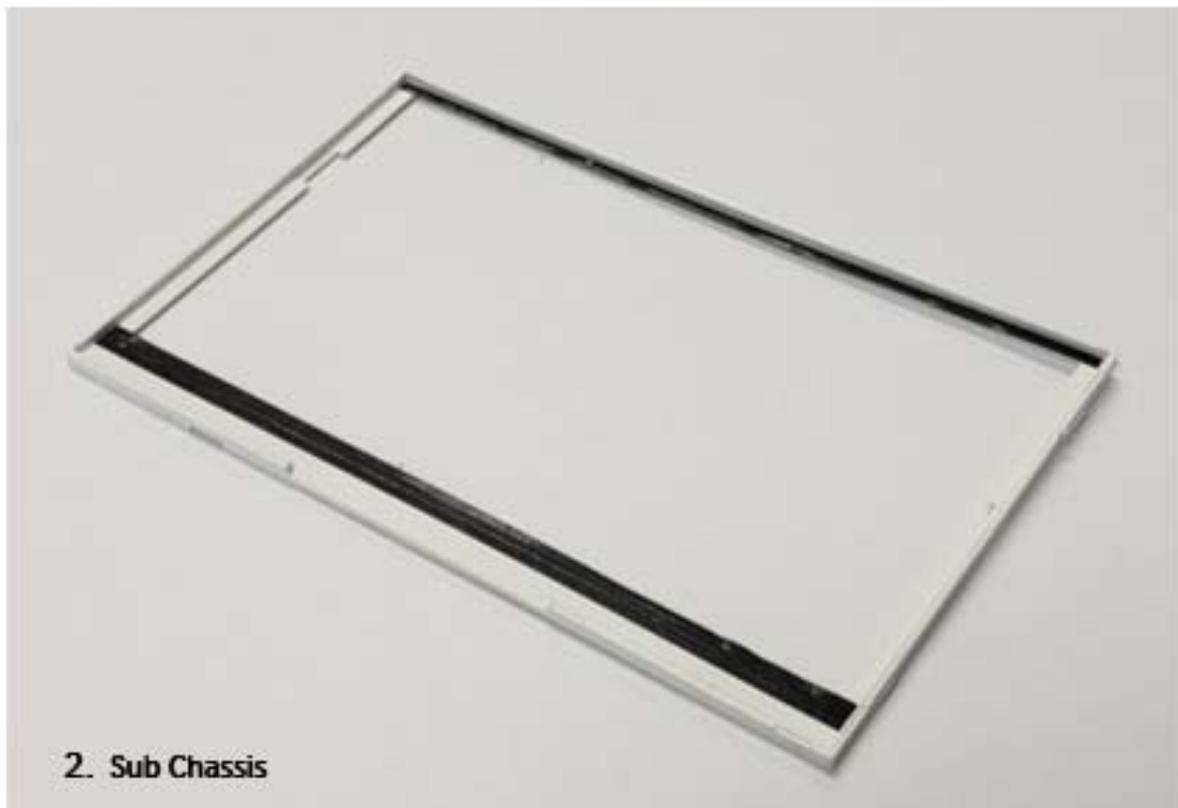
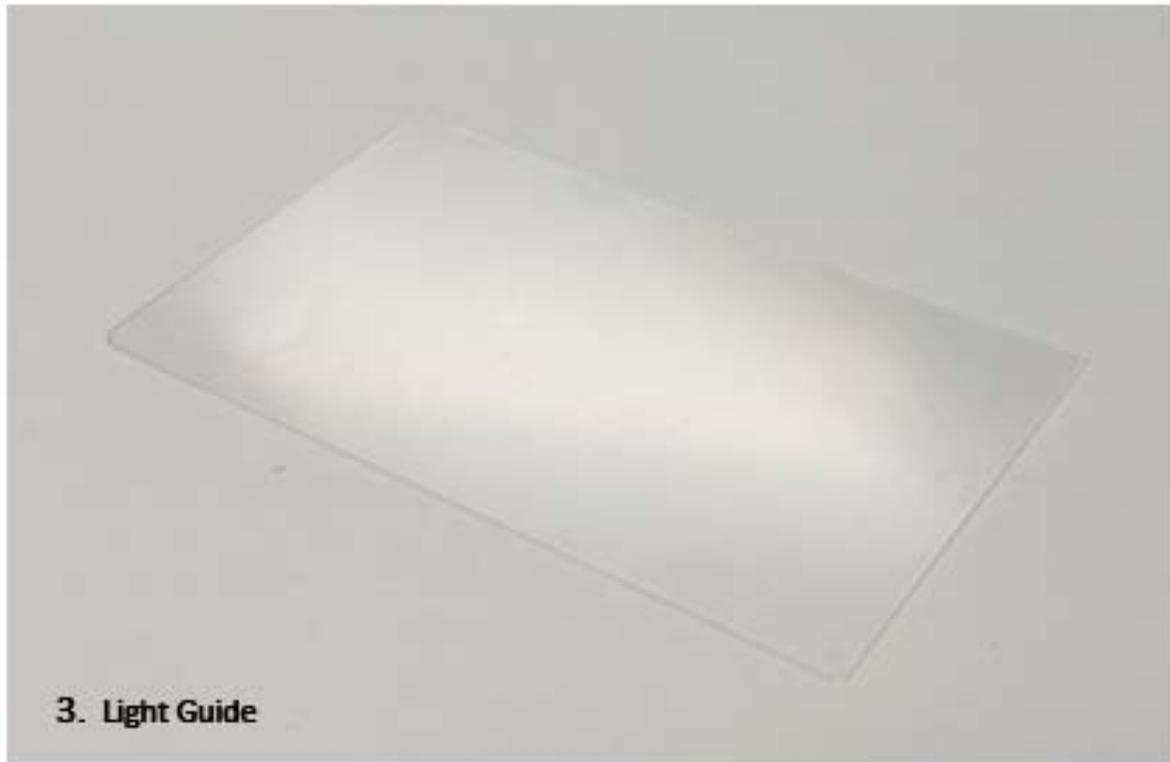
7. Interconnect Flex Cable

- Flexible cable transfers data signals and power to the LCD Cell and backlight
- Can also be integrated behind LCD with a connector

8. Front Chassis

- Metal frame encompasses the LCD cell, interior components and typically connects to rear chassis



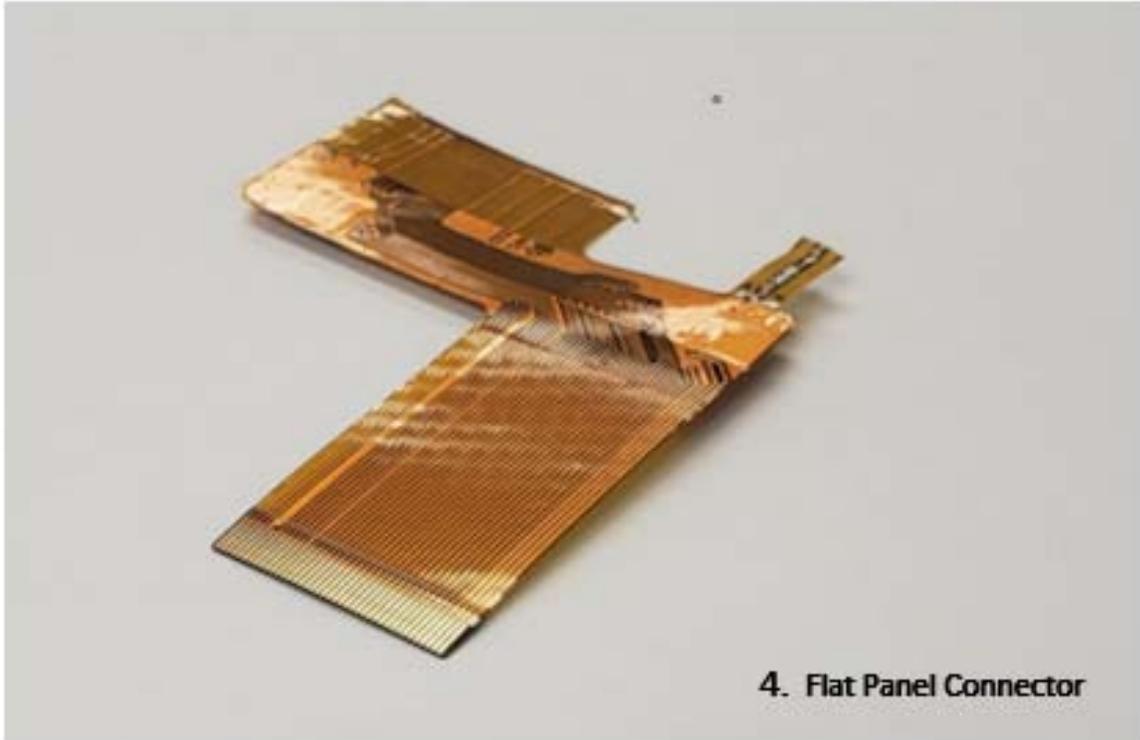




3. Backlight Rail



2. LCD Cell



4. Flat Panel Connector



5. Front Chassis