

INSTRUCTOR



JAMES DIAS

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PROFESSOR: JAMES DIAS DE SOUSA / CREA MG213140



www.telecelula.com.br



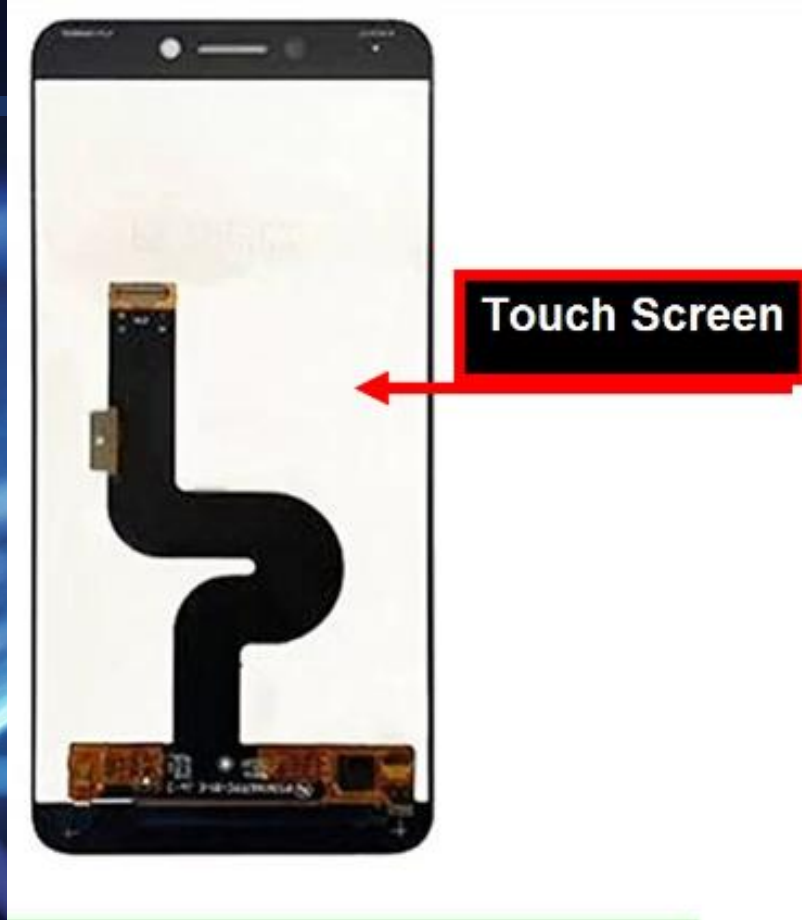
TELECÉLULA

GLASS + OCA FILM

SMARTPHONES E TABLETS



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>



GLASS OUT TOUCH

SMARTPHONES E TABLETS



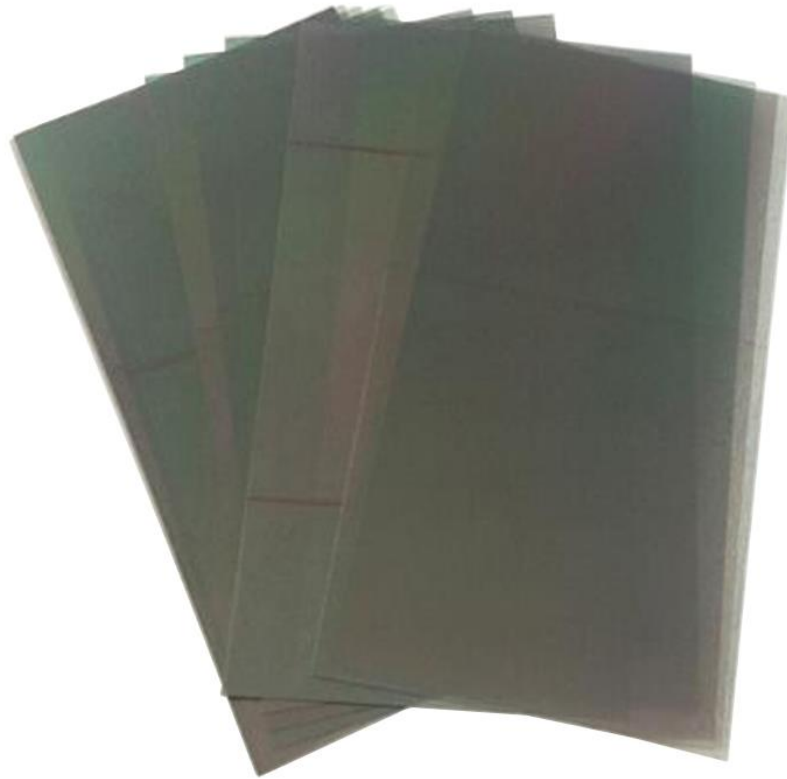
<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>

FRAME

SMARTPHONES E TABLETS



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>



POLARIZER

SMARTPHONES E TABLETS



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>

FRENTE

VERSO



TELECELULA

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BACKLIGHT + DIFUSOR

SMARTPHONES E TABLETS



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>



EEPROM

APPLE



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>

iPhone 13 Pro Max Repair Green Display

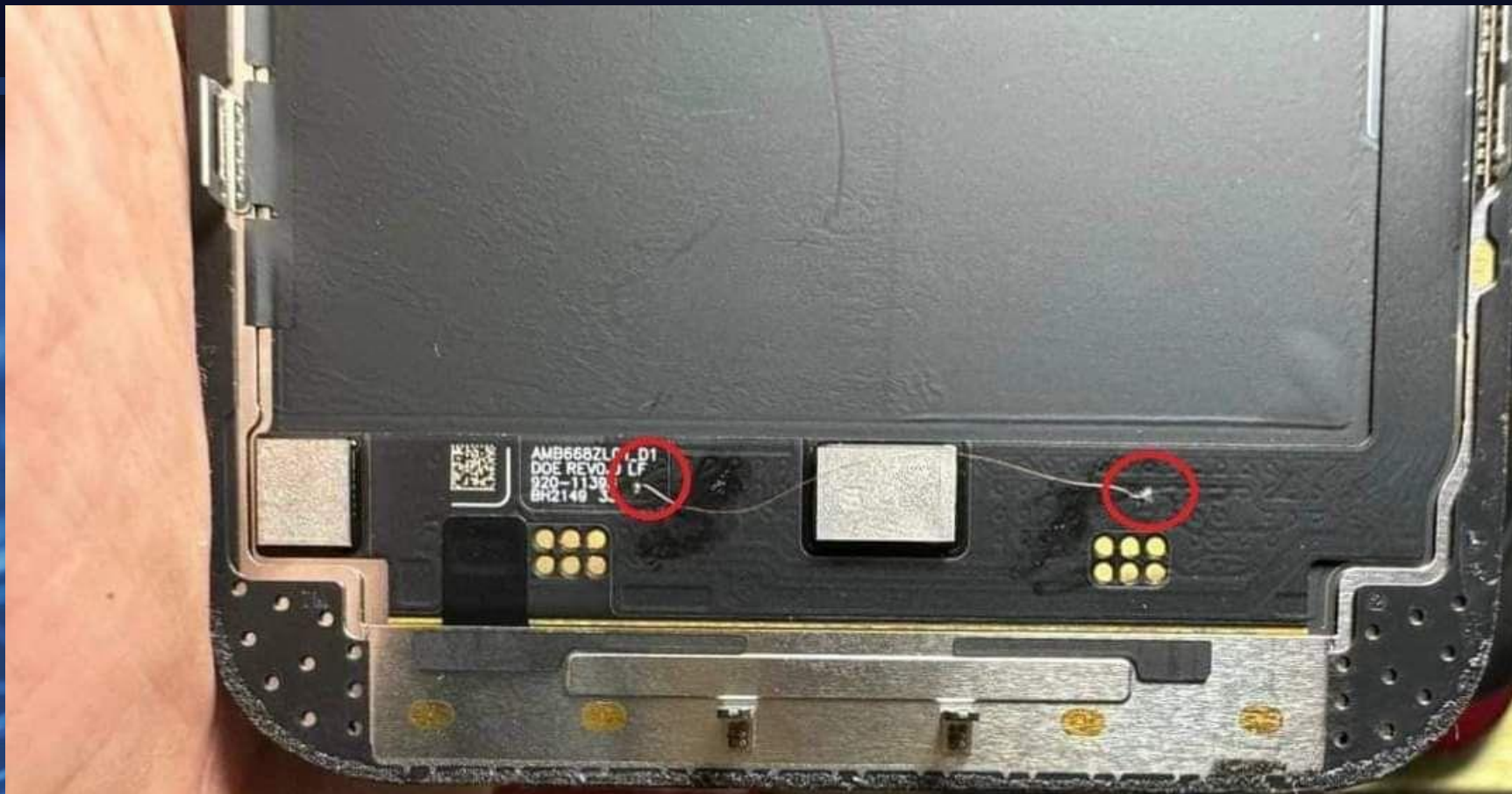


JUMPER

SMARTPHONES E TABLETS



<https://www.youtube.com/watch?v=G5k7LhmyoyU>



JUMPER

SMARTPHONES E TABLETS

<https://forum.gsmhosting.com/vbb/f631/iphone-13-pro-max-white-screen-solution-enjoy-3155386/>

For Xiaomi Mi Mix 3



For Xiaomi Mi 8 SE



For Xiaomi Mi 8



For Xiaomi Mi 8



For Xiaomi Mi 9



For Xiaomi Mi 9 SE



FLEX DISPLAY

SMARTPHONES E TABLETS



<https://forum.gsmhosting.com/vbb/f631/iphone-l3-pro-max-white-screen-solution-enjoy-3155386/>

REPAROS DISPLAY PANEL

GLASS / TOUCH

FRAME

POLARIZER

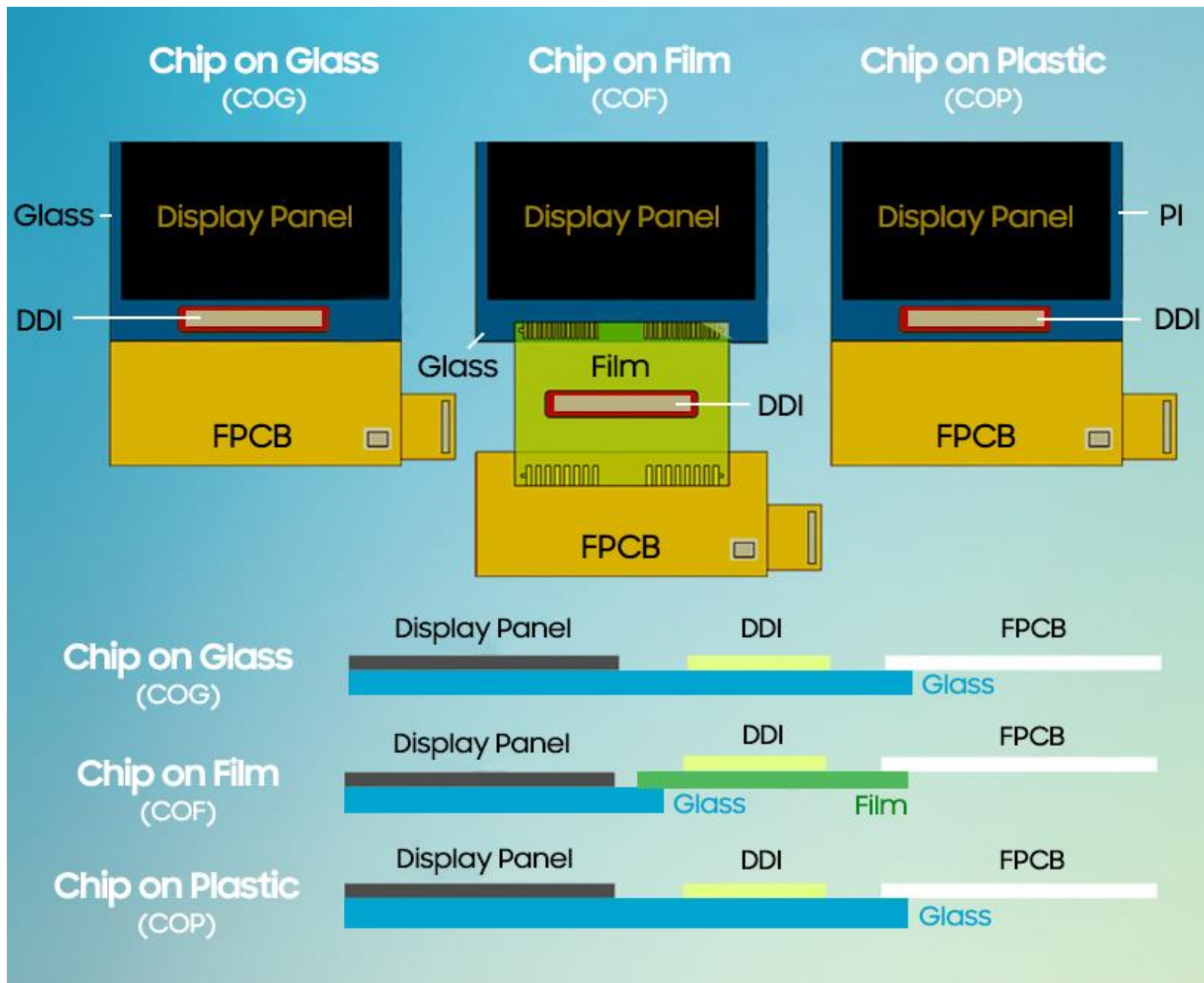
BACKLIGHT

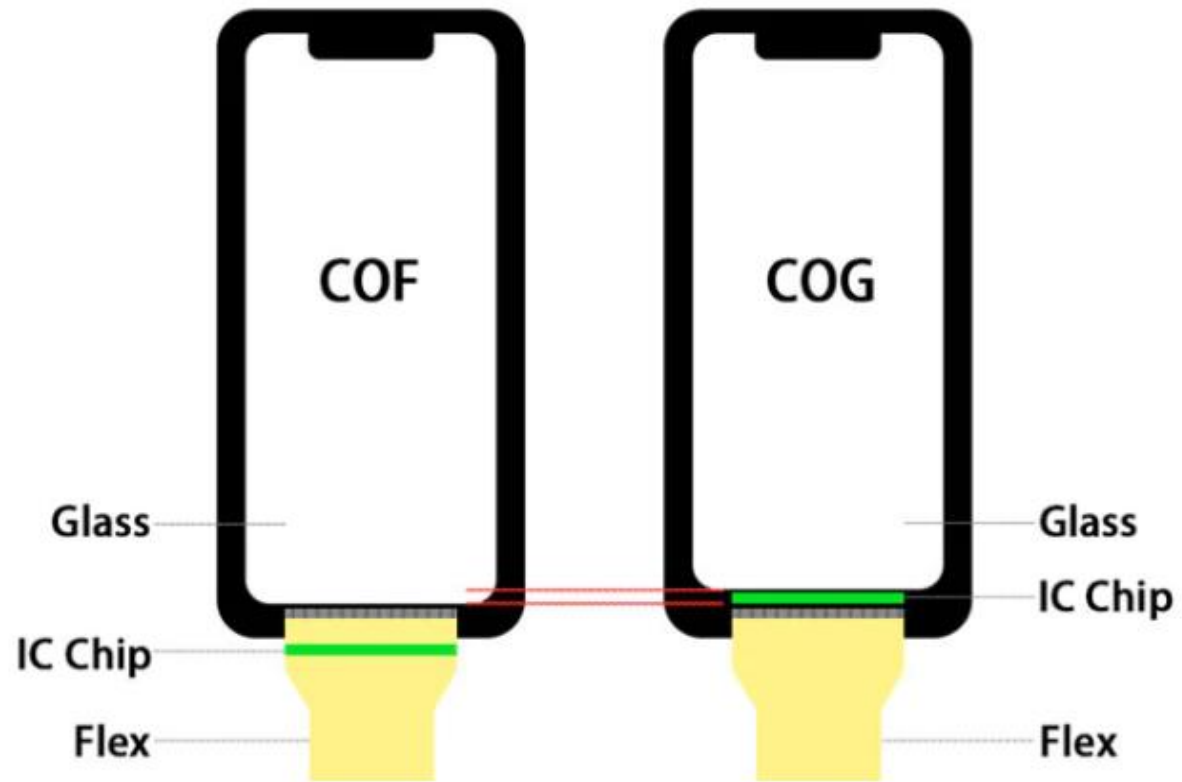
EEPROM

JUMPER

FLEX DISPLAY







COF, COG

SMARTPHONES E TABLETS



<https://taoyuanparts.com/blogs/news/what-is-the-difference-between-cof-cog-in-mobile-lcd-screen>

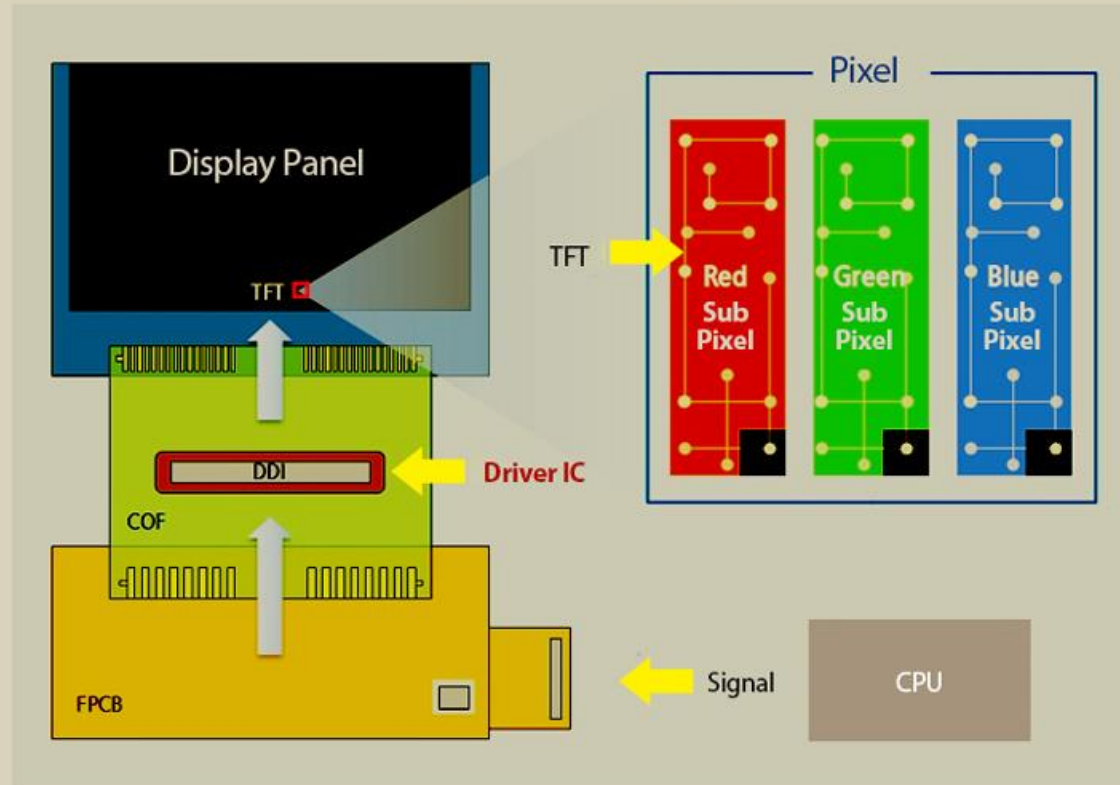


COG = CHIP ON GLASS

COF = CHIP ON FLEX

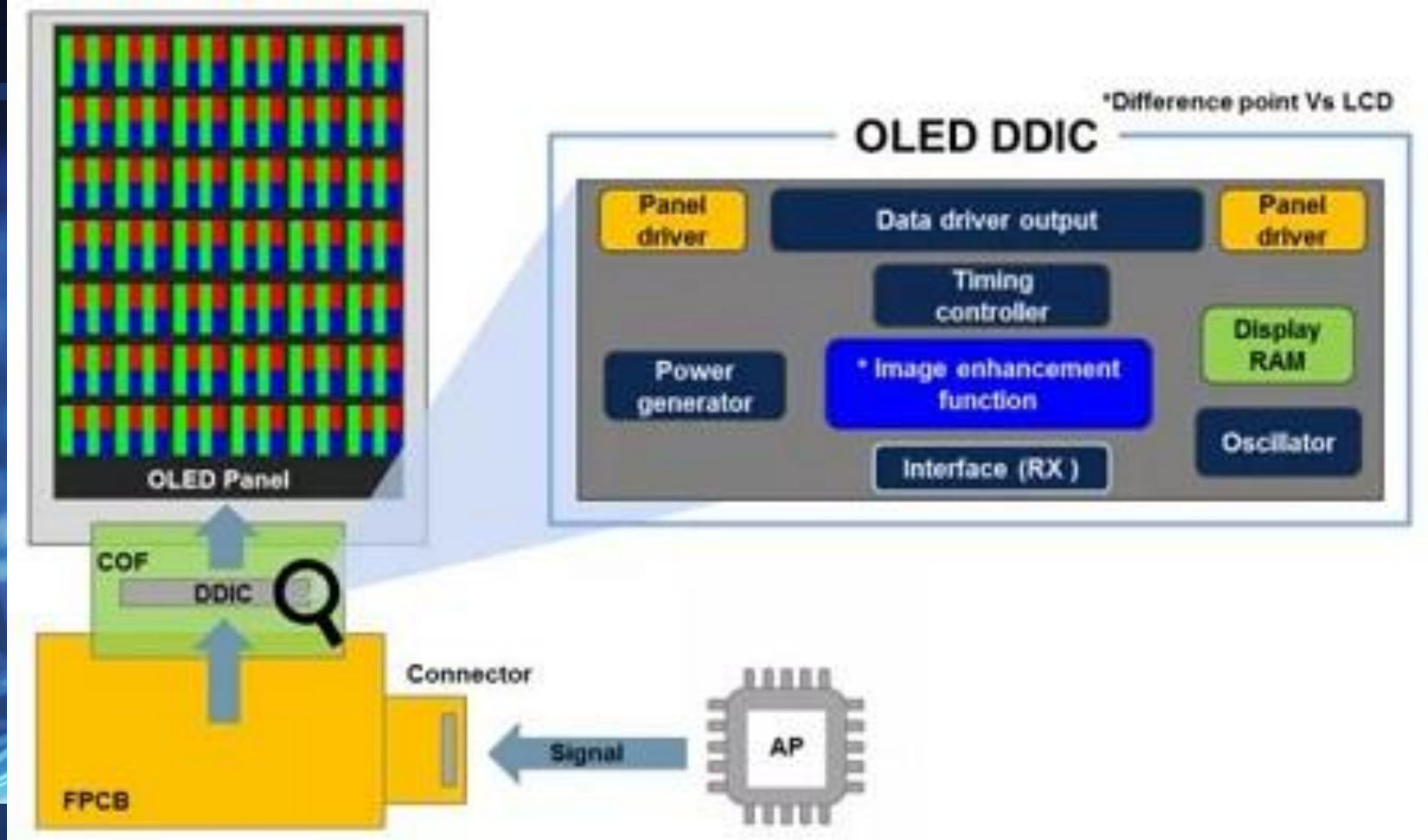


How to Operate Display Panel



IC CHIP = LINE DRIVER IC (LDI)

SMARTPHONES E TABLETS

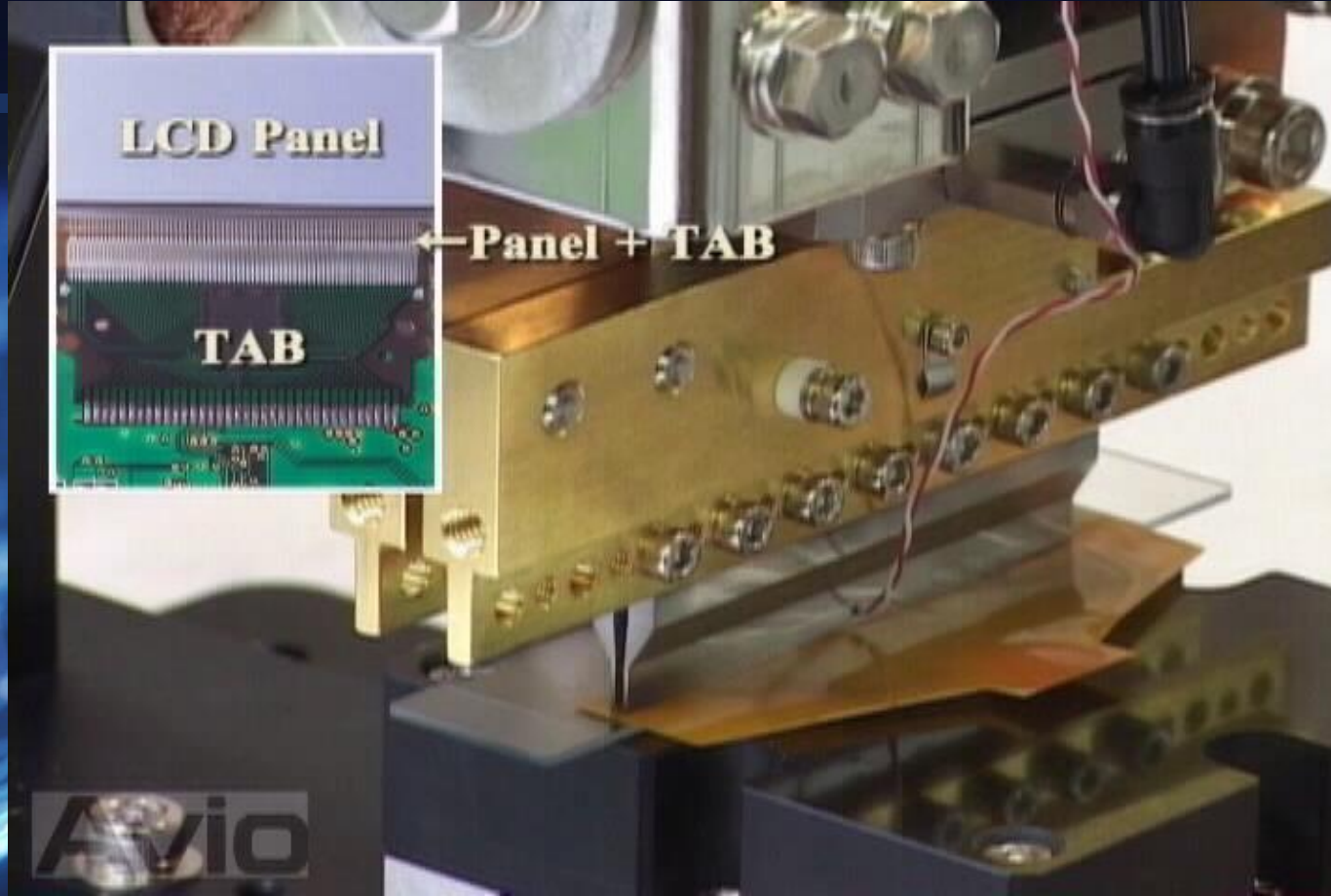


DDIC - DISPLAY DRIVER INTEGRATED CIRCUIT

SMARTPHONES E TABLETS



BONDING MACHINE



BONDING MACHINE



BONDING MACHINE

ACF = ANISOTROPIC CONDUCTIVE FILM



DONDING COG, COF, COP =
USAMOS ACF

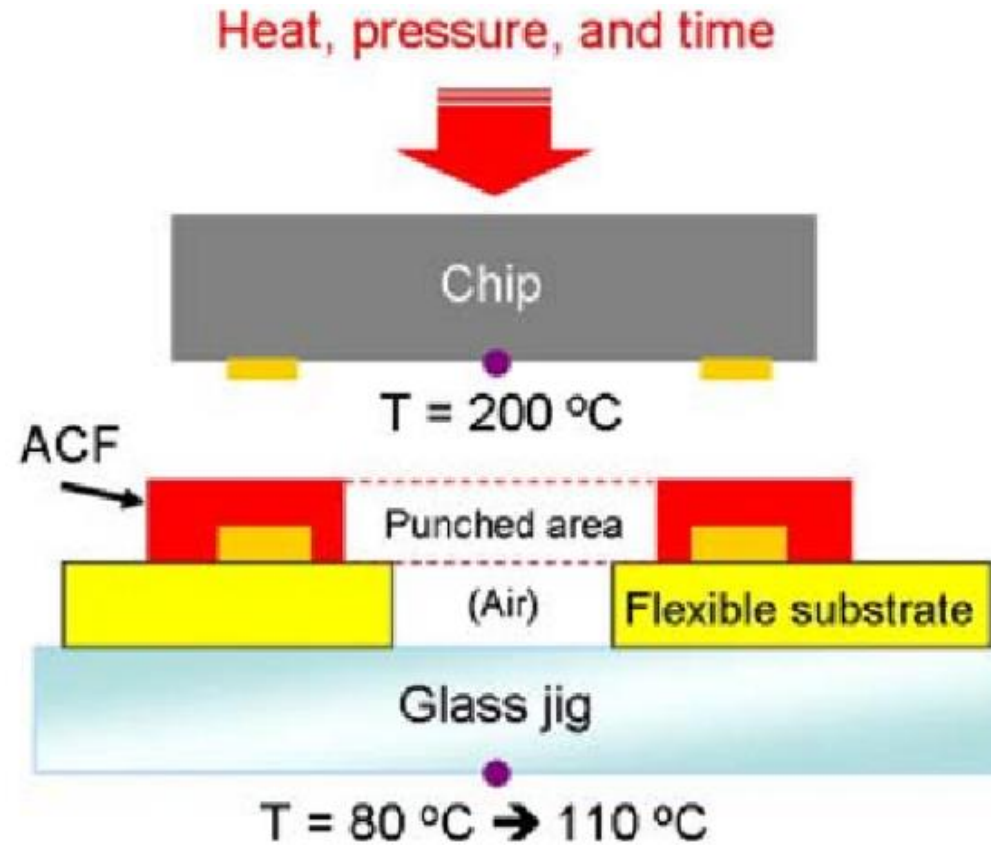
- ACF (= Anisotropic Conductive Film), que é uma resina de vedação na qual partículas condutoras são dispersas em uma resina epóxi termoendurecível. Por crimpagem a quente, apresenta anisotropia elétrica que mantém a condutividade na direção da espessura e o isolamento na direção do plano na parte crimpada.

ACF = ANISOTROPIC CONDUCTIVE FILM

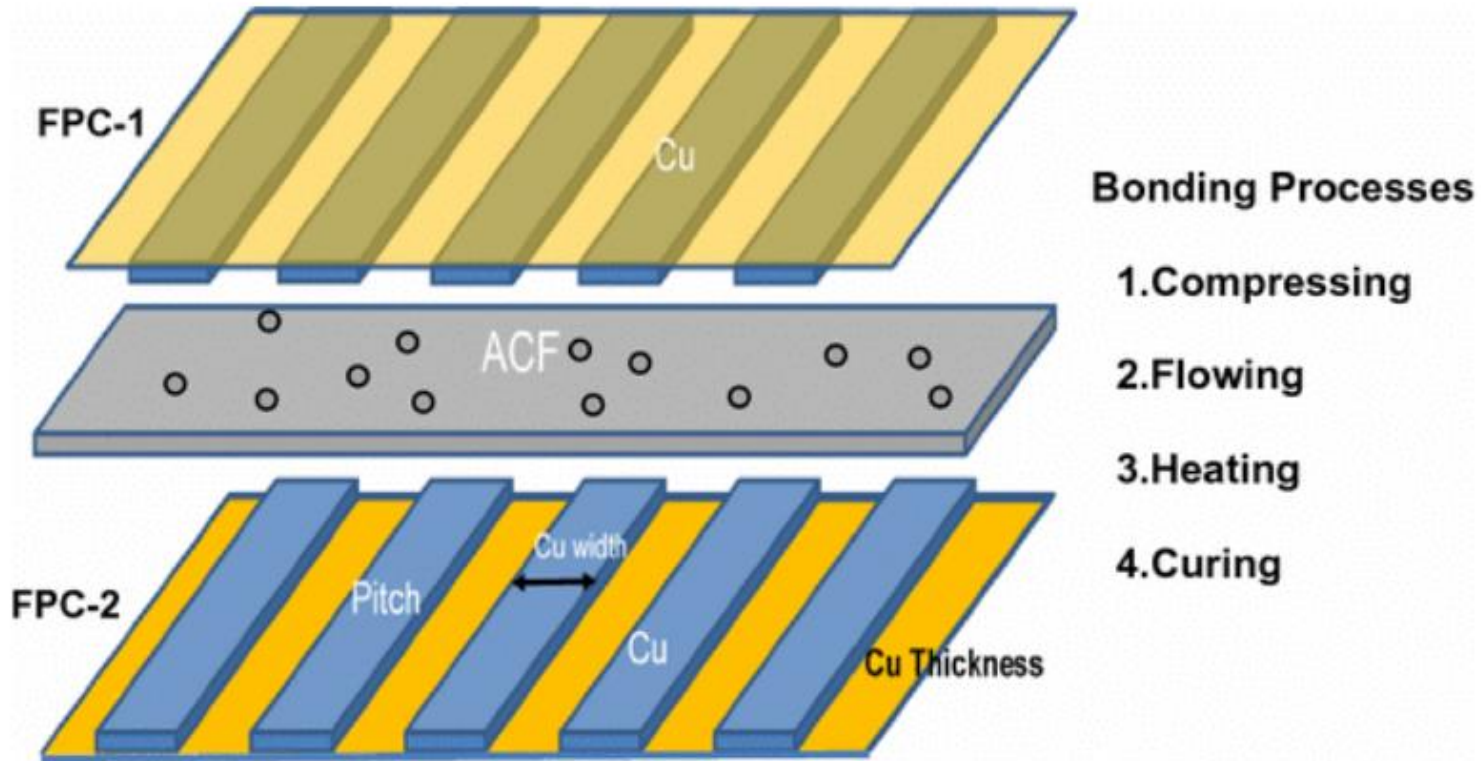
ACF TAPE

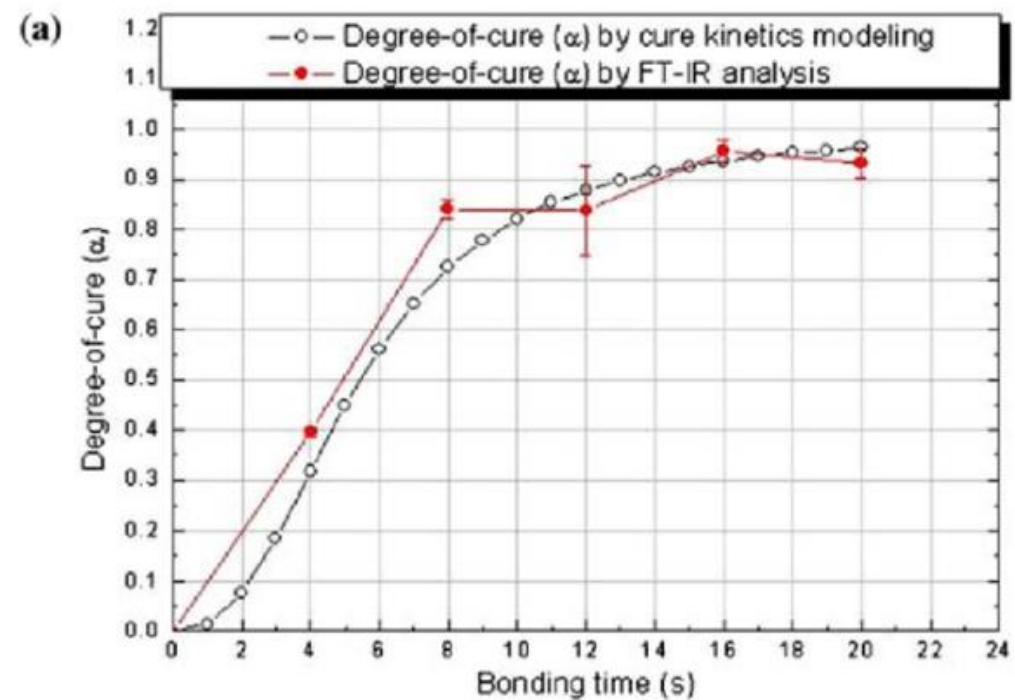
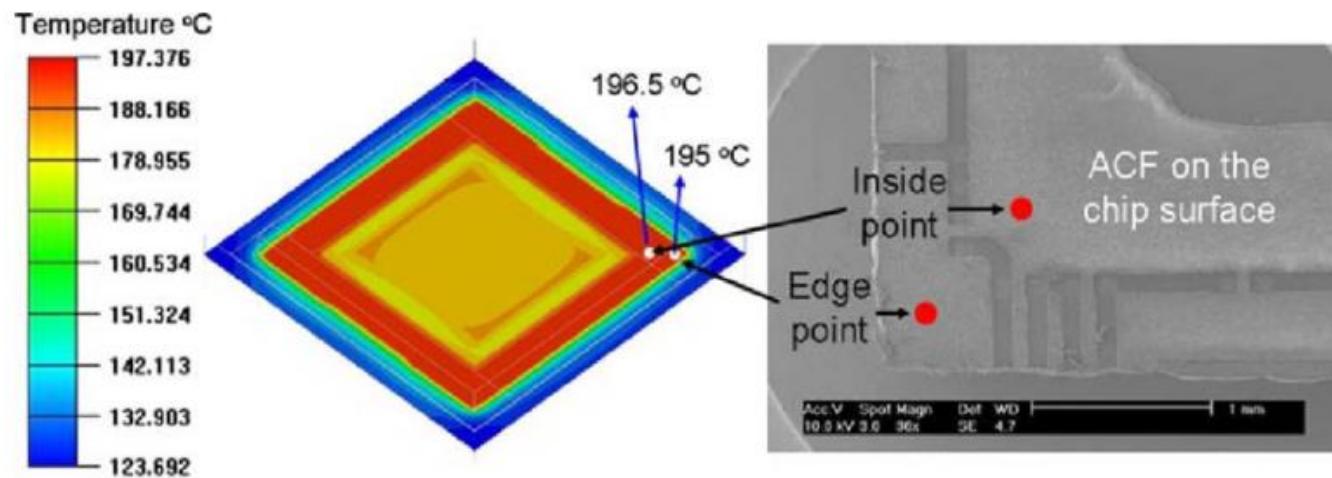


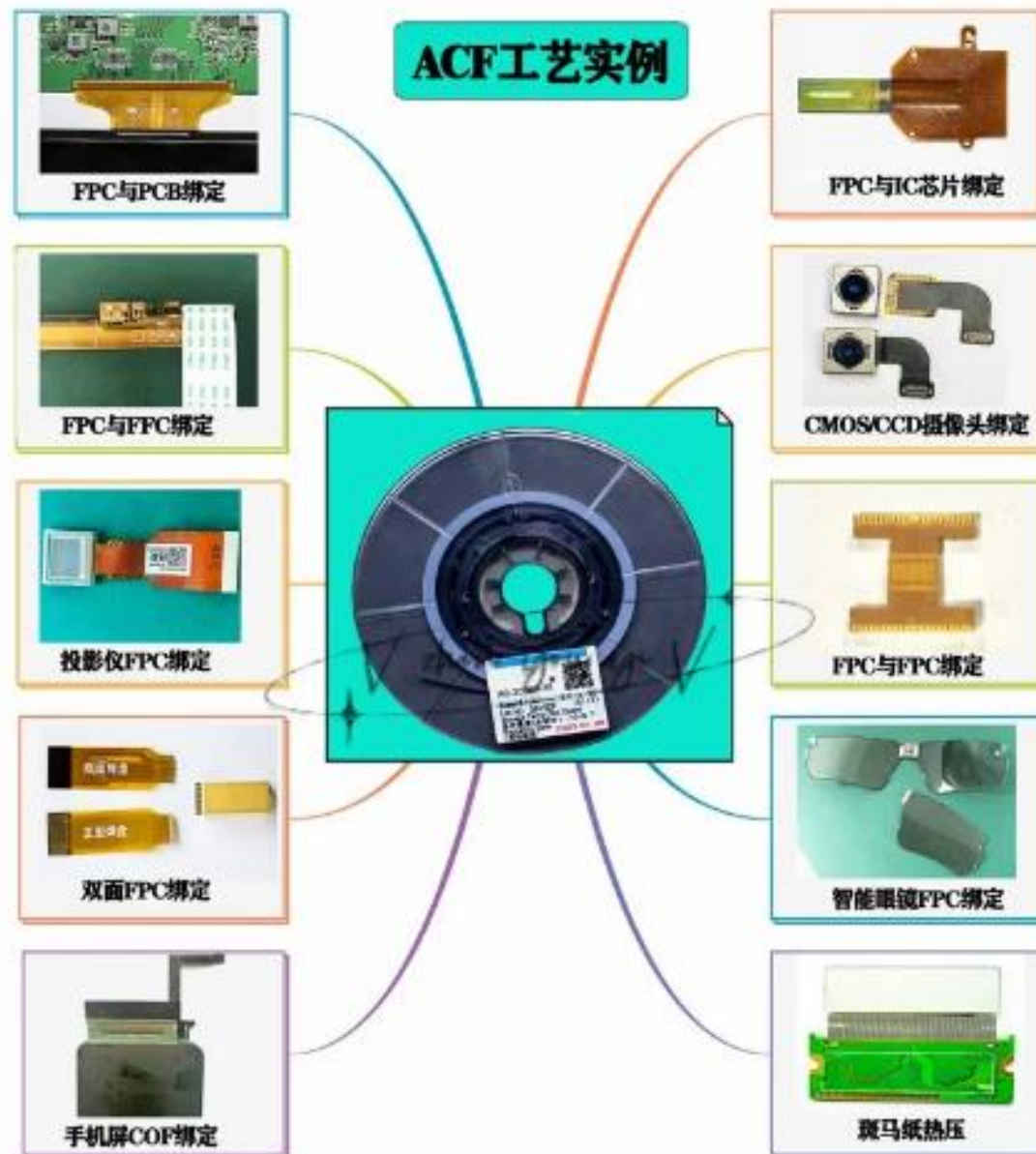
BONDING PROCESSES

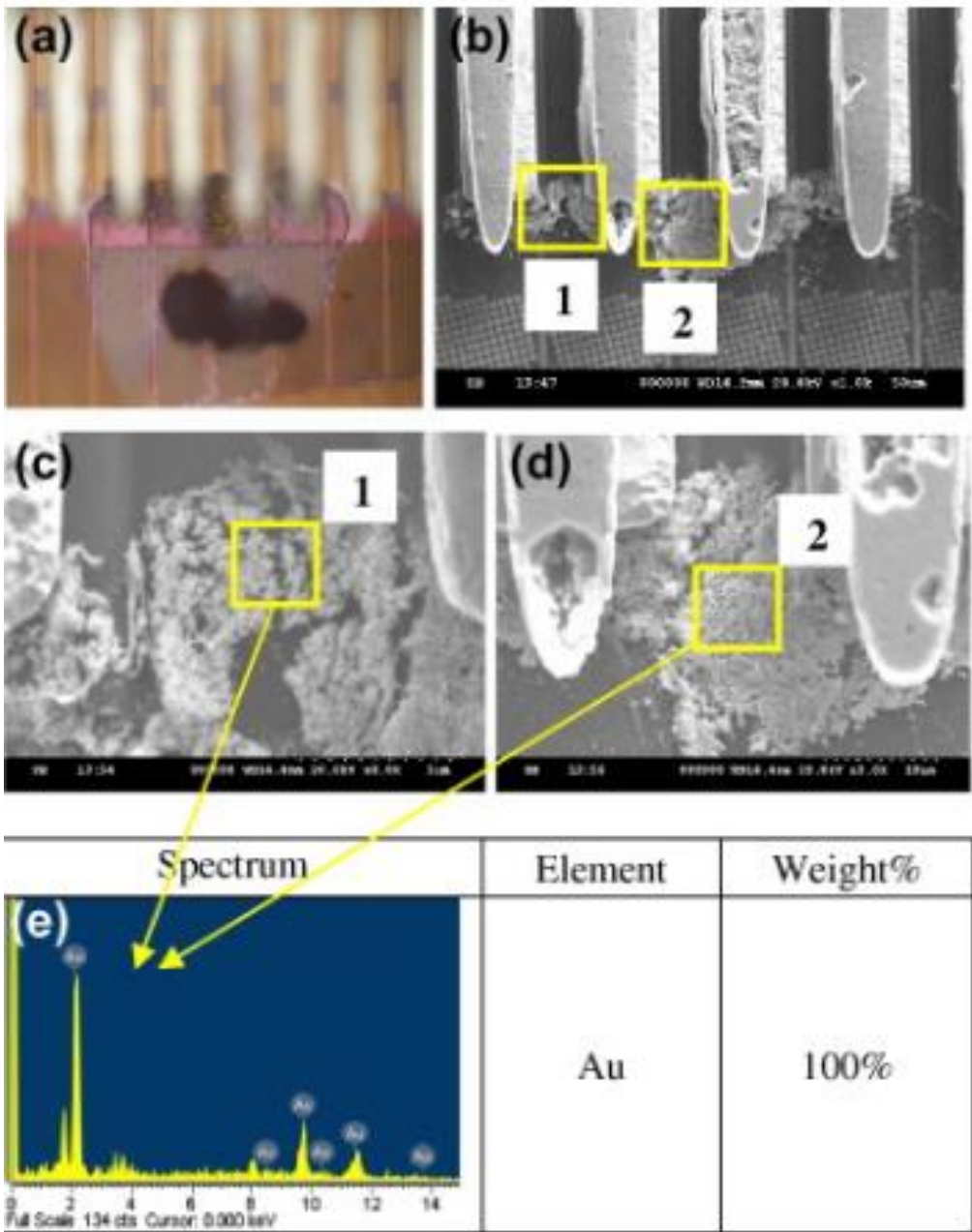


COMPRESSING, FLOWING, HEATING, CURING

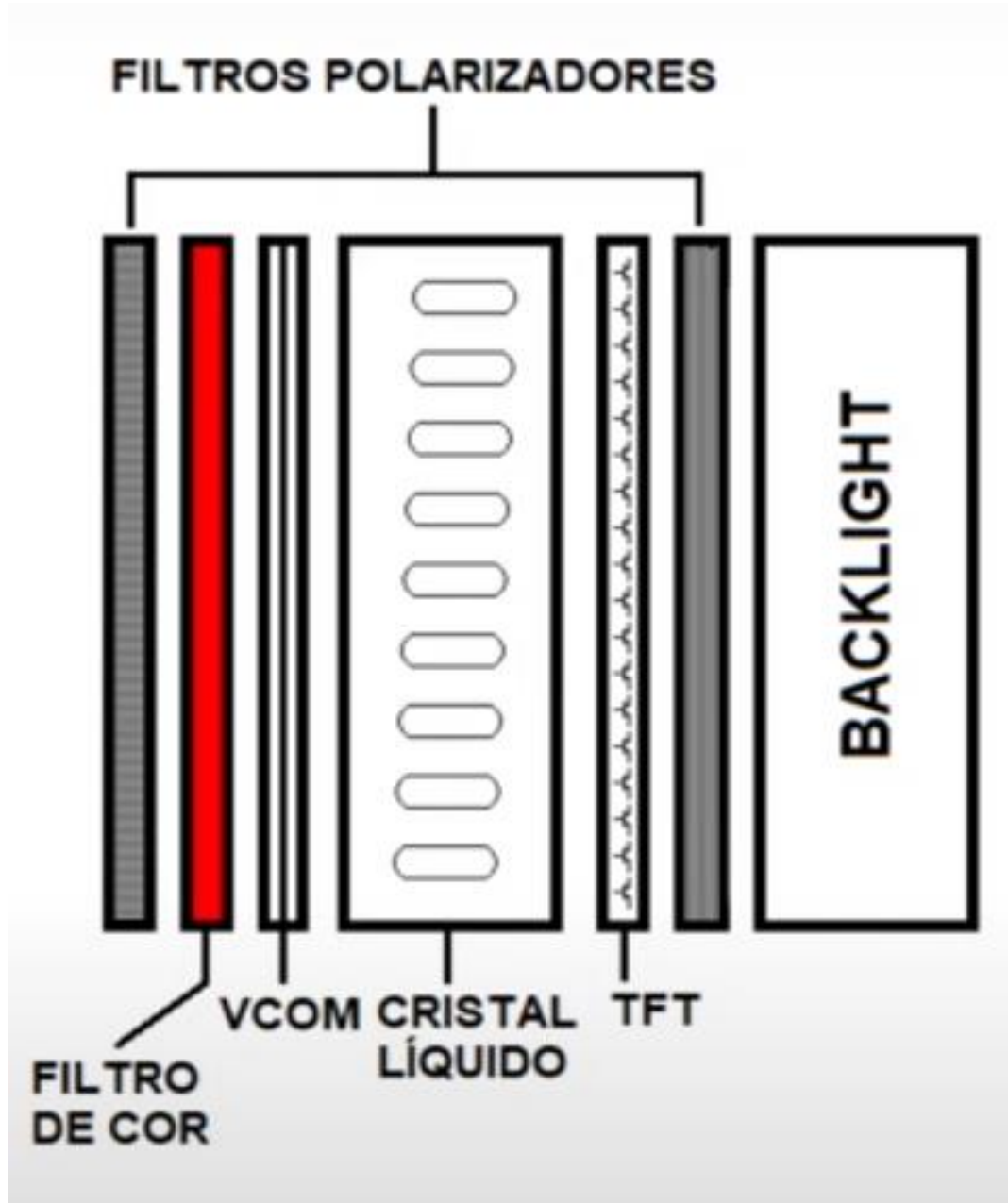


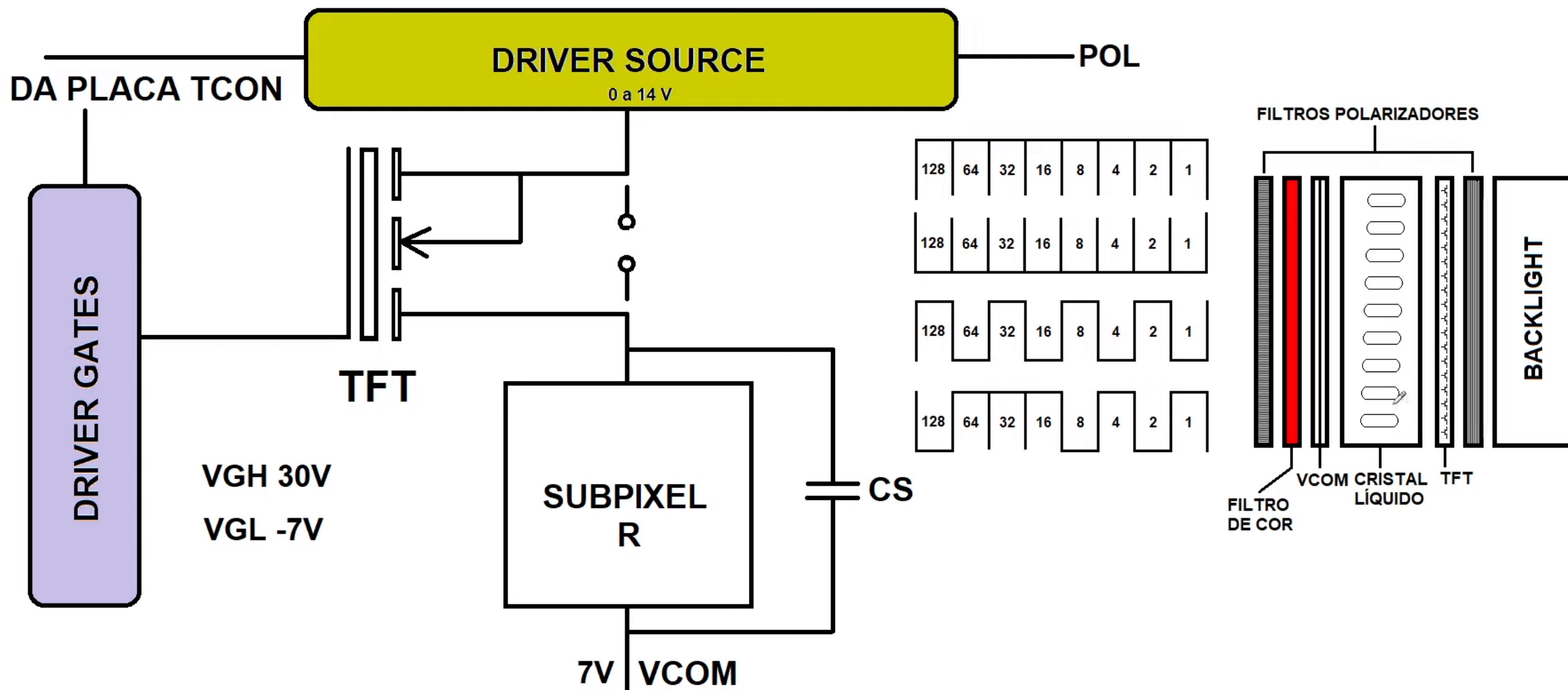






CONSTRUÇÃO BÁSICA FDP FLAT PANEL DISPLAY





EXIGÊNCIAS TÉCNICAS, FLAT PANEL DISPLAY (FPD)

What do pixels look like?

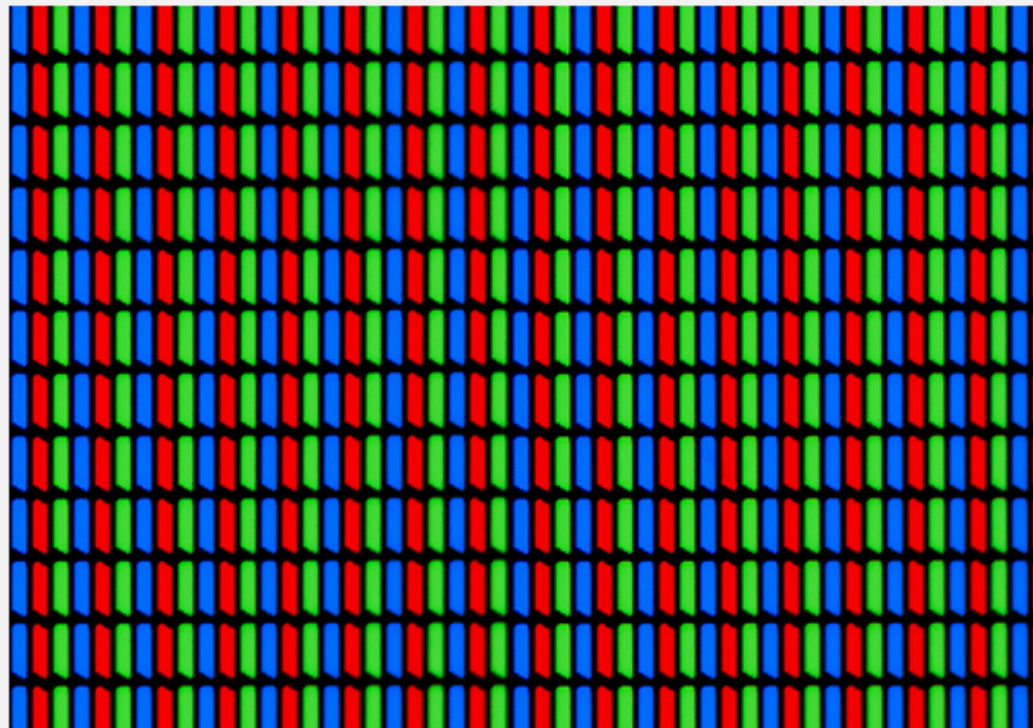
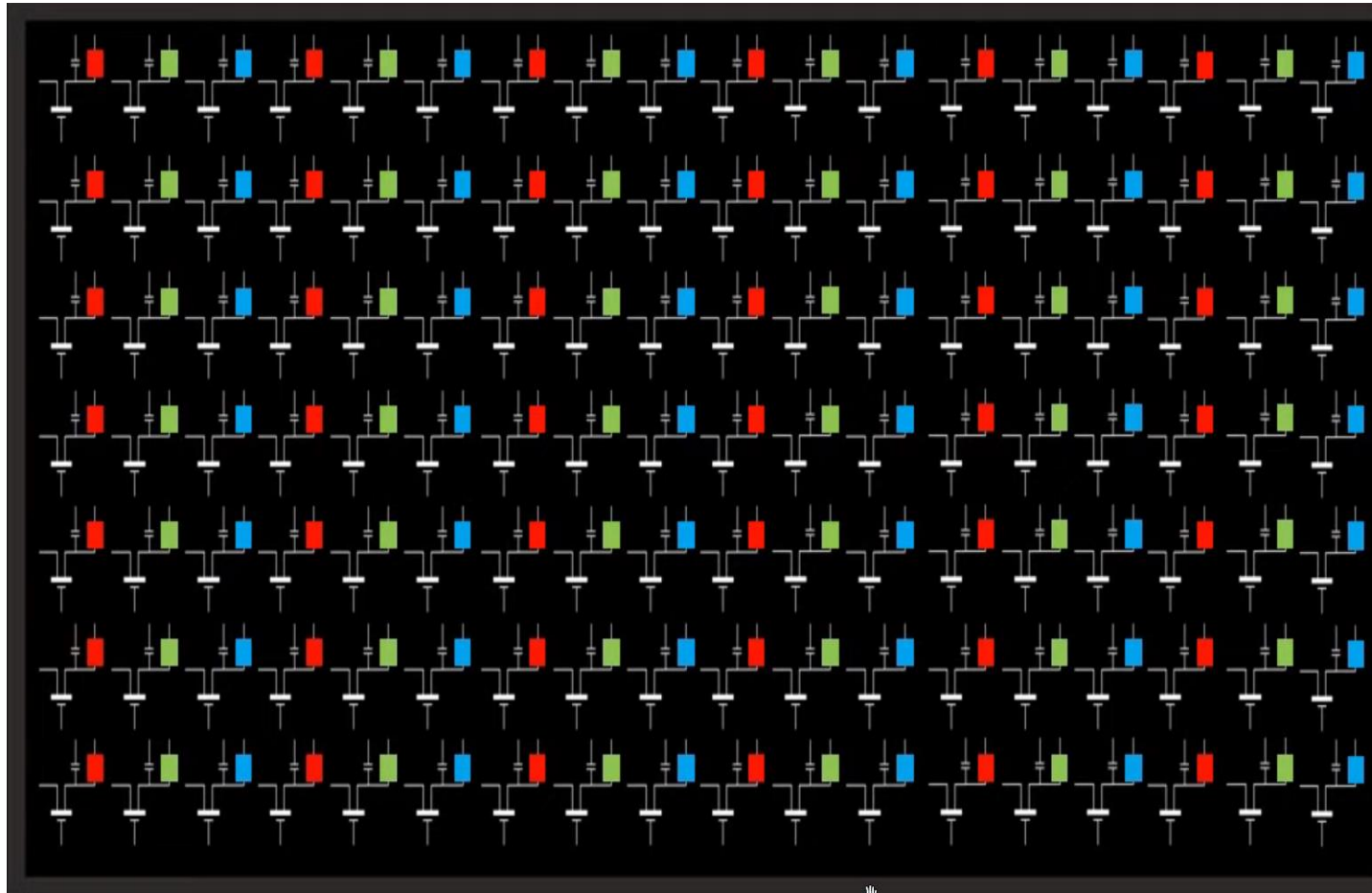


PHOTO: PHOTOCQ/GETTY IMAGES. ©2022 TECHTARGET. ALL RIGHTS RESERVED.

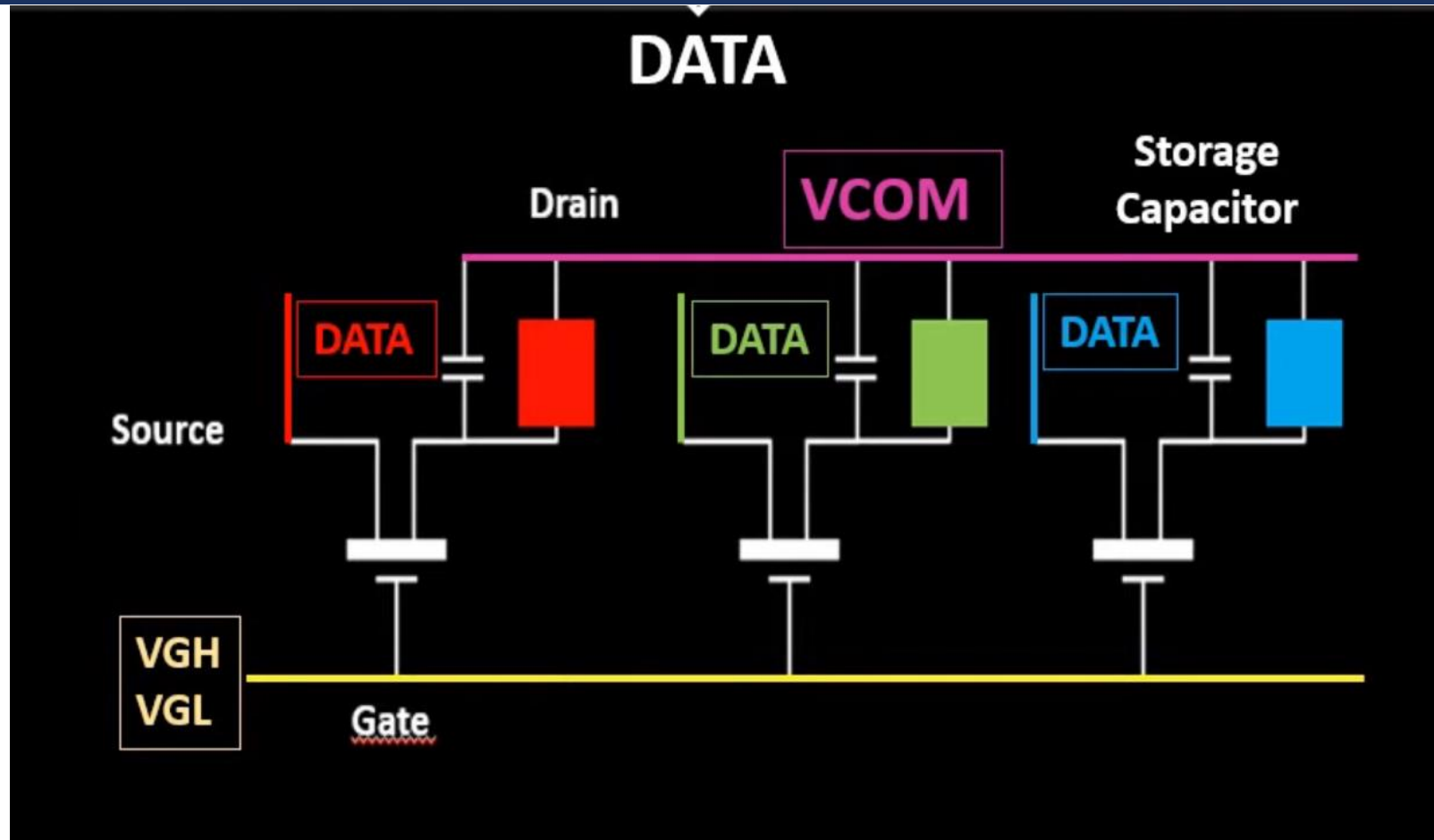
<https://www.techtargget.com/whatis/definition/display>

EXIGÊNCIAS TÉCNICAS, FLAT PANEL DISPLAY (FPD)



<https://www.youtube.com/watch?v=Xt2xkb3sm00>

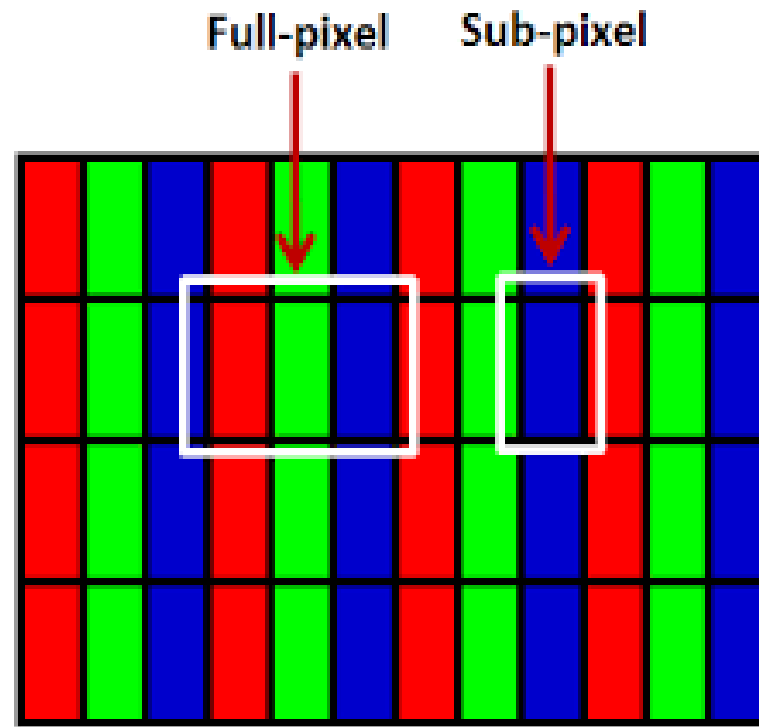
MOSFET TFT



TENSÕES

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Digital Power Supply Voltage For LCD	VDD	3	3.3	3.6	V	-
Analog Power Supply Voltage	<u>AVDD</u>	--	10.4	11	V	-
Gate On Power Supply Voltage	<u>VGH</u>	20	21	22	V	-
Gate Off Power Supply Voltage	<u>VGL</u>	-8.5	-8	-7	V	-
Common Power Supply Voltage	VCOM	--	3.8	--	V	Note 1
Logic Input Voltage	VIH	0.7*DVDD	-	DVDD	V	-
	VIL	GND	-	0.3*DVDD	V	

PIXEL E SUB PIXEL





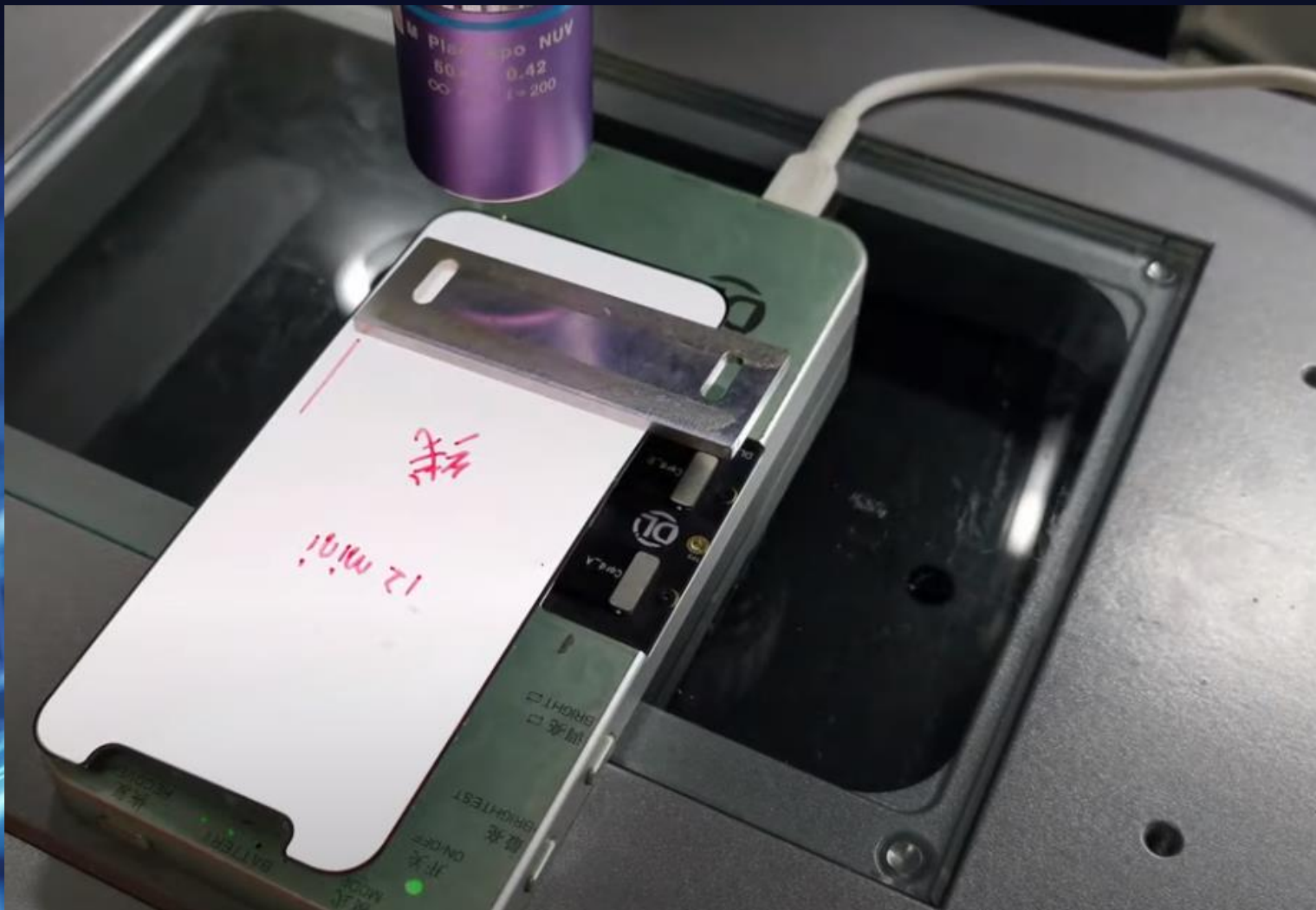
LASER MACHINE

REPAIR DISPLAY PAINEL



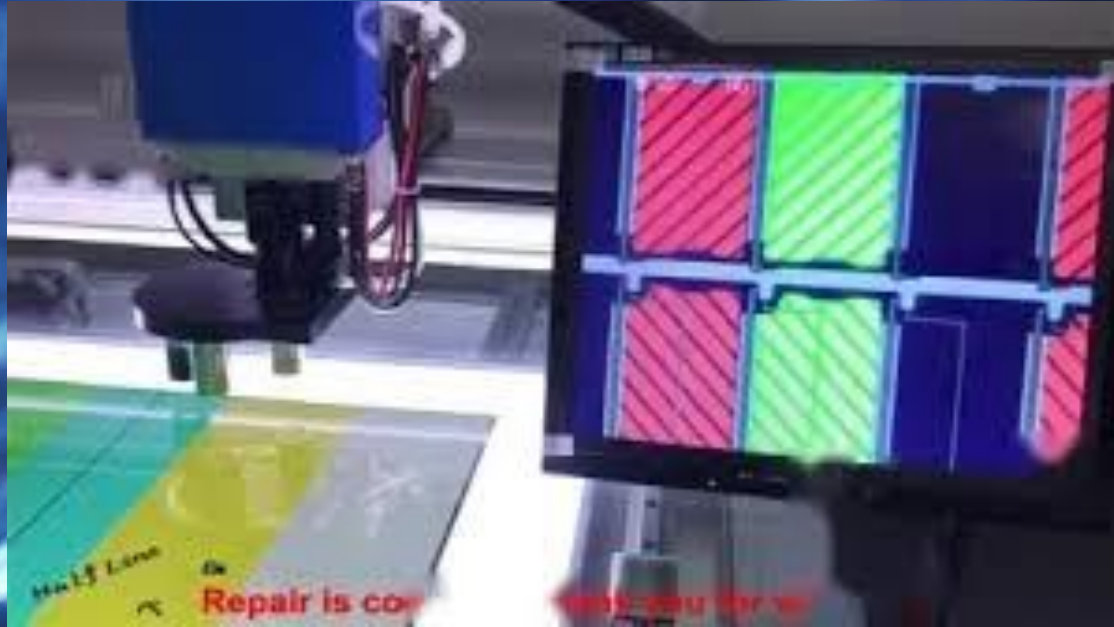
LASER MACHINE

REPAIR DISPLAY PAINEL



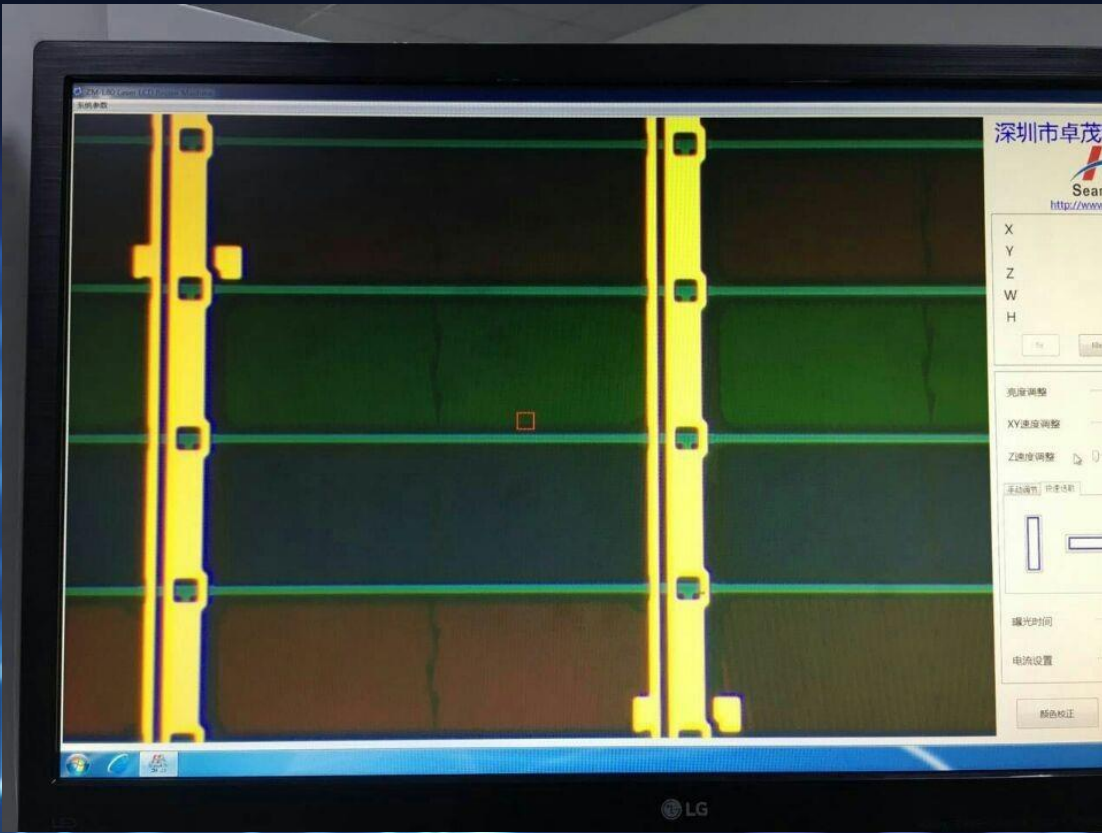
REPAIR DISPLAY PAINEL

LASER MACHINE



LASER MACHINE

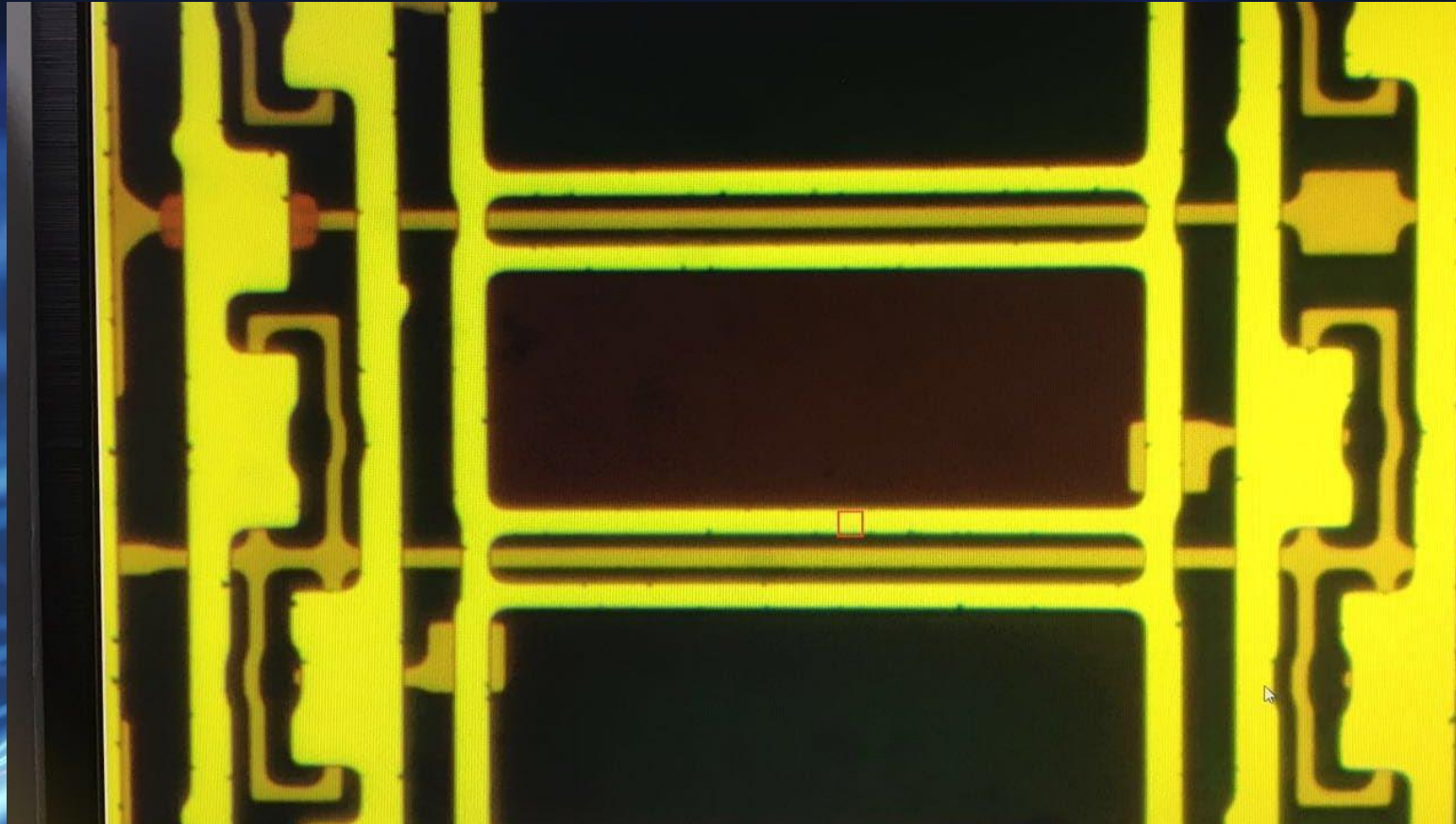
REPAIR DISPLAY PAINEL



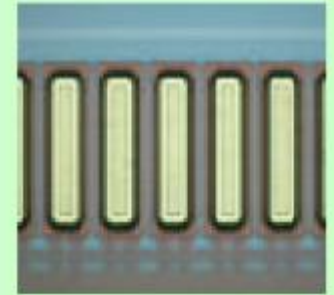
REPAIR DISPLAY PAINEL

LASER MACHINE





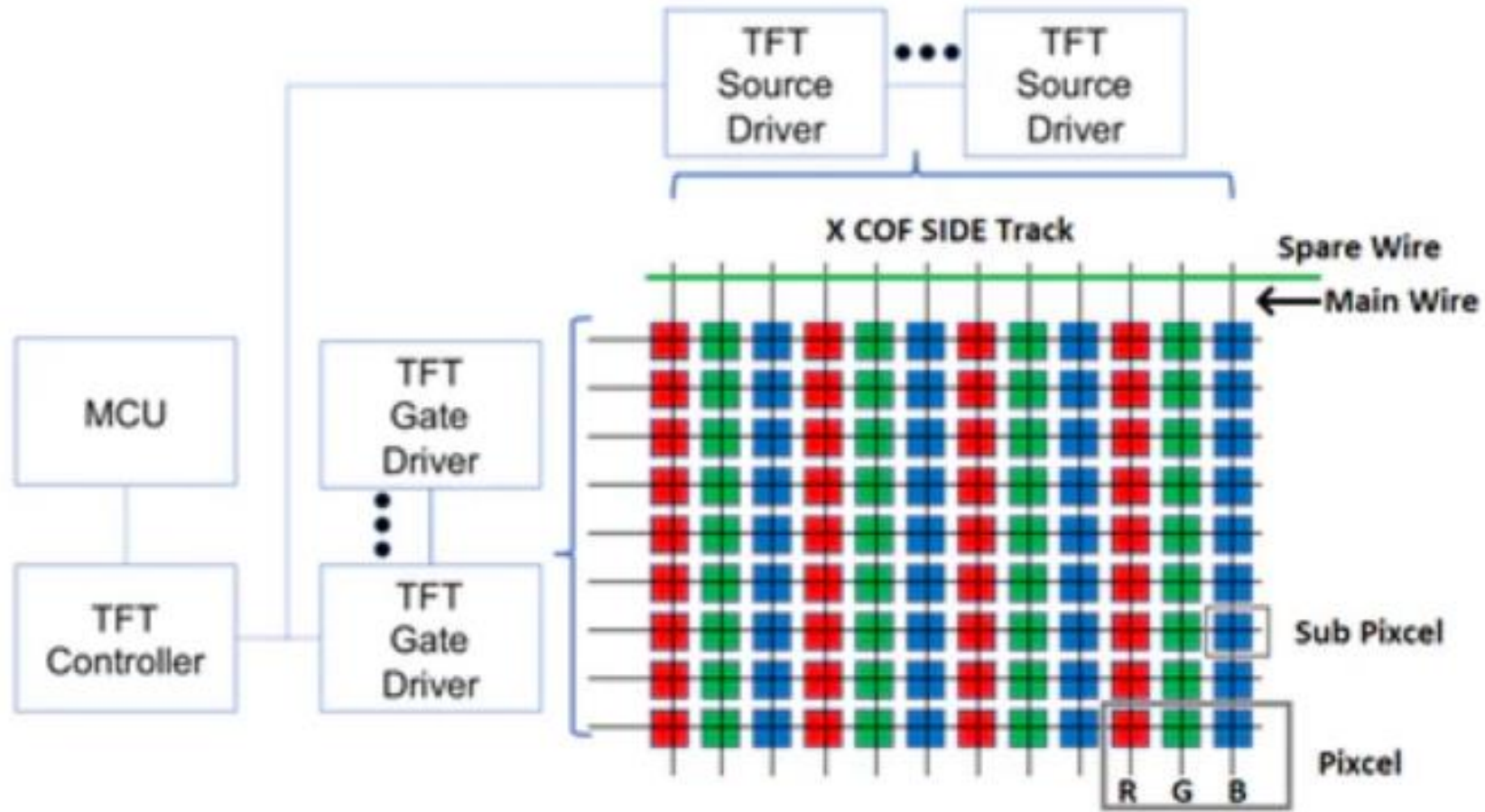
**Electroless Ni
bumps on
LCD Chip**



LASER MACHINE

REPAIR DISPLAY PAINEL

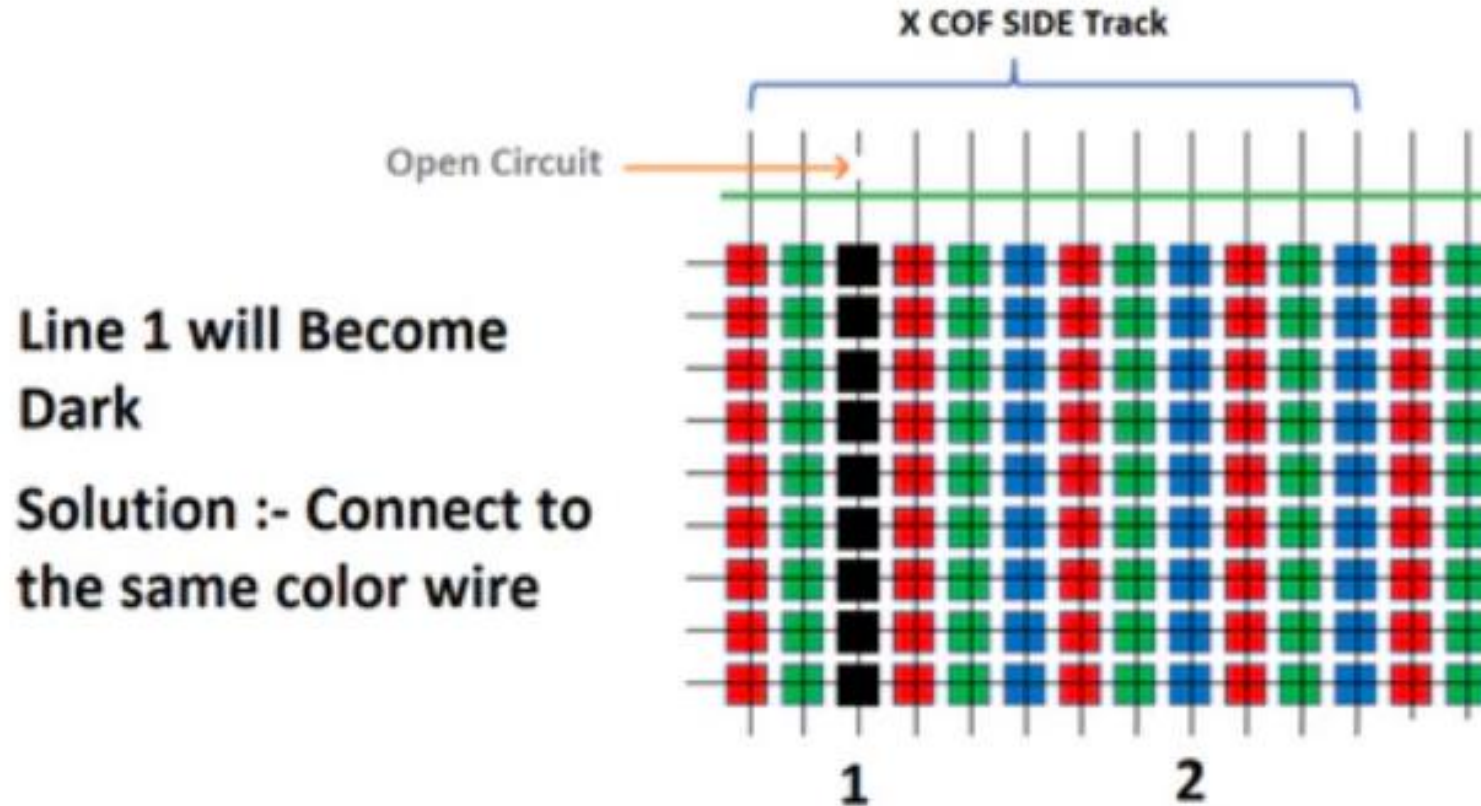
Glass Simple Structure



LASER MACHINE



Case 1:- Repair a Open Circuit



REPAIR DISPLAY PAINEL

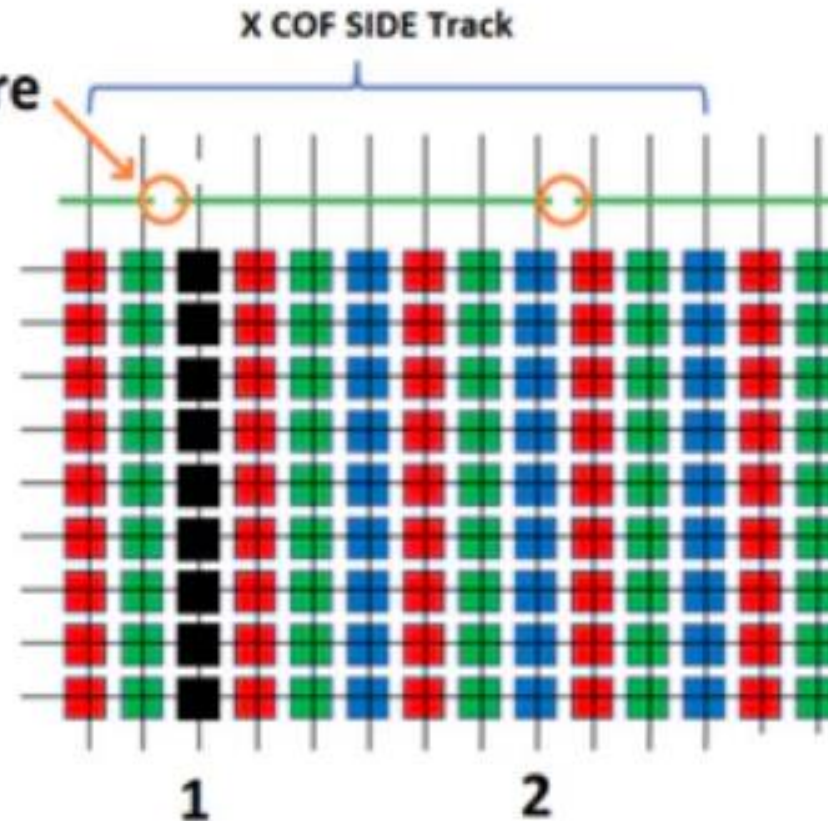
LASER MACHINE

https://www.google.com/url?sa=i&url=https%3A%2F%2Fpanelrepairtrainer.com%2Fblogs%2Flcd-tv-panel-repair-training%2Flcd-led-tv-faults-which-can-be-repaired-by-laser-machine&psig=AOvVawI2DC-wOI5ONEQgvW49VHpk&ust=1690637513891000&source=images&cd=vfe&opi=89978449&ved=0CA8QjhqxqFwoTCKDj_9XBsYADFQAAAAAAdAAAAABAj



Case 1:- Repair a Open Circuit

Step1:- Cut Spare wire

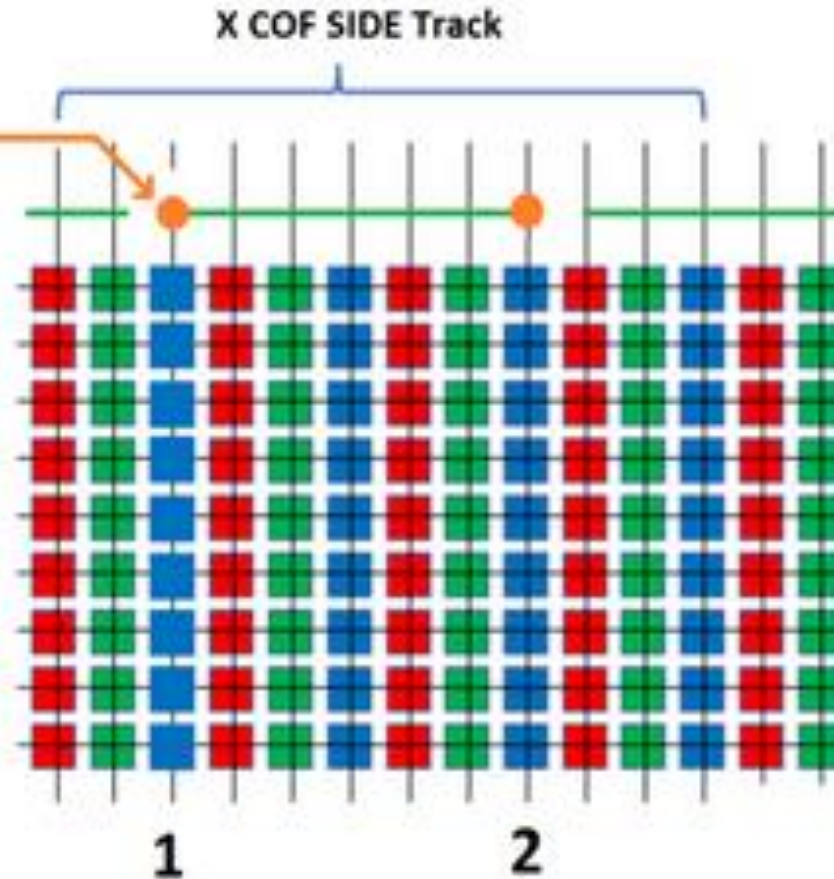


CASO 1: REPARANDO UM CIRCUITO ABERTO SOLUÇÃO: CONECTE AO FIO DA MESMA COR

Case 1:- Repair a Open Circuit

Step2:- Connect main wire and spare line

- Now line 1 is connected with line 2, line 1 will display same as line 2
- Though line 1 different from the original image, but can not be distinguished by eye.



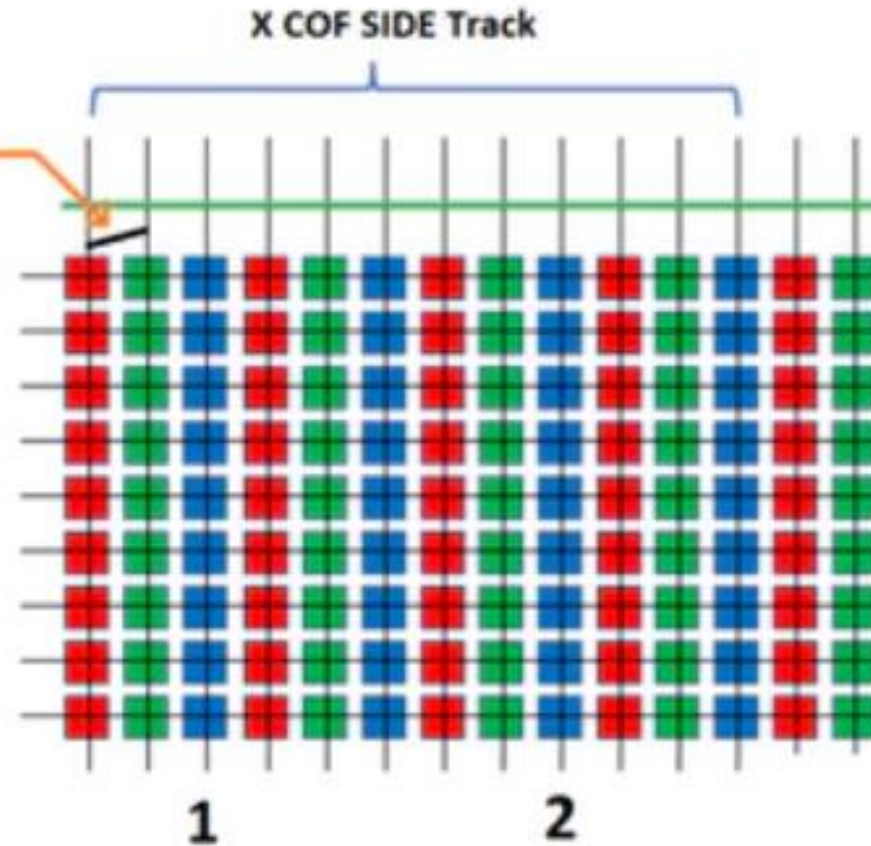
REPAIR DISPLAY PAINEL

LASER MACHINE

Case 2:- Repair a short Circuit

Short Circuit

- Short circuit between two wire just Cut it with laser.



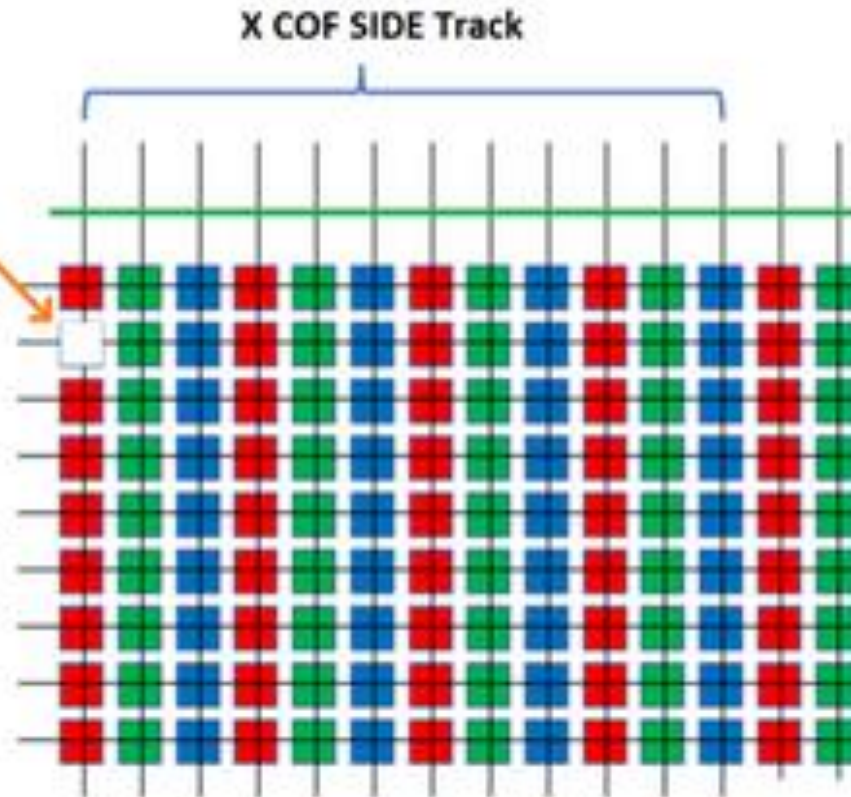
REPAIR DISPLAY PAINEL

LASER MACHINE

Repair a pixel

Broken Pixel

- For a Broken pixel, just cut the power supply of this pixel, then the pixel will become dark, and can not be seen by



REPAIR DISPLAY PAINEL

LASER MACHINE

O princípio do reparo da máquina a laser é usar o poder do laser para alterar a conexão do circuito no vidro. Temos duas funções básicas:

- 1. Desconectar uma Trilha**
- 2. Conectar uma Trilha**

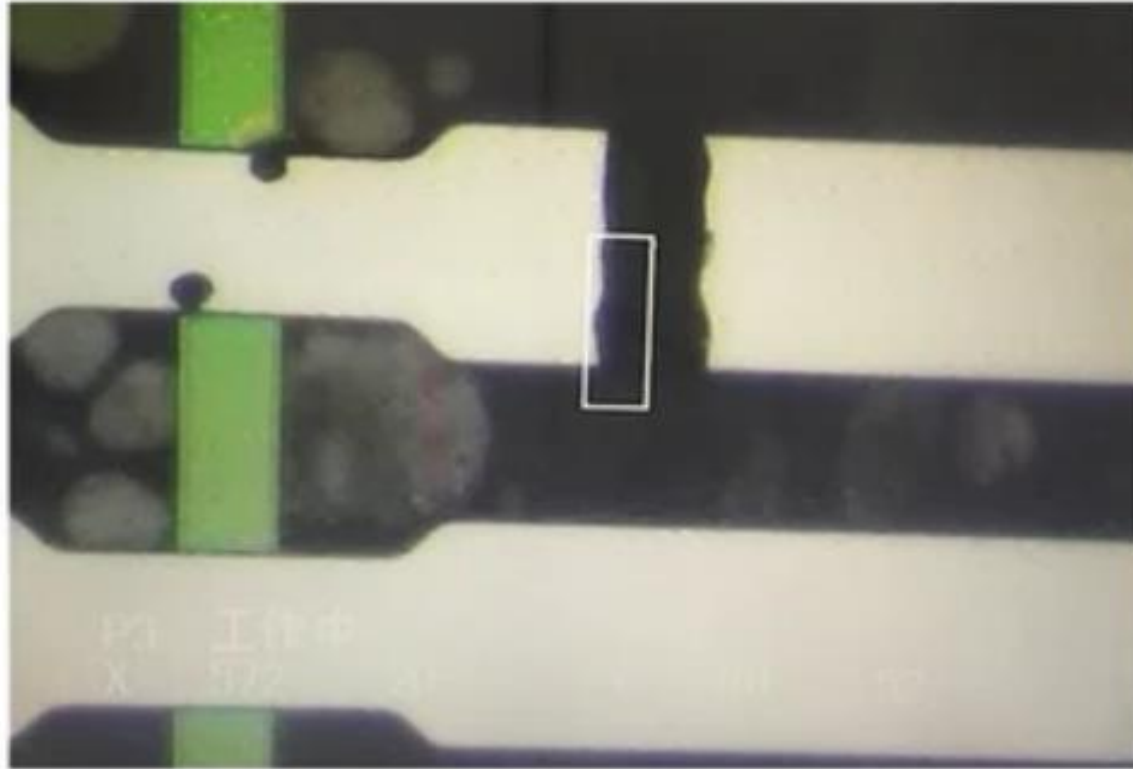
REPAIR DISPLAY PAINEL

LASER MACHINE

https://www.google.com/url?sa=i&url=https%3A%2F%2Fpanelrepairtrainer.com%2Fblogs%2Flcd-tv-panel-repair-training%2Flcd-led-tv-faults-which-can-be-repaired-by-laser-machine&psig=AOvVawI2DC-wOI5ONEQgvW49VHpk&ust=1690637513891000&source=images&cd=vfe&opi=89978449&ved=0CA8QjhqxqFwoTCKDj_9XBsYADFQAAAAAdAAAAABAJ



Break a wire



REPAIR DISPLAY PAINEL

LASER MACHINE

https://www.google.com/url?sa=i&url=https%3A%2F%2Fpanelrepairtrainer.com%2Fblogs%2Flcd-tv-panel-repair-training%2Flcd-led-tv-faults-which-can-be-repaired-by-laser-machine&psig=AOvVawI2DC-wOI5ONEQgvW49VHpk&ust=1690637513891000&source=images&cd=vfe&opi=89978449&ved=0CA8QjhxqFwoTCKDj_9XBsYADFQAAAAAdAAAAABAJ

Conectar Duas Trilhas

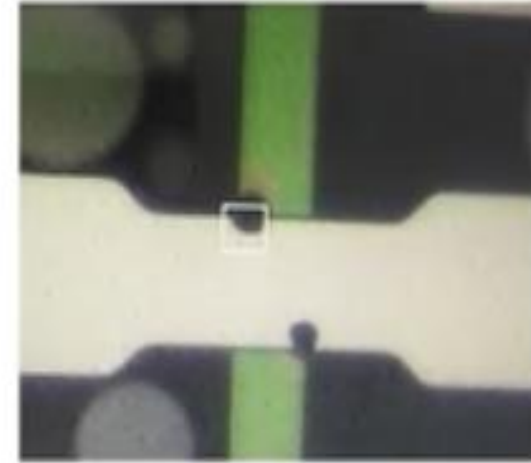
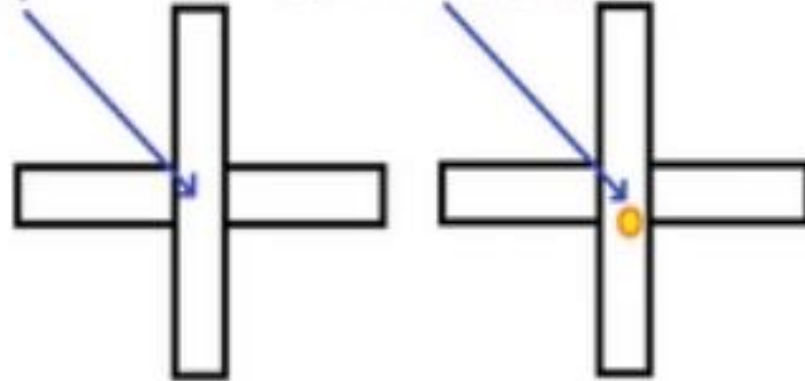
No vidro, geralmente temos algumas trilhas sobressalentes para reparo. Em condições normais, há uma camada isolante entre o fio principal e o fio sobressalente, o fio principal e o fio sobressalente não estão conectados. Se aplicar um pulso de laser adequado à cruz, pode quebrar a camada isolante e o fio principal e o fio sobressalente serão conectados.



Join Wire

Insulating layer

Connected



Connect two wires

REPAIR DISPLAY PAINEL

LASER MACHINE



VD INTELLISYS
TECHNOLOGIES (P) LTD.

Function --- Channel cleaning, cutting channel



ITO scratches cause electrical
shorts between phases



Poor laser smash
channel



Circuit re-engineering to
isolate short-circuit area

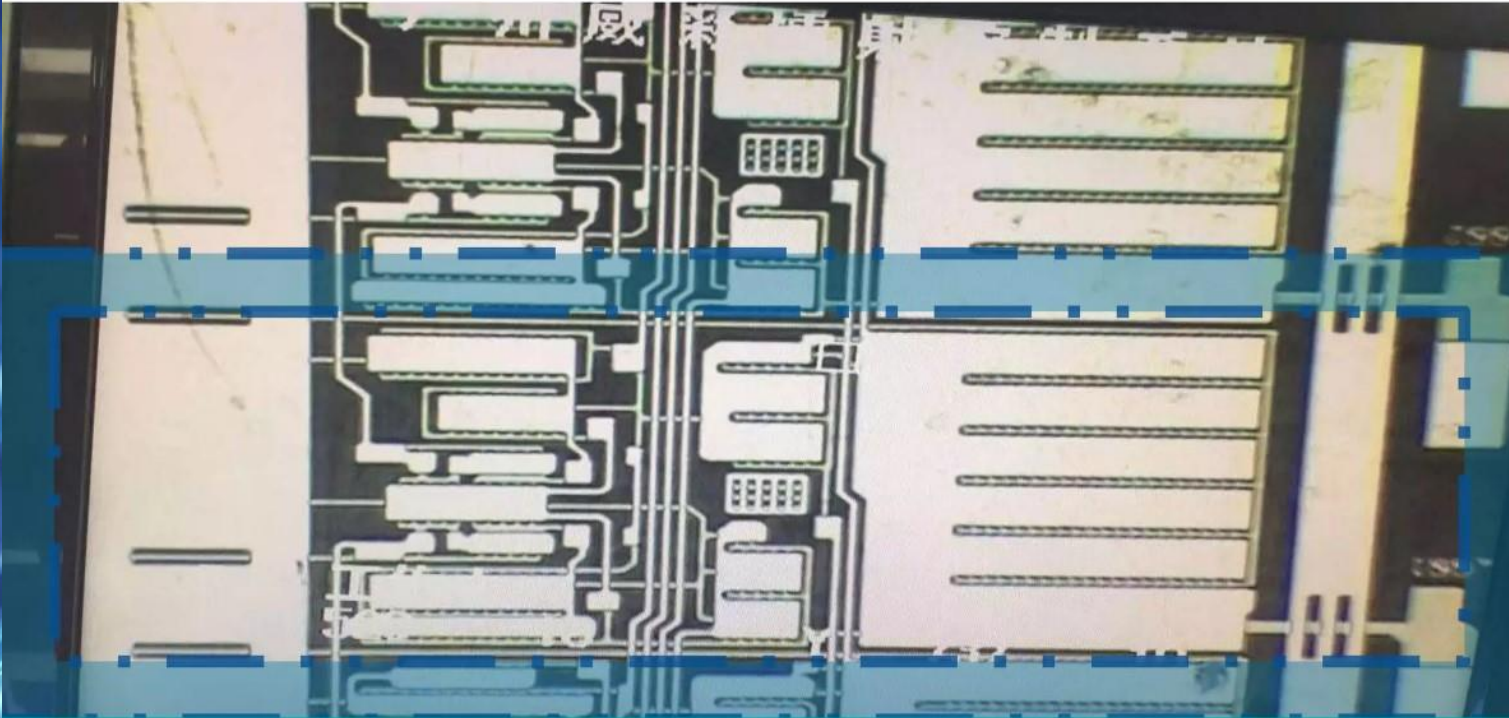
REPAIR DISPLAY PAINEL

LASER MACHINE



VD INTELLISYS
TECHNOLOGIES (P) LTD.

GOA internal circuit structure



Helps analyze internal circuits and facilitates maintenance

REPAIR DISPLAY PAINEL

LASER MACHINE

https://www.google.com/url?sa=i&url=https%3A%2F%2Fpanelrepairtrainer.com%2Fblogs%2Flcd-tv-panel-repair-training%2Flcd-led-tv-faults-which-can-be-repaired-by-laser-machine&psig=AOvVawI2DC-wOI5ONEQgvW49VHpk&ust=1690637513891000&source=images&cd=vfe&opi=89978449&ved=0CA8QjhxqFwoTCKDj_9XBsYADFQAAAAAdAAAAABAJ



VD INTELLISYS
TECHNOLOGIES (P) LTD.

Function two :Introduction to cutting and welding



REPAIR DISPLAY PAINEL

LASER MACHINE

https://www.google.com/url?sa=i&url=https%3A%2F%2Fpanelrepairtrainer.com%2Fblogs%2Flcd-tv-panel-repair-training%2Flcd-led-tv-faults-which-can-be-repaired-by-laser-machine&psig=AOvVawI2DC-wOI5ONEQgvW49VHpk&ust=1690637513891000&source=images&cd=vfe&opi=89978449&ved=0CA8QjhqFwoTCKDj_9XBsYADFQAAAAAdAAAAABAJ

LASER MACHINE

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=KS-LSI1TIAY&T=312S](https://www.youtube.com/watch?v=KS-LSI1TIAY&T=312S)

CLY-810LS LASER LCD REPAIR MACHINE TV PANEL



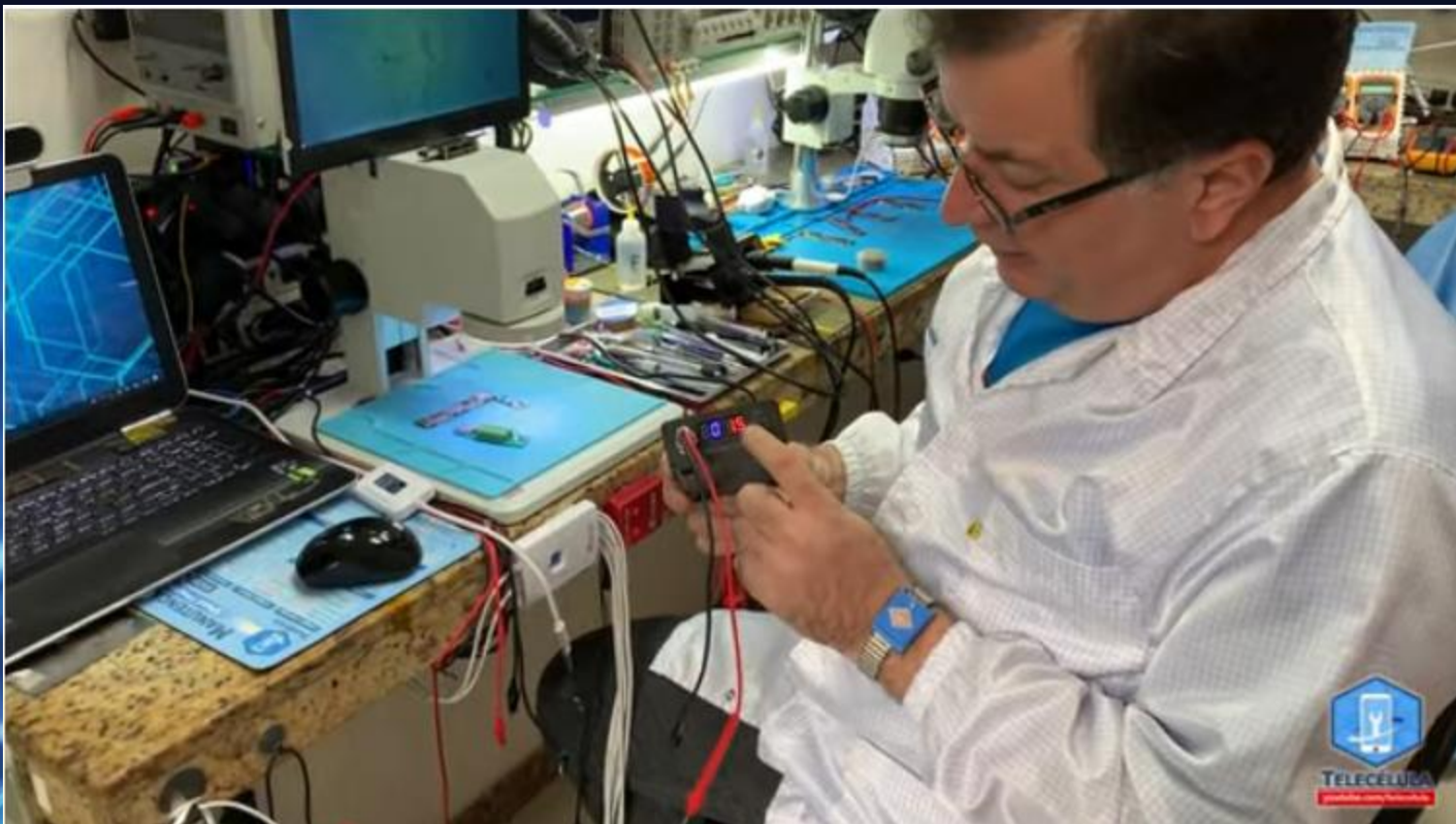
CLY-810LS LASER LCD REPAIR MACHINE TV PANEL





SHORT KILLER

REPAIR DISPLAY PAINEL



SHORT KILLER

REPAIR DISPLAY PAINEL



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