KEYSIGHT

2025 COMPANY OF THE YEAR

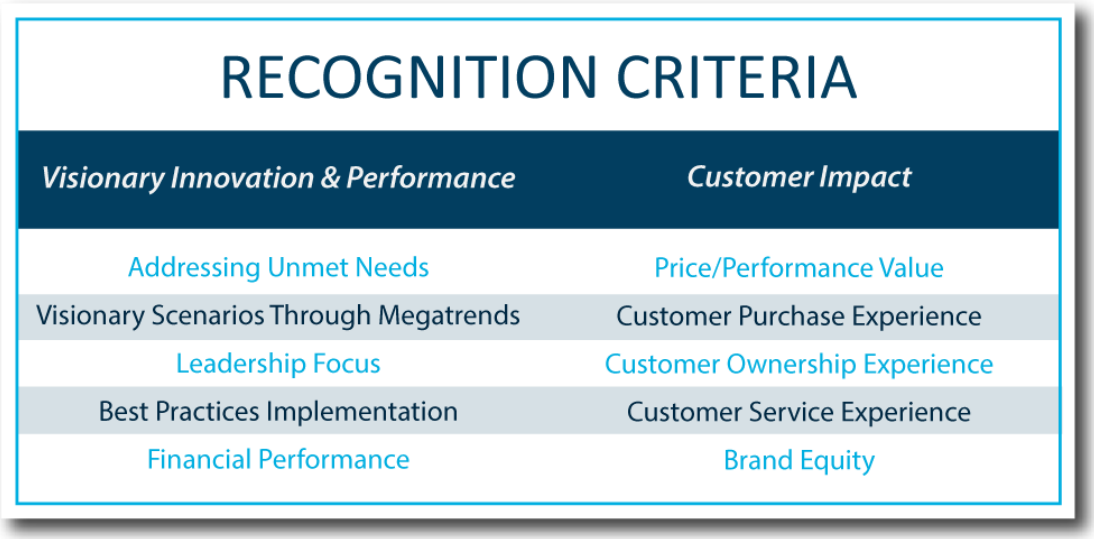
Driving impact across the customer value chain

RECOGNIZED FOR BEST PRACTICES IN THE GLOBAL 6G TEST AND MEASUREMENT INDUSTRY

FROST & SULLIVAN

Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Keysight Technologies excels in many of the criteria in the 6G test equipment space.



The Transformation of the 6G Test and Measurement Equipment Industry

The wireless test and measurement equipment industry is experiencing robust growth due to fifth-generation (5G) network deployments and the emergence of sixth-generation (6G) technologies. The need for ultra-fast, low-latency networks is critical to supporting advanced applications in sectors like the Internet of Things (IoT), smart cities, and augmented/virtual reality. Sustainability is another key driver, as the emphasis on energy-efficient networks aligns with global efforts to reduce environmental impact. The ongoing integration of artificial intelligence (AI) will enhance network performance and enable new capabilities, such as generative AI (GenAI)-based testing. Additionally, 6G aims to bridge the digital divide by providing universal connectivity, even in remote and underserved areas. This next-generation (next-gen) technology also presents lucrative opportunities for industries like healthcare and automotive, where reliable, high-speed connectivity will underpin innovative business models and revenue streams.

> *"With solutions spanning RF and network testing, Keysight offers a broader and more flexible approach than its competitors. These tools enable researchers to generate and analyze signals across the spectrum and recreate complex and dynamic environments, accelerating 6G research."*
>
> ***- Sujan Sami***
> ***Research Director, Test and Measurement***

Despite its potential, the path to 6G is not without challenges. The technological complexity of 6G, including the development of advanced features (e.g., extremely large, massive MIMO arrays, joint communication and sensing, and reconfigurable intelligent surfaces), demands novel testing

methodologies. Significant investment in infrastructure is necessary to transition from 5G, including upgrading hardware, software, and testing platforms. AI-driven scenarios for 6G will result in many new test cases and field validation challenges. Emulation-based testing using digital twins of radio components could help reduce field testing costs and accelerate technology validation. However, regulatory and standardization hurdles remain, as the industry works to establish specifications and ensure global compatibility. Moreover, vendors across the mobile ecosystem from chipsets to devices to base stations and the networks themselves must address growing public concerns regarding privacy, security, and AI integration to foster trust and drive adoption.

The global 6G testing equipment market is emerging, reflecting early-stage investment in research and development (R&D) and testing solutions.[1] Ongoing stakeholder development of next-gen test instruments for 6G validation is currently positioning the market for robust growth. Moving forward, collaboration across the wireless ecosystem will be crucial, involving players from semiconductor manufacturers to system and software providers. Digital twin technology and GenAI testing frameworks will play pivotal roles in managing 6G testing complexity, enabling efficient and cost-effective validation processes. As standardization and commercial efforts progress, early investors in comprehensive testing solutions will gain a competitive advantage in this burgeoning market.

Demonstrated Leadership through Continuous Innovation

6G network advancement depends heavily on new spectrum technologies to meet the demands of high-capacity, low-latency applications such as immersive telepresence and extended reality. Utilizing ultra-high frequency bands (sub-THz) (100 to 300 gigahertz [GHz]) and THz (up to 10 THz) enables massive data rates but presents challenges such as path loss and coverage limitations. As a result, sub-THz spectrum may not be adopted in 6G, although academic and industry R&D work continues in this area requiring testing. Current research focuses on overcoming these hurdles by investigating innovations like new waveforms, massive multiple-input multiple-output, reconfigurable intelligent surfaces (RIS), and full-duplex transmission, which doubles network throughput capacity. Testing these technologies is essential, positioning companies like Keysight Technologies (Keysight) at the forefront of enabling 6G's full potential.

Keysight gained a significant competitive edge in 2022 by becoming the first vendor to receive the Federal Communications Commission Spectrum Horizons Experimental license, granting access to sub-THz frequencies ranging from 95 GHz to 3 THz.[2] This vast contiguous spectrum allows for unprecedented data throughput speeds of up to 1 terabit per second (Tbps) making it ideal for high-bandwidth applications such as augmented reality and holographic communication. This regulatory milestone gave Keysight an advantage in validating high-speed, low-latency 6G applications, allowing it to lead the market in advancing 6G technology testing.

The company's innovations in wideband signal generation further distinguish it from competitors. Keysight's advanced sub-THz testbed supports signal generation across the D-band (110 to 170 GHz), G-

[1] *6G Testing—Advancements in Next-generation Networks* (Frost & Sullivan October 2022)

[2] "Keysight Technologies First to Receive FCC Spectrum Horizons License for Developing 6G Technology in Sub-Terahertz." *Keysight Technologies*. Press release. 8 March 2022. https://www.keysight.com/us/en/about/newsroom/news-releases/2022/0308-nr22031-keysight-technologies-first-to-receive-fcc-spectrum.html Accessed 25 November 2024.

band (140 to 220 GHz), and H-band (220 to 330 GHz), with bandwidth utilization up to 30 GHz.[3] These capabilities are crucial for exploring system performance at new frequencies. Keysight also offers solutions for sub-THz component characterization and enables FR3 performance testing with its PROPSIM channel emulator. With solutions spanning RF and network testing, Keysight offers a broader and more flexible approach than its competitors. These tools enable researchers to generate and analyze 6G signals across the spectrum and recreate complex and dynamic environments, accelerating 6G research.

Integrating high-speed hardware with sophisticated software tools like PathWave Vector Signal Analysis software enhances Keysight's offerings. A robust combination of waveform generators, optical modulation analyzers, and network analyzers ensures accurate characterization of complex transceiver modules. Keysight's integrated approach simplifies the development process, making it particularly attractive to original equipment manufacturers and network operators. This comprehensive 6G design and validation portfolio positions the company ahead of competitors that rely on siloed or less adaptable testing solutions.

Furthermore, Keysight's strategic collaborations with leading research institutions and industry leaders demonstrate its commitment to innovation. For example, Keysight is collaborating with Ericsson and Analog Devices on centimeter-wave (cmWave) / frequency range 3 (FR3), taking part in various research projects by the 6G Smart Networks and Services Joint Undertaking (SNS-JU) program, and working with Northeastern University and NVIDIA on AI-RAN research. By fostering an ecosystem of academic and industry collaborations, Keysight strengthens its technological leadership, ensuring its solutions remain at the forefront of 6G advancements.

With its portfolio of high-performance 6G solutions designed to meet the bandwidth and performance needs of next-gen applications, Keysight is well-positioned to support diverse use cases, including wireless connectivity, healthcare, and industrial automation. This adaptability ensures the company's relevance across verticals, cementing its status as a key player in shaping the future of 6G testing equipment. By focusing on spectrum utilization, wideband signal generation, and integrated testing solutions, Keysight remains poised to support the development of 6G technologies.

Keysight Technologies: An AI/ML Innovation Hub

As networks continue to evolve, Keysight identifies AI and machine learning (ML) as central to 6G networks, driving improvements in spectrum management, security, radio access network (RAN) planning, and automation. These technologies also enhance network performance by making systems more intelligent and efficient, optimizing resource allocation, and enabling dynamic, automated operations to meet the growing demands of 6G applications. By harnessing AI/ML in its own solutions, the company helps optimize performance, improve testing accuracy, and streamline development processes, ensuring that 6G networks meet the demanding requirements of ultra-reliable, high-capacity, and low-latency communications. This integration sets a new standard for testing and validation in the rapidly evolving wireless ecosystem.

[3] "6G Technology." *Keysight Technologies*. Web page. https://www.keysight.com/us/en/solutions/emerging-technologies/6g-technology.html Accessed 25 November 2024.

A key differentiator, the Keysight network digital twin integrates extensive emulation solutions to accelerate AI-RAN adoption and commercialization. The company leverages digital twin technology to create high-fidelity virtual emulation environments that mimic real-world conditions. These digital replicas of 6G systems enable engineers to test various network scenarios, validate AI models, and fine-tune configurations, accelerating the innovation cycle without the limitations of physical network constraints.

In addition, Keysight integrates AI into software testing processes to enhance user experience during validation and defect detection. By employing advanced ML algorithms, the company ensures comprehensive coverage and faster development cycles for applications running on 6G networks. Keysight has collaborated with various universities on 6G and AI including Northeastern University, the University of Malaga, and the Singapore University of Technology and Design (SUTD). Demonstrated at MWC25, the collaboration with Northeastern focused on the dynamic allocation of cloud resources and continuous testing of AI and RAN workloads over the fronthaul interface to benchmark performance and gain insights into the energy consumption of different O-RAN traffic models and AI / ML service usage profiles. With the university of Malaga, Keysight has opened a new state-of-the-art 6G research and innovation laboratory to advance 6G technology on various fronts including AI and ML networks and digital twins, and other critical research areas such as spectrum, sensing, new network architectures, and security. With SUTD, semiconductor device manufacturer LITE-ON, and NeuroRAN, a leader in AI-driven RAN technology, Keysight helped create an intelligent spectrum sensing system that processes images in real time over wireless networks despite changing conditions, enhancing performance while ensuring privacy, minimizing delays, and prioritizing energy efficiency for real-time wireless applications.

> *"The complex nature of 6G testing is driving the need for high-performance solutions with enhanced reliability, prompting vendors like Keysight to focus on digital models. The company is advancing 6G test equipment by leveraging digital twins to enhance network testing and validation. These digital models create high-fidelity replicas that simulate the behavior of complex 6G systems."*
>
> ***Samantha Fisher***
> ***Best Practices Research Analyst***

Finally, automated testing solutions stand out as another unique element of Keysight's AI/ML strategy. These solutions provide real-time analysis and predictive testing capabilities, minimizing manual intervention and improving efficiency and scalability. By enabling dynamic, adaptive testing, the company's automated solutions support the complex use cases of 6G technologies: smart everything, sensing, and global coverage. Through this comprehensive approach to AI/ML integration, Keysight delivers unparalleled testing and validation capabilities, reinforcing its position as a leader in shaping the future of wireless communication.

A Keen Quality and Reliability Focus

The complex nature of 6G testing is driving the need for high-performance solutions with enhanced reliability, prompting vendors like Keysight to focus on digital models. The company is advancing 6G test equipment by leveraging digital twins to enhance network testing and validation. These digital models create high-fidelity replicas that simulate the behavior of complex 6G systems. By integrating these

models, Keysight provides organizations with tools to test various network scenarios, ensuring the performance and reliability of infrastructure prior to deployment. This approach enables engineers to gain deeper insights into network behavior and interactions, fostering a comprehensive understanding of the evolving 6G ecosystem.

Key applications of the company's digital twin solutions include the creation of integrated digital twin testbeds and generating data to train AI / ML models for network optimizations. These testbeds simulate the entire 6G network, including all its components, enabling thorough performance assessments under various conditions. By modeling the full 6G ecosystem, Keysight's testbeds provide an invaluable resource for understanding system behavior and maximizing network configurations, which is crucial for developing robust, high-performance 6G technologies, significantly accelerating validation processes, and reducing the risk of deployment issues.

Moreover, Keysight's digital twin solutions also support RF performance validation by generating virtual RF system models. This capability allows engineers to simulate and analyze RF component behavior in a controlled, risk-free environment, ensuring that designs meet necessary specifications before physical prototypes are created. Also, scenario-based testing within the digital twins enables simulation of various network configurations and user behaviors, crucial for AI model validation and performance optimization in real-world conditions, especially for demanding 6G applications.

Finally, through collaboration with research institutions and industry, Keysight further enhances its digital twin capabilities. These partnerships help refine the digital models used for testing. Furthermore, the company designed its digital model technology to integrate with automated testing frameworks that incorporate AI/ML, allowing for real-time analysis, predictive testing, and network optimization, ensuring that 6G networks can adjust dynamically to changing conditions and meet performance requirements. With these advancements, Keysight positions itself as a thought leader and key player in 6G technology development.

Real-world Scenarios Driving New Network Architecture Development

Novel network topologies like non-terrestrial networks (NTN) and O-RAN are critical to enabling global coverage and network flexibility in 6G , driving Keysight to develop new solutions to support its customers' needs. One of the key industry focuses is RAN decentralization and virtualization, allowing for greater flexibility and scalability in network design, and enabling dynamic resource allocation based on demand. The company's solutions facilitate comprehensive testing of various RAN configurations, addressing performance and reliability under different conditions. This capability differentiates Keysight from competing solutions that offer limited adaptability in evolving 6G network requirements.

Another significant 6G innovation lies in the increased integration of NTN, including satellite and aerial communication systems. By supporting end-to-end testing of NTN from design through deployment, Keysight is helping device and network equipment manufacturers enhance 6G's ability to provide ubiquitous coverage, even in remote and underserved areas. The company's NTN testing capabilities position it to enable its customers to operate in an untapped market and offer products and solutions that meet customer needs.

End-to-end Support Driving Unmatched Client Experiences

Keysight streamlines the purchase and deployment timeline for its 6G test and measurement products and solutions through a customer-centric approach that combines efficiency, flexibility, and support. Its user-friendly online platform provides detailed product descriptions, specifications, and pricing to facilitate seamless e-commerce transactions, while customized solutions and bundled packages address specific customer needs and deliver greater value. Robust and personalized consultations help clients select the right tools with confidence, and flexible financial options, such as leasing and installment plans, make advanced equipment more accessible. The company also leverages AI to analyze purchase patterns, optimize inventory management, and ensure product availability. Complementing these efforts are comprehensive educational resources, including workshops and tutorials, enabling customers to maximize their purchases' value and tackle the challenges of 6G technology development effectively.

Additionally, the company delivers best-in-class customer service for 6G research and development through a multifaceted approach that prioritizes client support and satisfaction. Comprehensive technical assistance, available through multiple channels, ensures expert guidance on equipment selection, setup, and troubleshooting. Tailored solutions and pre-purchase consultations cater to unique client requirements, while robust training programs, workshops, and tutorials equip users to unlock their equipment's full potential. Precision, measurement accuracy and repeatability are ensured through advanced metrology techniques, providing results researchers can trust to validate findings faster. User-friendly online platforms provide seamless access to product information, support resources, and purchasing options, complemented by flexible financing solutions such as leasing, or installment plans to ease financial constraints. Proactive customer engagement, including regular follow-ups and feedback sessions, strengthens client relationships, positioning Keysight as a trusted partner in navigating the complexities of 6G technology development.

Moreover, Keysight optimizes the ownership experience by combining robust support, tailored solutions, and innovative resources. The company provides comprehensive technical support via multiple accessible channels, including phone, email, and online chat, ensuring clients receive timely assistance during equipment selection, setup, and use. Extensive training programs, workshops, and online tutorials empower customers to maximize their testing equipment capabilities, fostering confidence in measurement results and efficiency. Keysight's proactive customer engagement, characterized by regular follow-ups and feedback initiatives, strengthens relationships and loyalty. Collectively these strategies establish the company as a trusted partner in simplifying 6G testing and ensuring a superior and reliable ownership experience.

Positioned for Growth

Keysight maintains strong brand equity by leveraging a holistic approach centered on customer engagement, innovation, and consistent delivery of quality experiences. Its customer-centric messaging aligns brand narratives with the values and priorities of its audience, fostering trust and emotional connections. A hallmark of Keysight's brand strategy is its unwavering commitment to consistency, ensuring that every interaction (from marketing campaigns to technical support) reinforces its reputation for reliability and excellence. The company's dedication to continuous innovation and high-quality product

offerings further solidifies its standing as a leader in the technology and measurement sector, building a strong association with dependability and cutting-edge solutions.

Keysight achieved strong financial performance in the fourth quarter of 2024, with revenue of $1.29 billion. For the fiscal year 2024, the company reported revenue of $4.98 billion.[4] The communications solutions group saw a solid 4% growth driven by AI-related investments.[5] In fiscal year 2025, Keysight delivered strong results in the first quarter with revenue of $1.3 billion and projects second-quarter revenue between $1.27 billion and $1.29 billion.[6] This forecast underscores the company's confidence in its ability to outperform its competitors, supported by its differentiated portfolio and ongoing technological innovations.

Keysight also actively engages its audience through educational programs, workshops, thought leadership, and collaborations with industry organizations, cultivating a sense of community and advocacy among its user bases. The company's data-driven approach to measuring and enhancing brand equity complements its engagement, allowing it to adapt to evolving customer expectations and market conditions. By combining these strategies, Keysight maintains high visibility and deepens loyalty and preference, differentiating itself as a trusted and forward-thinking brand in the competitive technology landscape.

Conclusion

As organizations set their sights on the future of wireless networks, the need for advanced tools and standardized protocols to handle extreme data rates, ultra-low latency, and high-frequency spectrum demands continues to grow. Additionally, there is an increasing need for scalable solutions that incorporate real-time artificial intelligence (AI) analytics, machine learning (ML) algorithms, and dynamic simulations to support the complexity of 6G scenarios. Overall, Keysight Technologies (Keysight) leads the 6G test and measurement market by addressing these challenges with a comprehensive, customer-centric approach that incorporates innovative technologies and best practice implementation.

With its advanced solutions, Keysight enables researchers to generate and analyze 6G signals across the spectrum, recreate complex and dynamic environments, and train, verify and optimize AI/ML models to enhance PHY and RAN performance. Moreover, the company's solutions address new network architectures, such as open radio access networks and non-terrestrial networks, positioning itself as a pioneer and trusted partner in the evolution from 5G to 6G.

For its strong overall performance, Keysight Technologies is presented with Frost & Sullivan's 2025 Global Company of the Year Award in the 6G test and measurement industry.

[4] "Keysight Technologies Reports Fourth Quarter and Fiscal Year 2024 Results." *Keysight Technologies*. Press release. 19 November 2024. https://investor.keysight.com/investor-news-and-events/financial-press-releases/press-release-details/2024/Keysight-Technologies-Reports-Fourth-Quarter-and-Fiscal-Year-2024-Results/default.aspx Accessed 25 November 2024.

[5] Ibid

[6] Ibid

What You Need to Know about the Company of the Year Recognition

Frost & Sullivan's Company of the Year Recognition is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Recognition Analysis

For the Company of the Year Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

Visionary Innovation & Performance

Addressing Unmet Needs: Customers' unmet or under-served needs are unearthed and addressed to create growth opportunities across the entire value chain

Visionary Scenarios Through Megatrends: Long-range scenarios are incorporated into the innovation strategy by leveraging mega trends and cutting-edge technologies, thereby accelerating the transformational growth journey

Leadership Focus: The company focuses on building a leadership position in core markets to create stiff barriers to entry for new competitors and enhance its future growth potential

Best Practices Implementation: Best-in-class implementation is characterized by processes, tools, or activities that generate consistent, repeatable, and scalable success

Financial Performance: Strong overall business performance is achieved by striking the optimal balance between investing in revenue growth and maximizing operating margin

Customer Impact

Price/Performance Value: Products or services offer the best ROI and superior value compared to similar market offerings

Customer Purchase Experience: Purchase experience with minimal friction and high transparency assures customers that they are buying the optimal solution to address both their needs and constraints

Customer Ownership Excellence: Products and solutions evolve continuously in sync with the customers' own growth journeys, engendering pride of ownership and enhanced customer experience

Customer Service Experience: Customer service is readily accessible and stress-free, and delivered with high quality, high availability, and fast response time

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty, which is regularly measured and confirmed through a high Net Promoter Score®

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)

