CASE STUDY

Automating Intelligence Helps Antenna Manufacturer Accelerate 5G Development

KEYSIGHT

Introduction

As 5G adoption gains traction, more companies realize the potential of the new generation of mobile networks, especially in the manufacturing sector. A McKinsey report forecasts that the industry will have over 22 million 5G Internet of Things (IoT) devices in use by 2030, making it one of the biggest markets for the technology.

However, the bigger the connectivity, the greater the technical demands of launching 5G solutions. In a global study commissioned by Keysight and conducted by Forrester, only 11 percent of organizations had fully automated testing and measurement processes. The same research found that complexity has increased the number of tests and time required to measure performance.

Time was the problem a global antenna module manufacturer faced when working to increase equipment bandwidth and data rates using millimeter-wave frequencies. By automating intelligence with Keysight, the company could accelerate its release plan by 50 percent and realize profits sooner. The change helped the company create business resilience in the rapidly evolving landscape of a highly competitive sector.

Organization

- Global antenna module manufacturer

Challenges

- Boost antenna bandwidth and data rates using millimeter-wave (mmWave) frequencies
- Limited 5G expertise
- < One month until new product introduction

Solutions

- 5G R&D Test Bed
- Keysight N5244B PNA-X Microwave Network Analyzer

Results

- Reduced R&D development time by 50 percent
- Accelerated release by two months

Challenge

The innovation race is heating up to develop and launch the next generation of communication technology for 5G. There are numerous globally renowned companies vying for 5G communications market share. These companies are building robust partnerships with experienced technology vendors to create an ecosystem of organizations that will eventually change how the world communicates.

One such company is a global antenna module manufacturer specializing in 5G communications, IoT, big data, and blockchain storage. The company urgently needed to procure a mmWave signal generator, signal analyzer, and network analyzer for RF performance testing to take a new product to market on time. The company needed a partner to provide guidance and help it automate intelligence to accelerate the development process and meet an ambitious product release timeline goal.

The company worked on beamforming technologies for mmWave antenna modules. But it had limited 5G expertise and a short timeframe — less than one month to release its new 5G beamforming product. The fast turnaround time and limited knowledge resulted in needing a partner that could offer more than just a network analyzer solution.

Solution

Beyond the need for a robust testing setup, the manufacturer required a partner with ample experience in 5G. Due to its leadership in standards and 5G, Keysight was the natural fit to serve as a guide and partner for this project. The first step was to provide the proper testing solution to ensure the customer would launch its new product within the stated timeline. The customer was able to build better products faster, armed with deep and reliable insights from Keysight, the market leader in emulation and design.

Keysight experts defined the best hardware for the customer's needs, selecting the Keysight N5244B PNA-X Microwave Network Analyzer to serve as a 5G Test Bed. The N5244B PNA-X analyzer operates between 10 MHz and 43.5 GHz and enables teams to replace an entire rack of equipment to simplify the measurement process and speed up technology development.

Hardware for the test bed used the most up-to-date protocols, ensuring customers would have the same results in the real world. This is because Keysight is heavily engaged in setting standards and collaborating with international bodies such as the International Telecommunications Union and the 3rd Generation Partnership Project.

However, beyond the testing setup, the manufacturer needed a partner that could point the way forward. Since its team had little experience with then-nascent 5G, Keysight experts provided training. The experts met with the manufacturer's team several times to advise on the technology deployment and how to make the most out of 5G and the new solution.

Results

The combination of test and measurement capabilities, powerful hardware, and expert assistance enabled the global antenna module manufacturer to accelerate mmWave antenna tests by more than 50 percent, reducing the turnaround from the market average of three months to only one month. The manufacturer was able to meet its challenging deadline and launched the product.

Ensuring the solution could release on time was fundamental from a practical perspective. The results speak for themselves: one month after releasing the new antenna module, the first order kicked off revenue generation much faster than planned. The power of automating intelligence is clear.

According to the Forrester study, 59 percent of decision-makers surveyed said they expect increased productivity when adopting automated intelligence, and 53 percent cited the ability to fix bugs earlier due to automation and simulation.. In addition, reducing time to market was another upside for 50 percent of respondents.

Looking Ahead

As the industry shifts to a more virtualized model with the evolution of approaches like open radio access networks and multi-access edge computing, systems will grow more complex. Automated testing and measurement will become even more game-changing for businesses. Ongoing breakthroughs in 6G technology promise to accelerate that transition to virtual and 'phygital' or models exponentially.

For More Information

- Application Note: Solutions for Design and Evaluation of 5G Candidate Waveforms
- Blog: How Automating Intelligence Speeds Innovation
- Brochure: 5G Waveform Generation & Analysis Test Bed Reference Solution
- Application Note: 5G R&D Test Bed

Automate intelligence to build future-proof business resilience. Start here to learn more about Automating Intelligence.

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