



# 2025 Mid-to-Large OLED Display Annual Report

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# 2. Analysis of OLED Industry Issues

## 2.2 Increase in OLED products for IT

### ■ OLED launch products for tablets and notebooks

- Unlike small OLEDs, which have maintained similar levels of product launches over the past four years, IT OLEDs, especially notebook and tablet launches, surged in 2024.
- In 2024, there are \*\*\* OLED tablet PCs on the market: \*\*\* from \*\*\*, \*\*\* from \*\*\*, \*\*\* from \*\*\*, and \*\*\* from \*\*\*.
- \*\*\*, which saw a \*\*\* in the number of products released from 52 in 2022 to \*\*\* in 2023, nearly \*\*\* to \*\*\* in 2024.

Shipments by Year - Tablet & NB



Number of products released per year - Notebook



# 5. Development Trends of Medium and Large OLED Panels

## 5.5 Inkjet printing OLED technology

- **Comparison of the pros and cons of inkjet printing processes and conventional OLED manufacturing technologies**
  - Mobile OLEDs (over 400ppi) are largely produced using FMM deposition, while white OLED + CF and QD-OLED are used for TVs. High-brightness, long-lasting RGB OLED panels are essential for growth in IT and automotive displays.
  - Inkjet OLED technology allows for the production of \*\*\* independent of \*\*\* and enables panel production without \*\*\*\*, enhancing panel coverage.
  - However, inkjet OLEDs generally exhibit \*\*\* and \*\*\*, which restricts their application range. Advancements in \*\*\* for \*\*\* and \*\*\* in inkjet processes are crucial.

Analyzing the advantages and disadvantages of different OLED manufacturing technologies

Items	Inkjet process	Evaporation		
	RGB OLED	RGB OLED	White OLED	QD-OLED
Method	Inkjet printing / Evaporation	Evaporation	Evaporation	Evaporation
Metal mask	Common and standard form with one mask	Two mask (RGB) / One mask (White)	One mask	One mask
Material usage efficiency	80% or more	20% (RGB) / 30% (White)	80%	80%
Pros	Enables high-resolution manufacturing regardless of substrate size Higher yields due to higher substrate area than FMM	No need for color mask and substrate High brightness over 1000 cd/m <sup>2</sup> by evaporation	Enables production of large high-resolution (8K) panels High brightness over 1000 cd/m <sup>2</sup> by evaporation	High brightness over 1000 cd/m <sup>2</sup> by evaporation
Cons	Low brightness (around 1000 cd/m <sup>2</sup> ) compared to evaporation Resolution: ~100ppi, Low brightness: ~1000 cd/m <sup>2</sup> Difficultly achieving uniform emission	Challenges of producing uniform and large (1000x1000)	Complex structure and optical design with about 20 layers of color filter and more	
Application	Mobile, Notebook	For mobile devices, IT devices, and vehicles	TV, monitor	TV, monitor
Key players	UVC, UVO	UVC, UVO companies except UVC, UVO	UVC, UVO	Samsung Display

Source: UBI Research DB

# 6. Analysis of OLED Panel Development Trends for IT

## 6.3 RGB Tandem OLED

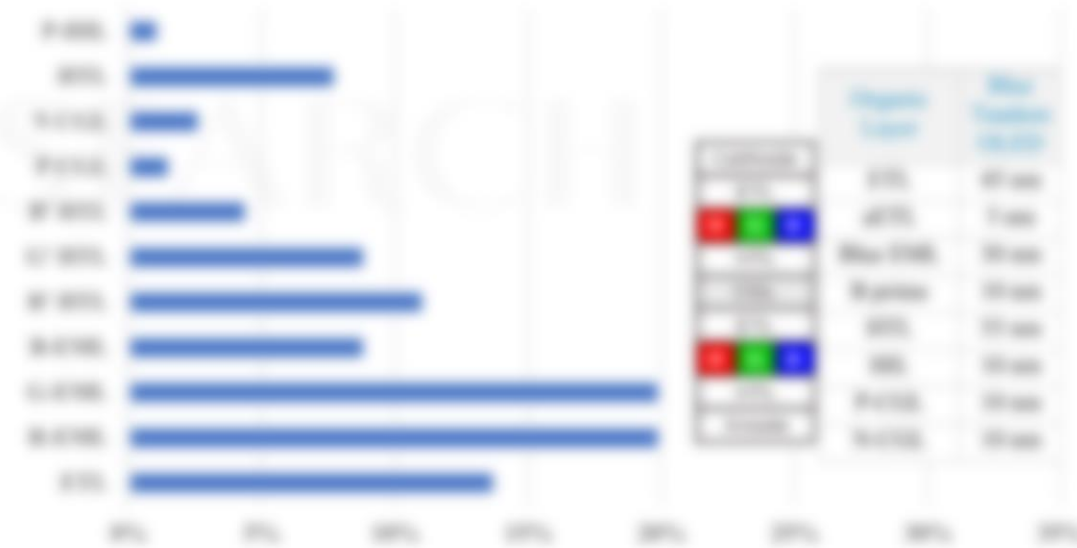
### Single OLED vs. Tandem OLED

- Single OLEDs and tandem OLEDs have similar overall organic thicknesses, with single OLEDs primarily consuming HTL and R' HTL materials.
- Tandem OLEDs increase the consumption of \*\*\*, and \*\*\* materials, while decreasing \*\*\* material consumption and requiring additional \*\*\* material.

Luminous Material Consumption  
(Single Stack OLED)



Luminous Material Consumption  
(Tandem OLED)





# 7. Analysis of OLED development trends for automotive

## 7.2 OLED display development trends for automotive

### ■ Visionox

- Following SID 2024, Visionox also showcased OLEDs for automotive applications at CES 2025, ranging from safe driving to intelligent cockpits.
- The Intelligent Surface Solution can be used in automotive and home interiors that require curved surface adhesion with resolutions up to 4K and precise touchscreens. \*\*\* for automotive \*\*\* is in mass production with a \*\*\*-inch product being used in \*\*\*'s luxury vehicles.

Visionox's Automotive OLED Products at SID 2024 and CES 2025

Model	Automotive Curved Center-Information Solution	Intelligent Surface Solution	Automotive Slidable Center-Information Solution
Resolution	NA	~ 4 K	NA
Feature	High brightness and wide angle viewing with high refresh rate, precise color, low power consumption and slim design, suitable for curved surface adhesion.	High brightness, wide angle viewing, precise color, low power consumption, and slim design, suitable for curved surface adhesion.	High brightness, wide angle viewing, precise color, low power consumption, and slim design, suitable for curved surface adhesion.
Picture			

Source: TCL CSOT, UBI Research DB

# 8. OLED Mass Production Capacitance Analysis and Outlook

## 8.1 OLED line status for IT

### ■ LG Display

- LG Display, like Samsung Display, is developing panels for foldable laptops for Apple.
- The Foldable laptop measures 20.25-inches and becomes 14-inches when folded.
- \*\*\* of curvature is expected to be \*\*\*, \*\*\*, \*\*\*structure is expected to be\*\*\* with \*\*\*. Expected to launch in 2027, but may be delayed.

### ■ LG Display AP3, E5

- AP3 is a 6th-generation OLED line in Kumi that converted an existing LCD production line to OLED. It used to produce LCD panels for Apple's iPhones, but has now shifted to producing \*\*\* displays for \*\*\*, \*\*\*, and \*\*\*. It has \*\*\* production lines and \*\*\* lines for \*\*\* and \*\*\*.
- Capable of producing 15K laptops per month, with deposition and encap processes performed on the E5 line.

### ■ LG Display AP5, E6

- It is a 6G flexible OLED line, and the E6-3 line is the iPhone production line, but RGB 2stack tandem panels can also be mass-produced.
- The E6-4 line is a \*\*\*K/month \*\*\* production line that is producing \*\*\*-inch products for the \*\*\* starting in \*\*\*.
- If iPad Pro sales are low in 2025, it is possible that some tablet PC-facing production will cease and iPhone-facing panels will be produced.
- The AP5 line is the \*\*\* for \*\*\*'s \*\*\*, with the \*\*\* and \*\*\* process performed on the \*\*\* line.



# 9. Annual OLED Market Performance Analysis

## 9.3 Analysis of performance by application

### ■ Analyzing shipments

Shipment by Application



Shipment Ratio by Application



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