



**2012 Global Passive Intermodulation Test Equipment  
Market Share Leadership Award**



FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

## **Market Share Leadership Award Passive Intermodulation Test Equipment Global, 2012**

### **Frost & Sullivan's Global Research Platform**

Frost & Sullivan is in its 50th year in business with a global research organization of 1,800 analysts and consultants who monitor more than 300 industries and 250,000 companies. The company's research philosophy originates with the CEO's 360-Degree Perspective™, which serves as the foundation of its TEAM Research™ methodology. This unique approach enables us to determine how best-in-class companies worldwide manage growth, innovation and leadership. Based on the findings of this Best Practices research, Frost & Sullivan is proud to present the 2012 Global Market Share Leadership Award in Passive Intermodulation Test Equipment to Kaelus.

### **Significance of the Market Share Leadership Award**

#### **Key Industry Challenges**

With 4G deployments under way, passive intermodulation (PIM) interference is becoming a key concern for telecommunications service providers and the Wireless industry. Poor PIM performance can have a severe impact on the throughput of high-data-rate systems and ultimately customer retention and new customer acquisition. Although the concept of internal interference is not new, it has taken on an entirely new meaning more recently with the billions of dollars being invested into next-generation networks. So as to not jeopardize these investments, demand for PIM test equipment has increased drastically as it enables a more efficient utilization of the spectrum prospectively lowering receiver noise floor levels.

While the needs for accuracy and reliability are common among all end users of PIM test equipment, the laboratory, manufacturing and field environments vary significantly, translating into different challenges and requirements from one end-user group to another. Portability, as it relates to the size and weight of the instruments, is critical in the field, for instance. In addition, customers' heavy focus on efficiency gains has spurred the importance of ease of use in PIM test equipment. The competitive and dynamic nature of the wireless communications industry is expected to continue to fuel the demand for higher performance yet easier to use test equipment moving forward.

In addition, with uncertain economic conditions and the financial resources of end users varying greatly, the procurement of PIM test equipment can be a significant challenge. Pushing the envelope in terms of affordability and providing customers with different means to procure the equipment they need are expected to be critical factors for success in the global PIM test equipment market.

## Best Practice Award Analysis for Kaelus

The Frost & Sullivan Award for Market Share Leadership is presented to the company that has demonstrated excellence in capturing the highest market share within its industry. The Award recognizes the company's leadership position within the industry in terms of revenues or units, as specified.

### Kaelus' Performance in PIM Testing

Through Summitek Instruments, one of its constituent predecessor companies, Kaelus was the first company to market a PIM tester in 1996. At the time, although not a new issue, the need for PIM production acceptance testing of microwave components was starting to grow in the wireless industry but there was no standard, commercial, and easy-to-use solution on the market. Most companies were putting their own systems together, and these were not suited for the needs of a production environment. Kaelus took the basic schematics of in-house solutions and packaged them into an easy-to-operate solution featuring a rich graphical user interface. Customers were immediately attracted by the cost, low maintenance requirements, and ease-of-operation of this solution. It has since enjoyed a leadership position in this market.

Through Triasx, a different predecessor company, Kaelus was also the first to introduce a portable PIM tester to the market in 2005. From the onset, Kaelus has enjoyed tremendous success with its portable PIM testing solution, which is commonly used in North America, mainland Europe and China. Product awareness is also gaining traction in South America, India and Russia. In order to provide better support and services to its customers, and to better leverage the channels to market, product development investments and manufacturing assets, Smiths Interconnect reorganized a number of its Telecoms businesses, including Summitek and Triasx, into a single business and created Kaelus.

Since the introduction of the first PIM tester, the competitive landscape has changed significantly. However, despite the entrance of new companies in the market, some of which benefit from significant brand recognition in the Wireless Field Test Industry, Frost & Sullivan's research affirms that Kaelus has managed to maintain its leadership position in the PIM Testing space. The company's revenues in the PIM Test Equipment market are estimated to be over 5 times that of its closest competitor. This is due to a multitude of reasons including Kaelus' large product portfolio featuring capabilities specifically developed to cater to the unique needs of key end-users groups, its ability to innovate, and its efforts to offer customers various procurement and use options.

## Key Performance Drivers for Kaelus

### Factor 1: Product Match to Client Needs

Kaelus consists of four previously distinct legal entities that have significant synergies. Of those, Summitek introduced the first PIM tester for the production environment in 1996, providing customers with a significantly adapted solution for manufacturing applications, compared with what they were already using. While Summitek targeted the production environment with its first product introduction, its solution was rapidly adopted in engineering laboratories as well, as the level of utilization of the equipment on the manufacturing floor was such that it simply could not be shared. Although laboratory engineers are generally more technically adroit than production personnel, the pressure on them to decrease development time compelled them to adopt the solution in their laboratory environment.

For the field environment, Triasx (now also integrated into the single Kaelus business structure) developed and introduced the first portable PIM test solution to the market in 2005. Triasx benefited from a long history with the global Operator market including a close relationship with Telstra, a leading telecommunications service provider in Australia that encouraged Kaelus to develop the product. As a result, the solution is especially relevant to the needs of operators as it was developed from the ground up as a field-testing solution. Kaelus' portable PIM test solutions are optimized for mobile use. The software used in its portable PIM solutions is testament to that fact, as it is drastically different from the software used in its manufacturing solution. Not to mention that customers greatly appreciate the solution's graphical user interface for its ease-of-use.

While Kaelus' range of products is broad, featuring models in various frequency bands and therefore providing ample choice for customers, the company is expected to introduce two more models this year. A critical aspect of Kaelus' product portfolio is the mechanical reliability of its solutions, which is critical for customers who cannot afford to wait for their damaged equipment to be repaired.

### Factor 2: Ability to Innovate

Compared to other market participants, Kaelus is more focused on PIM testing and analysis than any other company in the market. Kaelus has a long history with the RF Manufacturing Equipment market and its testing and measurement heritage is instrumental in helping it support its fleet of test equipment worldwide. Kaelus has consistently invested heavily in product evolution and expansion to keep pace with the rapidly evolving Telecomms market. A recent example of the company's innovative achievements was the January 2012 introduction of range-to-fault (RTF) technology for several models within its iQA series of PIM testers. Compared to available solutions on the market, the company not only offers distance to PIM but also distance to Return Loss. However, the true differentiator is the overlay of both measurements on a single screen that enables users to compare PIM

problems to Return Loss issues. Such innovation is expected to be difficult to follow for other market participants.

Compared to other market participants, the design of Kaelus' solutions are flexible. Consisting of a panel PC running a test instrument in a ruggedized case, the Kaelus design facilitates modifications, software changes, and the addition of features. This has tremendous value for customers who navigate the rough seas of the ever-changing Wireless industry. This aspect of the company's product offering fosters innovation, thereby increasing the value of the offering to customers.

### **Factor 3: Customer Support**

As mentioned earlier, the customer base for test equipment including PIM test equipment consists of several groups of users, each having significantly different requirements. They can be broadly categorized into three groups: engineering groups, production personnel, and installers. Engineering groups and production personnel mostly belong to large companies that focus on developing and manufacturing the next generation of wireless products and have large capital expenditure budgets. In the installer space, margins are especially challenged for contractors requiring maximum CapEx utilization.

Kaelus provides support at all levels of customer engagement with a global footprint of service centers and highly skilled field application engineers located in the USA, South America, Europe, India, China and Australia. In addition to high-touch customer service, Kaelus also offers customers access to on-site product demonstrations and technical support, Passive Intermodulation committees and discussions, certified installer training, and online information. Kaelus continues to expand their global service center locations and the certified installer-training program based on industry demand.

## **Conclusion**

Kaelus, a new brand consisting of four formerly separate entities in the Smiths Interconnect division of Smiths Group, is the leader in the PIM Test Equipment market. The company was the first to market a PIM tester for manufacturing applications as well as a portable PIM tester for field applications. The development of a product line that encompasses products specifically developed according to the needs of major end-user groups and its ability to continue to innovate are key factors that have contributed to the increased value of its offerings in the eyes of customers and to maintain its leadership position in the market. Frost & Sullivan expects a bright future for Kaelus. Based on Frost & Sullivan's independent analysis of the Global Passive Intermodulation Test Equipment market, Kaelus is recognized with the 2012 Market Share Leadership Award.

## The CEO 360-Degree Perspective™ - Visionary Platform for Growth Strategies

The CEO 360-Degree Perspective™ model provides a clear illustration of the complex business universe in which CEOs and their management teams live today. It represents the foundation of Frost & Sullivan's global research organization and provides the basis on which companies can gain a visionary and strategic understanding of the market. The CEO 360-Degree Perspective™ is also a “must-have” requirement for the identification and analysis of best-practice performance by industry leaders.

The CEO 360-Degree Perspective™ model enables our clients to gain a comprehensive, action-oriented understanding of market evolution and its implications for their companies' growth strategies. As illustrated in Chart 1 below, the following six-step process outlines how our researchers and consultants embed the CEO 360-Degree Perspective™ into their analyses and recommendations.

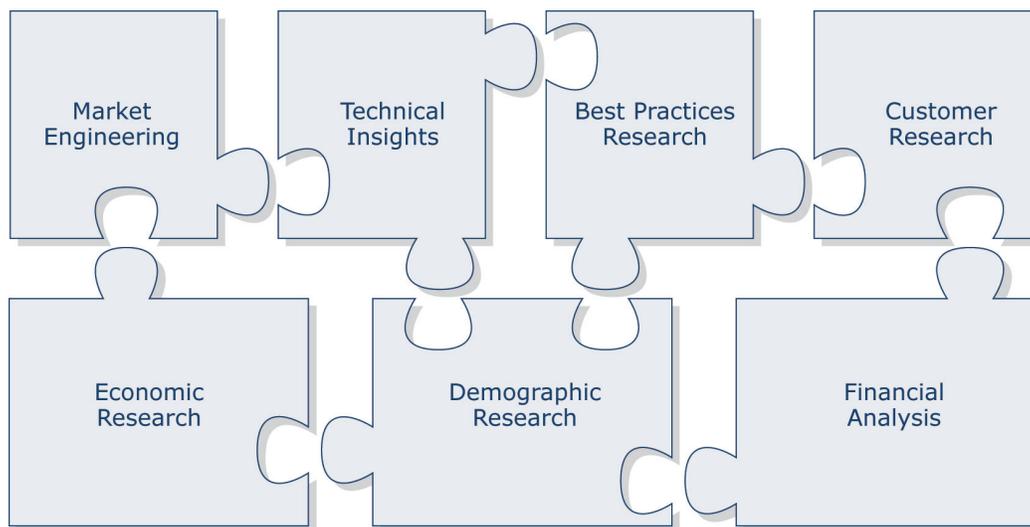
**Chart 1: How the CEO's 360-Degree Perspective™ Model Directs Our Research**



## Critical Importance of TEAM Research

Frost & Sullivan's TEAM Research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all seven of Frost & Sullivan's research methodologies. Our experience has shown over the years that companies too often make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Frost & Sullivan contends that successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. In that vein, the letters T, E, A and M reflect our core technical, economic, applied (financial and best practices) and market analyses. The integration of these research disciplines into the TEAM Research methodology provides an evaluation platform for benchmarking industry players and for creating high-potential growth strategies for our clients.

**Chart 2: Benchmarking Performance with TEAM Research**



## About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best-practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from more than 40 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.