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Quantum Dot Display Market Research Report- Global Forecast 2032

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Description:

Global Quantum Dot Display Market Overview:

Quantum Dot Display Market Size was valued at USD 45 Billion in 2022. The Quantum Dot Display market industry is projected to grow from USD 56.25 Billion in 2023 to USD 335.27 Billion by 2032, exhibiting a compound annual growth rate (CAGR) of 25.00% during the forecast period (2023 - 2032). Increased awareness about the low energy consumption benefits and rising demand for quantum dot display in computer monitors are the key market drivers enhancing the market growth.

Global Quantum Dot Display Market Overview

Source: Secondary Research, Primary Research, MRFR Database, and Analyst Review

Quantum Dot Display Market Trends

- **Growing demand for quantum dot displays in automotive applications drives market growth.**

The market CAGR for quantum dot displays is driven by the rising demand for quantum dot displays in automotive applications. As automotive manufacturers focus on enhancing the in-car infotainment systems and instrument clusters, quantum dot displays have gained traction due to their ability to deliver vivid colors and high contrast ratios, even in bright sunlight. Quantum dot displays provide improved visibility and legibility, enabling drivers to access critical information easily and safely. The automotive industry is witnessing a transition towards electric vehicles (EVs) and autonomous driving, which further drives the demand for advanced display technologies. With their high color accuracy, Quantum dot displays can be used to create seamless and immersive displays in EVs, offering an enhanced user experience. Additionally, the durability and longevity of quantum dot materials make them suitable for automotive applications, as they can face harsh environmental conditions and maintain their performance over an extended period.

Technological advancements play a different role in the development and growth of the quantum dot display market. The ongoing research and development activities in quantum dot materials, manufacturing processes, and display architectures lead to improved performance and cost-effectiveness. Manufacturers are continuously striving to develop quantum dot displays with higher efficiency, wider color gamuts, and better stability. Moreover, key players and venture capitalists increased investments in quantum dot display technologies to drive market growth. These investments are primarily aimed at scaling up production capabilities, optimizing manufacturing processes, and expanding the application areas of quantum dot displays. As a result, the market is witnessing collaborations and partnerships between display manufacturers, material suppliers, and technology developers to accelerate the commercialization of quantum dot displays.

The consumer electronics segment is one of the major drivers of the quantum dot display market. The demand for high-resolution displays with vibrant colors and superior picture quality has been growing rapidly, particularly in televisions and smartphones. Quantum dot displays offer a wide color gamut, allowing for more accurate and lifelike color reproduction, enhancing consumers' overall viewing experience. Additionally, quantum dot technology improves energy efficiency, enabling manufacturers to develop thinner, lighter devices with longer battery life. The rising popularity of 4K and 8K televisions has been a significant growth factor for quantum dot displays. The ability of quantum dots to emit pure colors and deliver high peak brightness has made them an ideal choice for premium TV models. As a result, major television manufacturers have incorporated quantum dot technology into their flagship products. Furthermore, the increasing affordability of quantum dot displays and advancements in the manufacturing process is expected to drive their adoption in mid-range and entry-level televisions and smartphones, further expanding the market.

The quantum dot display market is experiencing significant growth, driven by increasing adoption in consumer electronics, automotive applications, and technological advancements. Quantum dot displays offer superior color reproduction, improved energy efficiency, and enhanced durability, making them attractive for various display applications. As consumer demand for high-quality displays continues to rise,

the quantum dot display market is expected to witness further advancements and innovations, leading to a brighter and more vibrant visual experience across various devices and industries, driving the Quantum Dot Display market revenue.

Quantum Dot Display Market Segment Insights:

Quantum Dot Display Material Insights

The Quantum Dot Display market segmentation, based on material, includes cadmium-based and cadmium free. The cadmium-based segment dominated the market. These quantum dots are composed of cadmium and are known for their best color reproduction and high efficiency. They offer a wide color gamut, allowing for vibrant and accurate colors. However, using cadmium raises concerns about its environmental impact and potential toxicity.

Quantum Dot Display Product Insights

The Quantum Dot Display market segmentation, based on product, includes smartphones, PC monitors, tablet PC, and TV. The smartphone category generated the most income. Quantum dot technology enables smartphones to deliver vibrant colors, high resolution, and improved energy efficiency. With consumers increasingly demanding immersive visual experiences, smartphone manufacturers are integrating quantum dot displays to enhance their products' visual appeal. The growing popularity of mobile gaming and multimedia consumption further fuels the demand for quantum dot displays in smartphones.

Quantum Dot Display Application Insights

The Quantum Dot Display market segmentation, based on application, includes consumer electronics, healthcare, automotive, and IT & telecommunication. The consumer electronics category generated the most income. These displays are widely used in TVs, smartphones, tablets, laptops, and gaming monitors to enhance color performance and visual experience.

Figure 1: Quantum Dot Display Market, by Vertical, 2022 & 2032 (USD Billion)

Source: Secondary Research, Primary Research, MRFR Database, and Analyst Review

Quantum Dot Display Regional Insights

By region, the study provides market insights into North America, Europe, Asia-Pacific, and the Rest of the World. The North American Quantum Dot Display market area will dominate this market due to the presence of major technology companies and a strong focus on research and development activities contributing to the market's growth in this region. The increasing adoption of quantum dot displays in televisions, monitors, and smartphones is driving market growth in this region.

Further, the major countries studied in the market report are The US, Canada, German, France, the UK, Italy, Spain, China, Japan, India, Australia, South Korea, and Brazil.

Figure 2: QUANTUM DOT DISPLAY MARKET SHARE BY REGION 2022 (USD Billion)

Source: Secondary Research, Primary Research, MRFR Database, and Analyst Review

Europe's Quantum Dot Display market accounts for the second-largest market share due to the region's strong automotive industry, along with the presence of prominent display manufacturers, which fosters market growth. Quantum dot displays are increasingly integrated into automotive infotainment systems, providing superior image quality and visual experiences. Furthermore, the rising demand for energy-efficient displays and the growing trend of smart homes contribute to Europe's expansion. Further, the German Quantum Dot Display market held the largest market share, and the UK Quantum Dot Display market was the fastest-growing market in the European region.

The Asia-Pacific Quantum Dot Display Market is expected to grow significantly from 2023 to 2032. The region is witnessing rapid economic growth, rising disposable incomes, and a growing consumer electronics industry. The countries have a large manufacturing base and are major producers of consumer electronics, which drives the demand for quantum dot displays. Additionally, the increasing popularity of high-resolution displays, such as 4K and 8K, further fuels the market growth in Asia Pacific. Moreover, China’s Quantum Dot Display market held the largest market share, and the Indian Quantum Dot Display market was the fastest-growing market in the Asia-Pacific region.

Quantum Dot Display Key Market Players & Competitive Insights

Leading market players are investing heavily in research and development to expand their product lines, which will help the Quantum Dot Display market grow even more. Market participants are also undertaking a variety of strategic activities to expand their footprint, with important market developments including new product launches, contractual agreements, mergers and acquisitions, higher investments, and collaboration with other organizations. To expand and survive in a more competitive and rising market climate, the Quantum Dot Display industry must offer cost-effective items.

Manufacturing locally to minimize operational costs is one of the key business tactics used by manufacturers in the Quantum Dot Display industry to benefit clients and increase the market sector. The Quantum Dot Display industry has offered some of the most significant medical advantages in recent years. Major players

in the Quantum Dot Display market, including LG Display Co. Ltd. (South Korea), Samsung Electronics Co. Ltd. (South Korea), Sony Corporation (Japan), Sharp Corporation (Japan), 3M Company (US), Microvision Inc. (US), Evident Technologies Inc. (US), Altair Nanotechnologies Inc. (US), Quantum Materials Corporation (US), Nanosys Inc. (US), QD Vision Inc. (US), and others, are attempting to increase market demand by investing in research and development operations.

Nanosys Incorporation, founded in 2001, located in Milpitas, California, United States, is a nanotechnology company that develops and manufactures quantum dot materials for displaying products. Its products include quantum dot enhancement film and quantum rail. In February 2022, Nanosys partnered with Smartkem to join each other on a new generation of low-cost solution printed microLED and quantum dot materials for advanced displays. Both companies believe combining solution printed displays using SmartKem's high-performance organic semiconductor formulations with TFT interlayer materials using Nanosys's microLED and quantum dot nano-led technologies should create a new low-power class of robust, flexible, lightweight displays. Initial validation work on the equipment, processes, and materials readiness has already occurred.

Samsung Group, also known as Samsung, was founded in 1938 and is located in Seocho District, Seoul, South Korea. It is a South Korean international manufacturing company that comprises numerous affiliated businesses. Its products include automotive, clothing, chemicals, consumers, telecommunications, etc. In June 2020, Samsung Electronics launched the world's first curved gaming monitor, Odyssey G9, which supports HDR 10+ adaptive technology. It has a QLED display with quantum dots that offer a 1ms response time and a 240Hz refresh rate.

Key Companies in the Quantum Dot Display market include

- LG Display Co. Ltd. (South Korea)
- Samsung Electronics Co. Ltd. (South Korea)
- Sony Corporation (Japan)
- Sharp Corporation (Japan)
- 3M Company (US)
- Microvision Inc. (US)
- Evident Technologies Inc. (US)
- Altair Nanotechnologies Inc. (US)
- Quantum Materials Corporation (US)
- Nanosys Inc. (US)
- QD Vision Inc. (US)

Quantum Dot Display Industry Developments

February 2022: UbiQD, Inc., a New Mexico-based deep tech company specializing in nanomaterials innovation, announced that the company had released new plant trial data and launched a new website for a greenhouse industry-focused brand. UbiGro incorporates UbiQD's quantum dot technology to create a unique and unique layer of light in a greenhouse industry that enables growers to create a more optimal light spectrum. UbiGro is disruptive for energy-intensive horticultural lighting and presents a revolution in the controlled environment agriculture industry. UbiGro has been retrofitted into more than 30 unique greenhouse sites in seven U.S. states and seven foreign countries.

July 2019: Nanoco Group developed a procedure for making quantum dots from non-toxic materials for applications such as biomarkers to target tissue for real-time imaging. The company aims to link these quantum dots with antibodies and inject them into patients to identify cancerous cells during endoscopies for image-guided surgery and kill the remaining cells after surgery.

Quantum Dot Display Market Segmentation:

Quantum Dot Display Material Outlook

- Cadmium Based
- Cadmium Free

Quantum Dot Display Product Outlook

- Smartphone
- PC Monitor
- Tablet PC
- TV

Quantum Dot Display Application Outlook

- Consumer Electronics
- Healthcare
- Automotive
- IT & Telecommunication

Quantum Dot Display Regional Outlook

- North America
  - US
  - Canada
- Europe
  - Germany
  -

France

- UK
- Italy
- Spain
- Rest of Europe

- Asia-Pacific

- China
- Japan
- India
- Australia
- South Korea
- Australia
- Rest of Asia-Pacific

- Rest of the World

- Middle East
- Africa
- Latin America

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