

FROST & SULLIVAN

BEST PRACTICES

AWARDS

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2019

BEST
PRACTICES
AWARD



KEYSIGHT
TECHNOLOGIES

**2019 GLOBAL COMMUNICATIONS TESTING
GROWTH, INNOVATION & LEADERSHIP
FROST RADAR AWARD**



F R O S T R A D A R

CONGRATULATIONS!

Frost & Sullivan is proud to present **Keysight Technologies** with this year's Frost Radar Best Practices Award for Growth, Innovation & Leadership (GIL) in the **Communications Testing Market**.

Frost & Sullivan's global team of analysts and consultants continuously research a wide range of markets across multiple sectors and geographies. As part of this ongoing research, we identify companies that consistently develop new growth strategies based on a visionary understanding of the future, and thus more effectively address new challenges and opportunities. This involves extensive primary and secondary research across the entire value chain of specific products. Against the backdrop of this research, Frost & Sullivan recognizes Keysight Technologies for these valuable achievements.

This recognition is strictly reserved for companies that are market leaders and are at the forefront of innovation. These companies consolidate or grow their leadership position by continuously innovating and creating new products and solutions that serve ever-evolving customer needs. These companies are also best positioned to expand the market by strategically broadening their product portfolio. Achieving Growth, Innovation & Leadership (GIL) is never an easy task, but it is one made even more difficult considering today's intensely competitive environment, customer volatility, economic uncertainty, and rapid technology evolution. Within this context, **Keysight Technologies'** receipt of this Award signifies an even greater accomplishment.

Moreover, this recognition is the result of many individuals (employees, customers, and investors) making daily choices to support the organization and meaningfully contribute to its future. Frost & Sullivan enthusiastically acknowledges and celebrates these achievements. Once again, congratulations on your accomplishments and we wish you great success in the future.

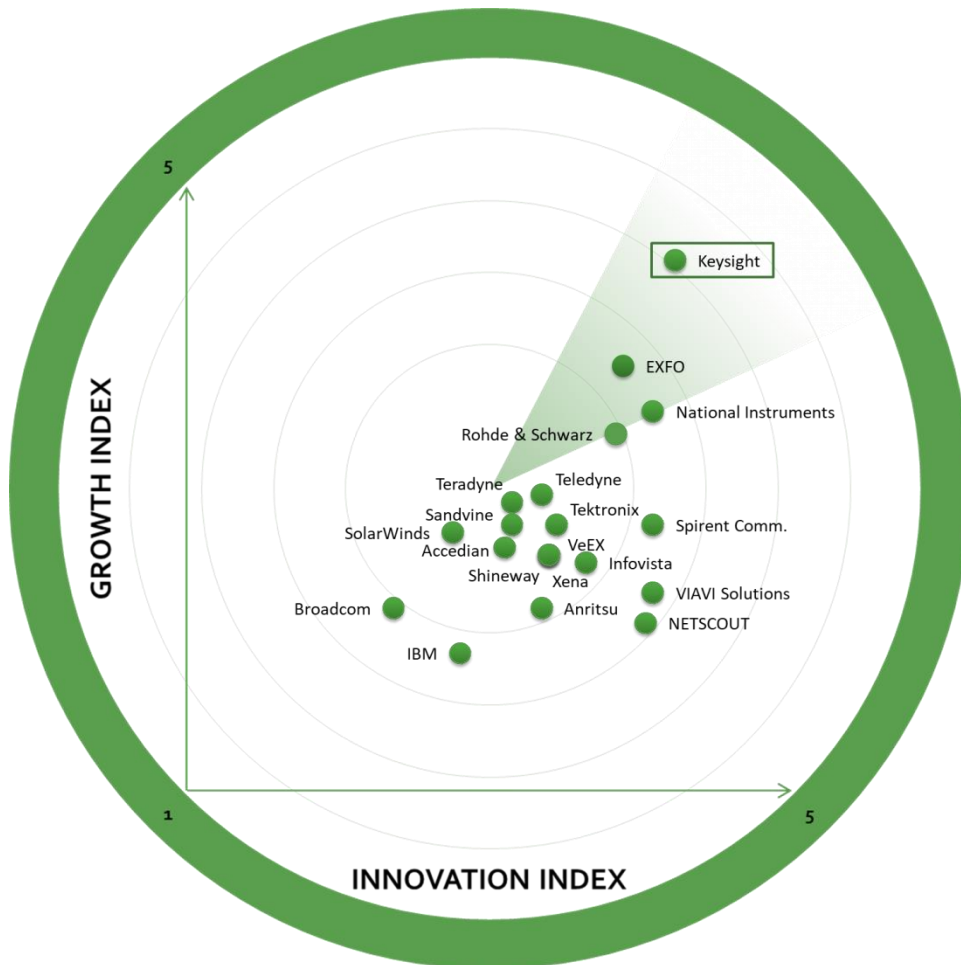
Sincerely yours,

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The Frost Radar

Communications Testing Market



Source: Frost & Sullivan

In a field of +100 global industry participants, Frost & Sullivan has independently ranked the top 20 companies in the above Frost Radar analysis.

The key parameters independently analyzed by Frost & Sullivan include:

- Innovation Scalability
- R&D
- Product Portfolio
- Mega Trends Leverage
- Customer Alignment
- Growth Pipeline
- Vision and Strategy
- Sales and Marketing

Frost & Sullivan studies related to this independent analysis:

- Electronic Test and Measurement Market, Forecast to 2022
- Global Communications Test and Measurement Market, Forecast to 2022

Industry Overview

Communication testing equipment is used to validate the performance of network infrastructure, mobile devices, and related components including modules and chipsets. The market includes electronic test and measurement equipment, fiber optic and Ethernet test equipment, and network and application performance management solutions. The voluminous amount of heterogeneous data that will be transferred at significantly higher throughput and lower latencies with 5G technology calls for a complete re-engineering of network infrastructure, and 5G-compliant modules and chipsets. 5G will bring use cases including the Internet of Things (IoT), smart cities, and autonomous and connected vehicles to the forefront.

Keysight Technologies is a forerunner in the electronic test and measurement market and has significant coverage in the communications testing market. The company offers end-to-end testing solutions, particularly for 5G, to a range of vendors that manufacture 5G compliant chipsets and devices, and also to network operators. The company offers a breadth of RF and digital testing, and, with the acquisition of Ixia, a prominent participant in the network testing segment, has enhanced its network testing capabilities.

Frost Radar Growth, Innovation & Leadership Award Keysight Technologies

COMPANY DIAGNOSTIC

Based in Santa Rosa, CA, Keysight Technologies was founded in 2014 as a spin-off from Agilent Technologies. In 2018, the company's revenue for communication testing (this includes the communications solutions group without the aerospace and defense, and with Ixia solutions group) generated \$ 1,834 million.

FROST RADAR POSITIONING

- A leader in the test and measurement space, Keysight Technologies caters to approximately 32,000 customers worldwide, with no single customer representing more than 10.0% of any reporting unit's net revenue.
- Keysight Technologies invests a substantial amount in research and development and is positioned high on the Innovation Index.
- A core focus is 5G, and it leverages its expertise in aerospace and defense to offer stakeholders in the 5G ecosystem cost-effective test solutions.

COMPANY STRENGTHS

- The acquisitions of Anite, Ixia and Prisma enhanced the company's communication testing prowess for chipsets, devices, and network infrastructure.
- Keysight is an important leader in the manufacture of radio frequency (RF) tests and digital test equipment.
- Software is becoming a larger part of the company's testing portfolio. This offers a framework for advanced analytics and enhanced test scalability. Keysight's PathWave platform is the basis on which its present and future market leadership is based.

COMPANY OPPORTUNITIES

- 5G is an important area of growth for the company. Keysight Technologies has invested significantly in research of test and measurement equipment that can be used to validate evolving standards and faster data rates.
- It is tapping into opportunities in the automotive industry. The company has automotive innovation hubs in Novi, Michigan (US), Boeblingen (Germany), Nagoya (Japan), and Shanghai (China).
- The acquisitions of Signadyne and Labber Quantum broaden Keysight's contributions in the rapidly evolving technology field of quantum computing.
- The evolution of data centers also is an important opportunity for Keysight Technologies.

What is the Frost Radar?

A Practical, High Impact, Scalable C2A (Companies to Action) Tracking Solution

WHAT IS IT?

A robust analytical tool that benchmarks companies' innovation focus and growth performance in a given market.

HOW IS IT BUILT?

Through in-depth analysis built on our 360-degree research methodology (primary and secondary research) and objective rating of companies in any given market.

WHY DO WE NEED IT?

To understand how companies benchmark against each other in their ability to innovate and grow against a backdrop of industry transformation and evolution.

WHAT WILL IT ACCOMPLISH?

Enable companies to gain an objective, independent perspective of their innovation and growth strategies, including their robustness, effectiveness, relative competitive strength, and implications on their long-term success.

HOW TO USE IT?

Frost Radar is a dynamic tracking tool that offers frequent rating and positioning of companies that are leading the industry on growth, innovation or both. Due to changes in operating environment and internal changes within these organizations, their positioning in Frost Radar will change over time. It is important to leverage Frost Radar to ensure that companies are aware of changes to their ecosystem and their relative positions to it.

WHAT DOES IT MEAN TO BE ON THE FROST RADAR?

Every company that finds itself on the Radar has been chosen because they have proven themselves to be worthy by demonstrating excellence in either growth, innovation, or both, and are able to translate that into proven solutions that benefit their clients. At times, companies with high market share may not place on the Radar. Companies are chosen because they are already doing great things, or because they are poised to do great things.

Frost Radar → C2A

All companies on the Frost Radar could be C2A. Best Practice recipients are the companies that Frost & Sullivan considers the **Companies to Act On Now**.

GROWTH, INNOVATION & LEADERSHIP AWARD

The Growth Innovation Leadership (GIL) best practice award is bestowed on companies that are market leaders that are at the forefront of innovation. These companies consolidate or grow their leadership position by continuously innovating and creating new products and solutions that serve the evolving needs of the customer base. These companies are also best positioned to expand the market by strategically broadening their product portfolio.

Frost Radar

2 Major Indices, 10 Analytical Ingredients, 1 Platform

VERTICAL AXIS – THE GROWTH INDEX

Growth index is a measure of a company's growth performance and track record, along with its ability to develop and execute a fully aligned growth strategy and vision; a robust growth pipeline system; and effective market-, competitor-, and end-user focused sales and marketing strategies.

- **G11: Market Share (previous 3 years):** Market share relative to its competitors in a given market space for the previous three years.
- **G12: Revenue Growth (previous 3 years):** Revenue growth rate for the previous three years in the market/ industry/category that forms context for the given Frost Radar.
- **G13: Growth Pipeline:** This is an evaluation of the strength and leverage of the company's growth pipeline system, to continuously capture, analyze and prioritize its universe of growth opportunities.
- **G14: Vision and Strategy:** This is an assessment of how well a company's growth strategy is aligned with its vision. Are the investments the company is making in new products and markets consistent with the stated vision?
- **G15: Sales and Marketing:** This is a measure of the effectiveness of a company's sales and marketing efforts in helping the company drive demand and achieve its growth objectives.

HORIZONTAL AXIS – THE INNOVATION INDEX

Innovation index is a measure of a company's ability to innovate products/services/solutions that are developed with a clear understanding of disruptive Mega Trends, are globally applicable, are able to evolve and expand to serve multiple markets, and are aligned to customers' changing needs. Key elements of this index include:

- **I11: Innovation Scalability:** This determines whether the organization's innovation(s) is/are globally scalable and applicable in both developing and mature markets, and also in adjacent and non-adjacent industry verticals.
- **I12: Research and Development:** This is a measure of the efficacy of a company's R&D strategy, as determined by the size of its R&D investment and how it feeds the innovation pipeline.
- **I13: Product Portfolio:** This is a measure of the product portfolio of the company, focusing on the relative contribution of new products to its annual revenues.
- **I14: Mega Trends Leverage:** This is an assessment of a company's proactive leverage of evolving long-term opportunities and new business models, as the foundation of its innovation pipeline.
- **I15: Customer Alignment:** This evaluates the applicability of a company's products/ services/ solutions to current and potential customers (7-year horizon), as well as how its innovation strategy is influenced by evolving customer needs.