+357 96 030922
info@marketpublishers.com

Electroretinogram Global Market Insights 2026, Analysis and Forecast to 2031

https://marketpublishers.com/r/E2AEC393E948EN.html
Date: April 2026
Pages: 112
Price: US$ 3,200.00 (Single User License)
ID: E2AEC393E948EN

Abstracts

The field of ophthalmic diagnostics is advancing beyond purely structural imaging to embrace objective, functional assessment of the visual pathway. Central to this paradigm is the Electroretinogram (ERG). An Electroretinogram is a highly specialized, non-invasive diagnostic device that measures the electrical responses of the various cell layers within the retina when stimulated by light. It provides a direct, objective assessment of retinal health and function by recording the activity of photoreceptor cells (rods and cones), as well as inner retinal cells like bipolar and ganglion cells. This capability makes ERG an indispensable tool for the diagnosis, monitoring, and management of a wide range of retinal disorders that may not be apparent through structural examination alone.

The clinical need for such functional assessment is substantial. The World Health Organization (WHO) estimates that approximately 253 million people globally live with vision impairment, with a significant and growing portion attributable to diseases affecting the retina. As the population ages and the prevalence of conditions like diabetic retinopathy and inherited retinal diseases (IRDs) increases, the demand for precise diagnostic tools is escalating. This clinical imperative is propelling the Electroretinogram market into a phase of significant growth. The global market size is estimated to reach a valuation between 380 million USD and 640 million USD by the year 2026. Furthermore, the market is forecast to expand at a robust Compound Annual Growth Rate (CAGR) of 7.3% to 10.2% through the forecast period ending in 2031. This growth is driven by the burgeoning field of gene therapy for IRDs, an expanding base of clinical applications, and continuous technological innovations aimed at improving diagnostic accuracy, patient comfort, and clinical workflow.

Regional Market Analysis

+357 96 030922
info@marketpublishers.com

The global ERG market is characterized by strong adoption in developed nations with advanced healthcare systems and a burgeoning research sector, with significant growth potential in emerging markets.

North America

North America, led by the United States, is the largest and most mature market for ERG systems, commanding an estimated global share of 40% to 50%. This dominance is supported by high healthcare expenditure, the presence of world-leading ophthalmic research institutions, and a well-established reimbursement framework for diagnostic electrophysiology. The region is home to several key market players, including LKC Technologies and Diopsys, which actively drive innovation and market penetration. Furthermore, the high volume of clinical trials for novel retinal therapies, particularly gene therapies, conducted in the U.S. mandates the use of standardized ERG as a primary functional endpoint, sustaining strong demand from both academic medical centers and contract research organizations (CROs).

Europe

Europe stands as the second-largest market, with a global share estimated between 25% and 35%. Germany, the UK, and France are key contributors, benefiting from strong public health systems and a deep-rooted tradition of ophthalmic research. European companies like Roland-consult have a strong reputation for producing high-quality, research-grade systems. The region's regulatory environment, governed by the EU Medical Device Regulation (MDR), sets a high bar for device quality and clinical evidence, favoring established manufacturers. There is a strong emphasis on adhering to the standards set by the International Society for Clinical Electrophysiology of Vision (ISCEV), which ensures high-quality, comparable data across clinical centers.

Asia-Pacific

The Asia-Pacific region is the fastest-growing market for ERG devices, currently holding an estimated 20% to 30% share but poised for the highest CAGR. This rapid growth is fueled by increasing investment in healthcare infrastructure, a rising prevalence of diabetes and myopia-related retinal pathologies, and growing patient and physician awareness in countries like China, Japan, and India. The region is also becoming a hub for technological innovation. The unveiling of a soft, multi-electrode ERG system built on a contact lens by Japanese researchers in May 2024 exemplifies this trend, showcasing

+357 96 030922
info@marketpublishers.com

a drive to create more patient-friendly devices with enhanced diagnostic capabilities.

South America & MEA

These regions constitute emerging markets with a combined global share of 5% to 10%. Adoption is primarily concentrated in specialized, private eye hospitals and academic centers in major metropolitan areas like S?o Paulo, Mexico City, and Dubai. The high capital cost of ERG equipment and the need for specialized training are the primary barriers to widespread adoption. However, the development of more compact, user-friendly, and cost-effective systems is expected to gradually increase penetration in these price-sensitive markets.

Market Segmentation

The ERG market is segmented by the specific type of test performed, which dictates the clinical question being answered, and by the end-use application.

By Type

Full-field flash ERG (ffERG): This is the foundational ERG test, assessing the global, massed electrical response of the entire retina to a brief flash of light delivered in a Ganzfeld dome. It is the gold standard for diagnosing and monitoring diffuse or widespread retinal diseases, particularly inherited photoreceptor degenerations like retinitis pigmentosa and cone-rod dystrophies. It allows for the separation of rod and cone system responses.

Pattern ERG (PERG): In contrast to the flash stimulus of ffERG, PERG uses a reversing checkerboard or grating pattern to elicit a response. This stimulus primarily assesses the function of the innermost retinal layer—the retinal ganglion cells—and macular function. PERG is therefore a critical tool in the early detection and management of glaucoma, where ganglion cell death is the primary pathology, and in other optic neuropathies.

Multifocal ERG (mfERG): This advanced technique allows for the topographical mapping of retinal function. It uses a complex stimulus to simultaneously record hundreds of localized ERG responses from different areas of the posterior pole. The result is a 3D map of retinal activity, making mfERG invaluable for identifying and monitoring localized retinal defects, such as those found in age-related macular degeneration (AMD), macular dystrophies, and for assessing

+357 96 030922
info@marketpublishers.com

retinal toxicity from certain systemic drugs (e.g., Plaquenil).

By Application

Clinical Diagnostic: This is the largest and primary application segment, driving the majority of market revenue. ERG systems are used in ophthalmology departments within hospitals and specialized retinal clinics for the definitive diagnosis of a wide range of conditions that are difficult to assess with other methods. This includes diagnosing IRDs, distinguishing between different types of retinal dystrophy, monitoring diabetic retinopathy progression, evaluating unexplained vision loss, and assessing for drug toxicity.

Research: The research segment is a critical driver of market innovation and long-term growth. ERG systems are indispensable in academic and research institutions for studying retinal physiology and disease mechanisms. In the pharmaceutical and biotechnology sectors, ERG is a mandatory tool in both preclinical animal studies and human clinical trials for new ophthalmic drugs, cell therapies, and gene therapies. It provides the objective, quantitative biomarker of retinal function needed to prove therapeutic efficacy and safety. The July 2024 proposal of a new ERG kinetics model by Christopher Tyler at SKERI to improve diagnostics underscores the ongoing research effort to extract more meaningful biomarkers from ERG signals.

Value Chain / Supply Chain Analysis

The ERG market value chain is built on a foundation of sophisticated electronics, signal processing software, and deep clinical expertise.

Research & Development (R&D): Value is created through innovation in hardware and software. R&D focuses on improving electrode design for better signal-to-noise ratio and patient comfort (e.g., corneal electrodes vs. skin electrodes vs. DTL fibers), designing light stimulus sources (Ganzfeld domes) that meet precise ISCEV standards, and developing advanced signal amplification and filtering technologies. The most significant R&D, however, lies in the proprietary software algorithms that acquire, process, and analyze the microvolt-level electrical signals to produce clinically interpretable waveforms.

+357 96 030922
info@marketpublishers.com

Specialized Component Sourcing: The supply chain relies on vendors for high-precision components, including medical-grade bio-amplifiers, analog-to-digital converters, light-emitting diodes (LEDs) with specific wavelengths and calibrated luminance, and materials for various electrode types.

System Assembly and Calibration: Manufacturers assemble these components into an integrated system. This stage involves rigorous testing and calibration of the photic stimulator and amplifier to ensure that the device performs according to the strict, internationally recognized ISCEV standards, which is a critical quality benchmark.

Regulatory Clearance: As diagnostic medical devices, ERG systems must obtain regulatory clearance, such as 510(k) from the FDA in the US and a CE Mark under the MDR in Europe. This requires comprehensive documentation of device safety, performance, and adherence to standards.

Commercialization and Distribution: The go-to-market strategy typically involves a direct sales force or a network of specialized ophthalmic device distributors. The sales process is consultative, requiring a deep understanding of electrophysiology and the clinical needs of retinal specialists.

Clinical Training and Support: This is a crucial final link in the value chain. Due to the complexity of the test procedure and waveform interpretation, manufacturers provide extensive training and ongoing clinical support to ophthalmic technicians and physicians. This ensures proper use of the device and accurate interpretation of results, which is essential for patient care and customer retention.

Company Profiles

The ERG market is a specialized niche dominated by a group of highly focused, technology-driven companies.

LKC Technologies: A leading US-based company and a major player in the global ERG market. Its UTAS system is widely recognized and used in clinical and research settings, known for its adherence to ISCEV standards and its comprehensive testing capabilities.

+357 96 030922
info@marketpublishers.com

Diagnosys LLC: A key competitor with a strong global presence. The Diagnosys Espion system is a powerful and versatile electrophysiology platform used extensively in top eye centers and for clinical trials.

Diopsys, Inc.: Diopsys has carved out a significant niche by focusing on making visual electrophysiology, including ERG and VEP, more accessible for office-based practices. Its NOVA platform is designed for ease of use, aiming to broaden the adoption of these tests beyond large institutions.

Roland-consult: A prominent German manufacturer with a strong reputation for producing high-quality, customizable, and research-grade electrophysiology systems. It has a significant footprint in the European research market.

Electro-Diagnostic Imaging, Inc. (EDI): A specialized US-based company offering a range of vision testing systems, including ERG and VEP products, catering to both clinical and research needs.

Metrovision: A French company with deep expertise in functional vision exploration. Metrovision offers a comprehensive diagnostic platform that includes various types of ERG testing alongside other psychophysical tests.

CSO Italia: An Italian company with a broad portfolio of ophthalmic diagnostic instruments, including ERG systems, leveraging its extensive distribution network.

Neurosoft: A company with a diverse portfolio of neurophysiological diagnostic equipment. It offers ERG modules that can be integrated with its broader neurodiagnostic platforms.

Opportunities & Challenges

Opportunities

The ERG market is poised for significant growth, driven by the revolution in retinal therapeutics. The emergence of gene therapies and other novel treatments for previously untreatable inherited retinal diseases has created an unprecedented demand for ERG. It is the primary tool used to objectively measure whether a treatment is restoring or preserving retinal function, making

+357 96 030922
info@marketpublishers.com

it indispensable for clinical trials and post-market monitoring.

The increasing global prevalence of diabetes is another major driver, as ERG can detect functional abnormalities from diabetic retinopathy before structural changes are visible. Furthermore, technological advancements are making ERG systems more compact, user-friendly, and integrated. The development of innovative electrode systems, like the contact lens-based prototype, promises to improve patient comfort and data quality, potentially expanding the use of ERG in pediatric and sensitive patient populations.

Challenges

Despite the positive outlook, the market faces several challenges. The high capital cost of a complete ERG system remains a significant barrier to adoption for smaller clinics and practices. The complexity of both performing the test and interpreting the results requires a significant investment in staff training, which can limit its use to specialized centers.

Reimbursement for ERG procedures can be inconsistent across different geographical regions and among various private and public payers, which can impact the return on investment for healthcare providers. Lastly, ERG faces indirect competition from structural imaging modalities like Optical Coherence Tomography (OCT). While they measure different things (function vs. structure), the widespread availability and ease of use of OCT can sometimes lead to the underutilization of functional testing like ERG.

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

CHAPTER 12 HISTORICAL AND FORECAST ELECTRORETINOGRAM MARKET IN EUROPE (2021-2031)

CHAPTER 13 HISTORICAL AND FORECAST ELECTRORETINOGRAM MARKET IN MEA (2021-2031)

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

Please ask for sample pages for full companies list

+357 96 030922
info@marketpublishers.com

Tables & Figures

TABLES AND FIGURES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Electroretinogram Global Market Insights 2026, Analysis and Forecast to 2031

Product link: https://marketpublishers.com/r/E2AEC393E948EN.html

Price: US$ 3,200.00 (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/E2AEC393E948EN.html