

Micro Light Emitting Diode (Led) Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The micro LED market is expected to register a CAGR of 51.1% during the forecast period. The rising growth of consumer technology coupled with an emergency of MEMS technology is further boosting the growth of the market studied.

Key Highlights

In the current market, liquid crystal displays (LCDs) and organic light-emitting diode (OLED) displays are the two dominant flat-panel display technologies. However, micro-LEDs (μLEDs) and inorganic mini-LEDs (mLEDs) have recently emerged by significantly enhancing LCDs' dynamic range or as sunlight-readable emissive displays.

A micro-LED is considerably simpler than an LCD, as they emit light and can be controlled individually. This results in displays that offer significantly better image quality (response time, contrast) and are highly efficient, too, as there are no filters in LCDs.

OLEDs utilize tiny sub-pixels made from organic emissive materials. Micro-LEDs are somewhat similar but with an inorganic LED structure. Compared to OLEDs, micro-LEDs are poised to be much more efficient and brighter, more durable (higher lifetime), and with a higher color gamut.

Mini-LED and micro-LED screens have several advantages over LCD and OLED displays, such as being thinner and more energy-efficient. As a result, several companies are developing new devices that may use the latest technologies. Apple showed significant interest in incorporating micro-LED technology in its iPhone, iPad, and smartwatch display applications.

The requirements of wearable products include small size, lightweight, low power consumption, and environmental resistance.

The progressing micro-LED technologies, thus, become critical for the development of smart wearables. Micro-LED is poised to be the next-generation display for innovative applications for smartwatches and glasses. In December 2020, Konka introduced the first micro-LED Watch, the APHAEA Watch. It uses a 2-inch micro-LED display with a pixel pitch of 0.12 mm, and the micro-LED chips are 30 μm in size.

Further, rapid advances in high-speed communication and miniature mobile computing platforms escalated a strong demand for

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deeper human-digital interactions beyond traditional flat panel displays. AR and VR technologies are driving the growth of next-generation interactive displays with increased applications across various industries. Such trends are expected to boost micro-LED adoption for AR and VR applications.

Micro LED Market Trends

AR/VR to Account for Significant Market Share

Virtual Reality and augmented reality technologies have redefined the way users interact with electronics and gadgets by embracing an immersive experience and promoting interaction between the user and the device. Such trends augment the demand for advanced display technologies, amongst other technologies.

Micro-LED is an advanced display technology that ensures high brightness and contrast while keeping power consumption low. These features are particularly relevant for augmented reality (AR) and virtual reality (VR) applications to deliver the best visual experience. The increased number of applications stimulates several companies to collaborate to develop and integrate advanced technologies in their devices and enhance the user's experience.

In October 2021, Chinese electronics company TCL unveiled its brand-new Thunderbird Smart Glasses Pioneer Edition, equipped with a full-color transparent micro-LED display. The glasses also have an inbuilt camera allowing users to take pictures with a click on the side of the frame. The glasses look like regular specs due to their transparent displays and the waveguide technology that TCL has been using for three years. The glasses may also have augmented reality support, which means they can add layers of digital information to the user's vision through the glasses.

Further, in December 2021, MICLEDI Microdisplays, a technology company in micro-LED displays for high-end augmented reality (AR) glasses, demonstrated the industry's first micro-LED arrays-for-AR built on a 300mm CMOS manufacturing platform. The advanced manufacturing precision, performance, and cost-efficiency offered by the 300mm product strategy distinguish MICLEDI as a display partner of choice for AR glasses manufacturers.

Also, in September 2021, Xiaomi introduced a pair of smart glasses called Xiaomi Smart Glasses, equipped with a monochrome micro-LED system that provides higher pixel density and a longer lifespan while having a simpler structure compared to OLED. According to Xiaomi, micro-LED allows for a more compact display and easier screen integration.

North America to Account for Largest Share

The increasing penetration of smartphones is considered one of the biggest contributors toward adopting micro LED in the region. In recent years, the United States witnessed consistent growth in smartphone sales. According to Zippia, around 294.15 million people in the United States own a smartphone, which is about 89% of the country's total population.

The increasing penetration of smartwatches in the region is also expected to augment the adoption of the micro LED market. Companies, such as Google and Apple are planning to launch a new smartwatch in the United States to leverage the growing opportunities of these devices in the region. For instance, in October 2022, Google launched its first smartwatch, which will be available online and in its physical store in New York City.

The United States Patent and Trademark Office has granted a patent for Apple Inc. for a flexible and rolling display. The company is now looking at developing a device featuring two separate housings which roll out to reveal a flat display in the center. The patent also indicates that the devices could feature both a rigid display and a rollable screen.

Further, in May 2022, Vuzik, a United States-based manufacturer of AR smart glasses, announced an agreement with Atomistic SAS. The strategic agreement provides Vuzix with an exclusive license to use microLED lenses for its smart glasses, and Atomistic SAS will assist Vuzix in designing custom backplates for its AR products. Such developments fuel the studied market's growth over

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the forecast period.

Micro LED Market Competitor Analysis

The Micro Light Emitting Diode (LED) Market is highly competitive. With increased innovations and sustainable products, many companies are increasing their market presence by securing new contracts and tapping new markets to maintain their position in the global market. Some of the key developments are:

In October 2022, Avicena announced the acquisition of a microLED fabrication facility and associated engineering team from Nanosys. The transaction will significantly enhance Avicena's capabilities in developing and manufacturing high-speed GaN microLEDs optimized for parallel multi-Tbps interconnects.

In March 2022, Google announced the acquisition of Raxium, a MicroLED-based start-up that develops tiny light-emitting diodes for displays used in augmented and mixed-reality devices. The acquisition will help Google make AR displays.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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