

The Global Market for MicroLED Displays 2021

<https://marketpublishers.com/r/G36A1B7D6955EN.html>

Date: May 2021

Pages: 152

Price: US\$ 1,130.00 (Single User License)

ID: G36A1B7D6955EN

Abstracts

The Global Market for MicroLED Displays 2021 analyses and forecasts the commercial potential of the MicroLED market. In this report, we also provide strategic analysis of the key players in the microLED industry which include large global consumer electronics producers, major equipment and materials suppliers, national laboratories and universities and small start-ups.

Since 2020 the development of microLED has been accelerating, with new chips, packaging, and downstream display applications emerging one after another, and market acceptance is also increasing. Several electronics manufacturers including Samsung and LG are bringing new microLED TV products to the market in 2021.

Micro-LED display technology offers a huge improvement on standard display panels due to its optimum brightness, efficiency and image definition, as well as improved lifetime. These benefits are crucial for near-to-eye applications such as augmented reality (AR) and head-mounted displays. They are also game changing technologies for a range of other applications – from large area displays and TVs to mobile phones and wearable devices such as smartwatches.

Applications include:

Displays

Head mounted displays (HMDs)

Large flat panel displays for TVs and monitors.

Large sized MicroLED RGB displays for outdoor signage

Smartphones

Smartwatches

Flexible displays.

Automotive

Head-up displays (HUD).

Automotive panels.

Augmented reality/virtual reality (AR/VR)

Three-dimensional/augmented reality/virtual reality (3D/AR/VR) displays

Pico-projectors

Smart glasses.

Biotechnology & medicine

Wearable biomedical devices.

Light sources for the neural interface and optogenetics.

Bioimaging.

Cochlear implants.

Visible light communication (Li-Fi)

Flexible lighting.

Report contents include:

Latest technology and supply chain information.

Industry trends and growth drivers.

Assessment of technology challenges.

Current and planned microLED products.

Analysis of markets and applications for microLEDs. Markets covered include TVs, AR and VR, smartphones, automotive, wearables and smartwatches, medical displays, flexible and foldable displays and transparent displays.

Assessment of competitive landscape.

MicroLED technology and market challenges.

Units shipments for microLEDs, by market, 2020-2026.

MicroLED industry developments 2020-2021.

Profiles of 63 companies. Companies profiled include Aledia, AU Optronics Corporation, China Star Optoelectronics Technology (CSOT), Ennostar, Inc., GI?, Jade Bird Display, Japan Display Inc. (JDI), Konka Group, LedMan Optoelectronics Co., Ltd., Leyard OptoElectronics, LG Display Co., Ltd., MICLEDI Microdisplays, Micro Nitride Co., Ltd., Mikro Mesa Technology Co., Ltd., PlayNitride, Inc., Rohinni LLC, Samsung, Seoul Semiconductor/Seoul Viosys Co., Ltd., Sony, Vuzix Corporation, TCL Electronics, Tianma Microelectronics Co., Ltd. and VueReal.

Contents

1 REPORT AIMS AND OBJECTIVES

2 EXECUTIVE SUMMARY

- 2.1 The MiniLED market
- 2.2 The MicroLED market
- 2.3 The Global display market
 - 2.3.1 Display technologies assessment
- 2.4 Motivation for use of MicroLEDs
- 2.5 MicroLEDs applications
- 2.6 Market and technology challenges
- 2.7 Industry developments 2020-2021
- 2.8 CES 2021
- 2.9 Market activity in China
- 2.10 Global shipment forecasts for MicroLEDs to 2027
 - 2.10.1 Units

3 TECHNOLOGY AND MANUFACTURING ANALYSIS

- 3.1 MiniLED (mLED) vs MicroLED (μ LED)
- 3.2 Development
 - 3.2.1 Sony
- 3.3 Types
- 3.4 Comparison to LCD and OLED
- 3.5 MicroLED displays
- 3.6 Advantages
 - 3.6.1 Transparency
 - 3.6.2 Borderless
 - 3.6.3 Flexibility
- 3.7 Costs
- 3.8 Manufacturing
 - 3.8.1 Epitaxy and Chip Processing
 - 3.8.1.1 Uniformity
 - 3.8.2 Assembly Technologies
 - 3.8.2.1 Monolithic fabrication of microdisplays
 - 3.8.2.2 Mass transfer
 - 3.8.2.3 Mass Transfer Processes

- 3.8.2.3.1 Elastomer Stamp Transfer
- 3.8.2.3.2 Roll-to-Roll or Roll-to-Panel Imprinting
- 3.8.2.3.3 Laser-induced forward transfer (LIFT)
- 3.8.2.3.4 Electrostatic Transfer
- 3.8.2.3.5 Micro vacuum-based transfer
- 3.8.2.3.6 Adhesive Stamp
- 3.8.2.3.7 Fluidically Self-Assembled Transfer
- 3.8.3 Full colour conversion
 - 3.8.3.1 Phosphor Colour Conversion LEDs
 - 3.8.3.2 Quantum dots colour conversion

4 MICROLED TVS

- 4.1 The market in 2021
 - 4.1.1 Comparison of microLED to other LED TV technologies
 - 4.1.2 Samsung
 - 4.1.2.1 Wall display and microLED TV
 - 4.1.3 LG
 - 4.1.3.1 MAGNIT MicroLED TV
- 4.2 Unit shipments 2020-2027

5 SMARTWATCHES AND WEARABLES

- 5.1 Products and prototypes
- 5.2 Unit shipments 2020-2027

6 SMARTPHONES

7 FLEXIBLE AND FOLDABLE MICROLED DISPLAYS

- 7.1 Foldable microLED displays
- 7.2 Product developers

8 BIOTECHNOLOGY AND MEDICAL DISPLAYS

- 8.1 Applications
- 8.2 Product developers

9 AUTOMOTIVE

9.1 Applications

9.1.1 Head-up display (HUD)

9.1.2 Headlamps

9.2 Product developers

10 VIRTUAL (VR) AND AUGMENTED REALITY (AR)

10.1 Smart glasses and head-mounted displays (HMDs)

10.2 Product developers

11 TRANSPARENT DISPLAYS

11.1 Applications

11.2 Product developers

12 SUPPLY CHAIN

13 COMPANY PROFILES 78 (63 COMPANY PROFILES)

14 REFERENCES

Tables

TABLES

- Table 1. Summary of display technologies.
- Table 2. MicroLED applications.
- Table 3. Market and technology challenges for microLED.
- Table 4. Micro and MicroLED industry developments 2020-2021.
- Table 5. MiniLED and microLED product announcements at CES 2021.
- Table 6. MicroLED activity in China.
- Table 7. MicroLED display forecast (thousands of units) to 2027.
- Table 8. Comparison between miniLED and microLED.
- Table 9. Comparison of MicroLEDs to conventional LEDs.
- Table 10. Types of microLED.
- Table 11. Comparison to LCD and OLED.
- Table 12. Schematic comparison to LCD and OLED.
- Table 13. Commercially available microLED products and specifications.
- Table 14. microLED-based display advantages and disadvantages.
- Table 15. Mass transfer methods, by company.
- Table 16. Comparison of various mass transfer technologies.
- Table 17. Comparison of LED TV technologies.
- Table 18. Flexible miniLED and MicroLED products.
- Table 19. Medical display MicroLED products.
- Table 20. Automotive display & backlight architectures
- Table 21. Applications of microLED in automotive.
- Table 22. Automotive display MicroLED products and prototypes.
- Table 23. Comparison of AR Display Light Engines.
- Table 24. VR and AR MicroLED products.
- Table 25. Applications of miniLED and microLED transparent displays.
- Table 26. Companies developing MicroLED transparent displays.
- Table 27. microLED supply chain.
- Table 28. LG mini QNED range
- Table 29. Samsung Neo QLED TV range.
- Table 30. San'an Mini and Micro LED Production annual target.
- Table 31. NPQDTM vs Traditional QD based Micro-LEDs.

Figures

FIGURES

- Figure 1. The progress of display technology-LCD to MicroLED.
- Figure 2. MicroLED display forecast (thousands of units) to 2027.
- Figure 3. Display system configurations.
- Figure 4. MicroLED schematic.
- Figure 5. Pixels per inch roadmap of μ -LED displays from 2007 to 2019.
- Figure 6. Comparison of microLED with other display technologies.
- Figure 7. Lextar 10.6 inch transparent microLED display.
- Figure 8. Transition to borderless design.
- Figure 9. Schematics of a elastomer stamping, b electrostatic/electromagnetic transfer, c laser-assisted transfer and d fluid self-assembly.
- Figure 10. Schematics of Roll-based mass transfer.
- Figure 11. Schematic of laser-induced forward transfer technology.
- Figure 12. Schematic of fluid self-assembly technology.
- Figure 13. Schematic of colour conversion technology.
- Figure 14. Process flow of a full-colour microdisplay.
- Figure 15. Samsung Wall display system.
- Figure 16. LG MAGNIT MicroLED TV.
- Figure 2. MicroLED display forecast for TVs (thousands of units) to 2027.
- Figure 17. microLED wearable display prototype.
- Figure 18. APHAEA Watch.
- Figure 2. MicroLED display forecast for smart watches (thousands of units) to 2027.
- Figure 19. AU Optonics Flexible MicroLED Display.
- Figure 20. Schematic of the TALT technique for wafer-level microLED transferring.
- Figure 21. Foldable 4K C SEED M1.
- Figure 22. MicroLEDs for medical applications
- Figure 23. MicroLED automotive display.
- Figure 24. Issues in current commercial automotive HUD.
- Figure 25. Rear lamp utilizing flexible MicroLEDs.
- Figure 26. Vuzix microLED microdisplay Smart Glasses.
- Figure 27. Different transparent displays and transmittance limitations.
- Figure 28. 7.56' high transparency & frameless MicroLED display.
- Figure 29. WireLED in 12" Silicon Wafer.
- Figure 30. Typical GaN-on-Si LED structure.
- Figure 31. 300 mm GaN-on-silicon epiwafer.
- Figure 32. MicroLED chiplet architecture.

Figure 33. 1.39-inch full-circle microLED display

Figure 34. 9.4' flexible MicroLED display.

Figure 35. BOE MiniLED display TV.

Figure 36. BOE miniLED automotive display.

Figure 37. Image obtained on a blue active-matrix WVGA (wide video graphics array) microdisplay.

Figure 38. Fabrication of the 10- μ m pixel pitch LED array on sapphire.

Figure 39. A 200-mm wafer with CMOS active matrices for GaN 873 ? 500-pixel microdisplay at 10- μ m pitch.

Figure 40. IntelliPix™ design for 0.26? 1080p microLED display.

Figure 41. C Seed 165-inch M1 microLED TV.

Figure 42. Flexible microLED.

Figure 43. Jade Bird Display microdisplays.

Figure 44. JBD's 0.13-inch panel.

Figure 45. Prototype microLED display.

Figure 46. APHAEA MicroLED watch.

Figure 47. Lextar 2021 micro LED and mini LED products.

Figure 48. LSAB009 microLED display.

Figure 49. Schematic of Micro Nitride chip architecture.

Figure 50. 9.4' flexible MicroLED display.

Figure 51. 7.56-inch transparent Micro LED display.

Figure 52. 48 x 36 Passive Matrix microLED display.

Figure 53. The Wall.

Figure 54. Samsung Neo QLED 8K.

Figure 55. NPQD™ Technology for MicroLEDs.

Figure 56. Wicop technology.

Figure 57. B-Series and C-Series displays.

Figure 58. Photo-polymer mass transfer process.

Figure 59. Vuzix uLED display engine.

Figure 60. The Cinema Wall MicroLED display.

Figure 61. 7.56" Transparent Display.

Figure 62. VueReal Flipchip microLED (30x15 μ m²).

I would like to order

Product name: The Global Market for MicroLED Displays 2021

Product link: <https://marketpublishers.com/r/G36A1B7D6955EN.html>

Price: US\$ 1,130.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G36A1B7D6955EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970