



Cisco Picks Up Pace of Antenna Innovation with MVG's StarLab

LEARN HOW...

Cisco has turbo-charged antenna R&D in just a matter of months since installing StarLab.



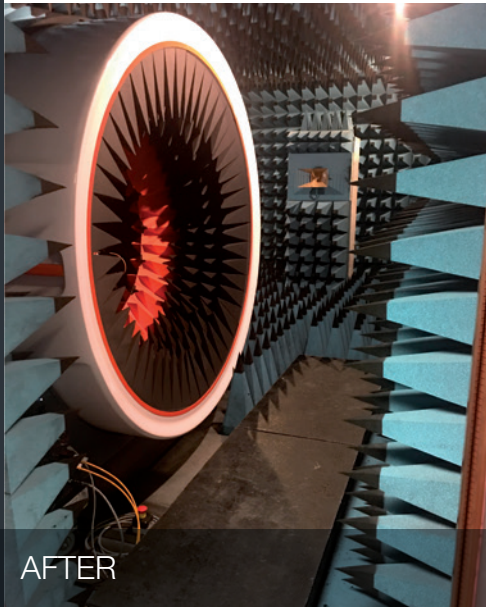
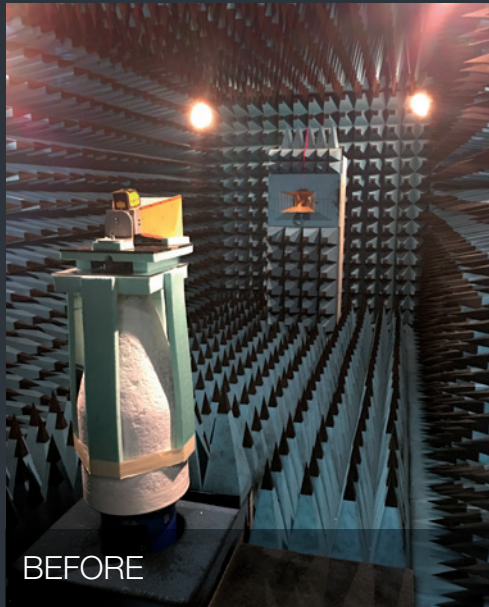
Jonathan Cyphert,
RF Hardware
Engineer, Cisco

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THE CHALLENGE

Cisco Systems is a US tech giant, designing and selling a broad range of technologies that power the Internet. Core networking technologies are switching, enterprise routing, wireless, and compute products.



The wireless portfolio offers indoor and outdoor coverage, including access points (APs). Cisco's flagship Catalyst series provides a range of WiFi-6 and WiFi-6E APs for wireless networking, both for home and enterprise use.

Jonathan Cyphert, a Cisco RF hardware engineer, has been overseeing the company's antenna test and measurement facilities for more than seven years. When he took on his role, however, Cisco was still using a SATIMO anechoic chamber – SATIMO was rebranded as MVG in 2008 – which was installed as far back as 2001. While

Mr. Cyphert was impressed with the resilience of the old technology, he wanted improvements.

Using single-probe testing, for example, Cisco was restricted to 2D measurements. The old SatENv software was also clunky and difficult to use, which, for an RF hardware engineer, Mr. Cyphert found far from ideal. Moreover, not everything could be done in-house. Verification of antenna measurements sometimes had to be outsourced, slowing down product development.

Mr. Cyphert also wanted peace of mind that frequency upgrades beyond 6 GHz, allowing Cisco to put the WiFi-7 protocol fully through its paces, could be done easily. One of the allotted frequency bands for WiFi-7, the next generation WiFi protocol for faster and lower-latency devices, sits between 5.925 GHz and 7.125 GHz.

Given the many challenges, and looking at StarLab's "boatload of features" – as well as getting a high level of engagement with the MVG sales team – Mr. Cyphert concluded it was a "no-brainer" replacement. Assured by MVG's reputation for quality, Cisco installed the StarLab 6 GHz system in February, which Mr. Cyphert was able to customize easily to support up to 10 GHz frequencies and handle WiFi-7 testing.

"It was right for the business to make the change and we've already seen remarkable improvements in the space of just a few months," enthused Mr. Cyphert. "Ways of working have changed dramatically for the better."



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Mr. Cyphert

BUSINESS UPSIDES

One of the main business advantages of StarLab compared with our previous system, explained Mr. Cyphert, is that typical measurement times have drastically shortened from 16 minutes to two minutes. “Not only that,” he added, “I get more measurement data within that timeframe.”

As part of its multi-probe testing capabilities, StarLab’s 3D-modelling feature facilitates the visualization of antenna radiation patterns. Greater insight into product capabilities is now possible.

There is also no need for time-consuming exchanges with third parties to verify measurement data. “Everything can be done in-house,” asserted Mr. Cyphert, “from simulation, to prototype, to measurement, to product concept.”

The quickest time for this process, set by Mr. Cyphert and his team, is one day. “Most of the work we do in StarLab is R&D for enterprise class products, including WiFi-7, using passive testing,” he added. “We’ve really accelerated product development since installing the new system.”

StarLab’s WaveStudio software has also helped speed up test and measurement cycles. No longer does Mr. Cyphert need to painstakingly convert text documents into Excel and then grapple with the measurement data to try and present them in an attractive way. “You can easily manipulate WaveStudio files to see 2D or 3D plots,” he said. “In fact, ‘easy-to-use’ is an understatement.” Greater ease of use extends beyond software. Having to manually change the position of the AP to take elevation and azimuth measurements is not needed anymore.

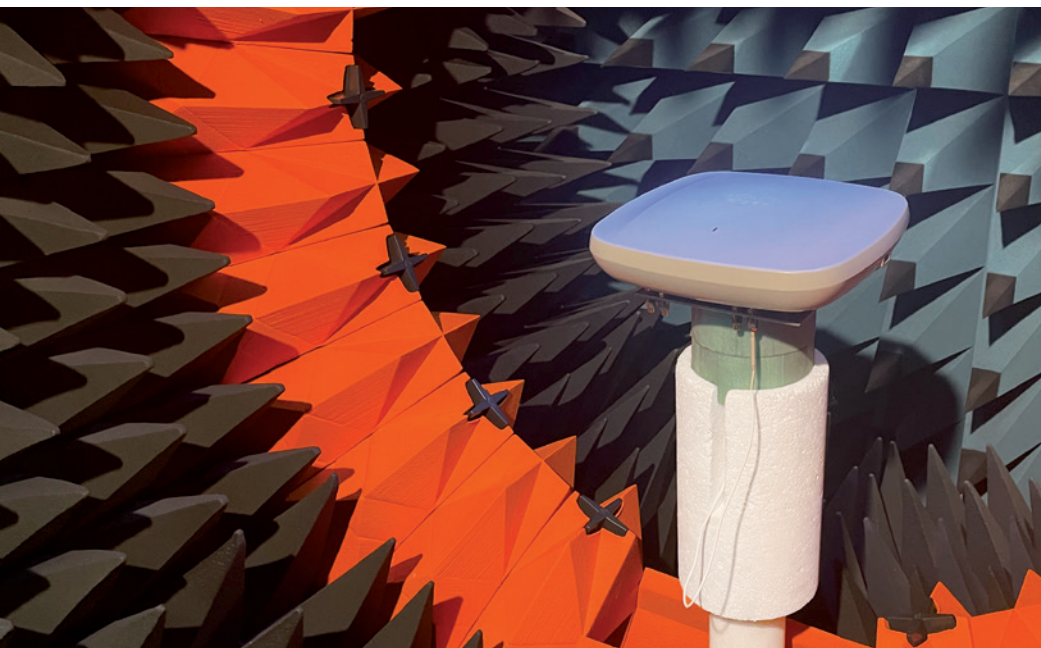
Another important reason why Mr. Cyphert chose StarLab is because of a “smooth upgrade path” to 18 GHz, the next version of the system.

Mr. Cyphert was also impressed by how easily and quickly the compact and portable StarLab 6 GHz was installed. He anticipated that when the time came for StarLab 50 GHz, perhaps a few years down the line, his successors at Cisco will be equally grateful at how easily it can be “wheeled in” and installed, in much the same way as the customizable 6 GHz version.



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Mr. Cyphert



+ TICKING ALL THE MEASUREMENT BOXES

Mr. Cyphert is a highly satisfied StarLab customer. "StarLab is an astonishing feat of engineering," he proclaimed. "It has drastically shortened antenna measurement cycles and provided much greater insight into our products."

The positive business outcomes for Cisco have not taken Mr. Cyphert entirely by surprise. "MVG is the well-known industry standard for antenna measurement systems," he said.

StarLab, as far as Mr. Cyphert is concerned, has given Cisco a monumental R&D boost in AP and antenna design.

+ FUTURE PLANS

Mr. Cyphert plans to change the format of Cisco's AP and antenna datasheets from 2D to 3D, both for internal use and enterprise customers, and so take full advantage of StarLab's 3D-modelling feature.

"Industry datasheets typically have a 2D polar plot because it's easy to display," he said. "But what you're really doing here is trying to solve a 3D problem with a 2D view."

Another goal is to incorporate active OTA testing into StarLab.

"We've simulated an office building, using cubicles and laptops, to do OTA testing and see how our products are going to work as close to reality as possible," said Mr. Cyphert. "But I'd also like to see the OTA testing functionality in a controlled environment, which is where StarLab comes in."



WiFi-7 at a glance

The IEEE 802.11be standard – the first draft version was published in March 2021 – was given the designation WiFi-7 by the Wi-Fi Alliance. It is the next major advance for WiFi wireless networking and is focused on Extremely High Throughput using 4K QAM technology and 16x16 MU-MIMO. Connections of at least 30 Gbps, and possibly up to 40 Gbps, are expected. A maximum channel size of 320 MHz doubles the WiFi-6 channel-size limit of 160 MHz. The allotted spectrum range for WiFi-7 is between 1 GHz and 7.25 GHz, including the 2.4 GHz, 5 GHz and 6 GHz frequency bands. The final version of the WiFi-7 standard is expected by early 2024, with commercial products becoming available shortly afterwards. Many manufacturers, including Cisco, will work on product development using the latest draft versions of the IEEE 802.11be standard before it is finalized.

MVG StarLab

Little in size, BIG in performance

The StarLab is a compact system specially designed by MVG for antenna pattern measurements in laboratories and production environments where space is limited.

It combines the flexibility of a portable system with the reliability of a laboratory tool able to precisely measure the performance of a product at each stage of its design. StarLab performs both OTA and passive measurements.

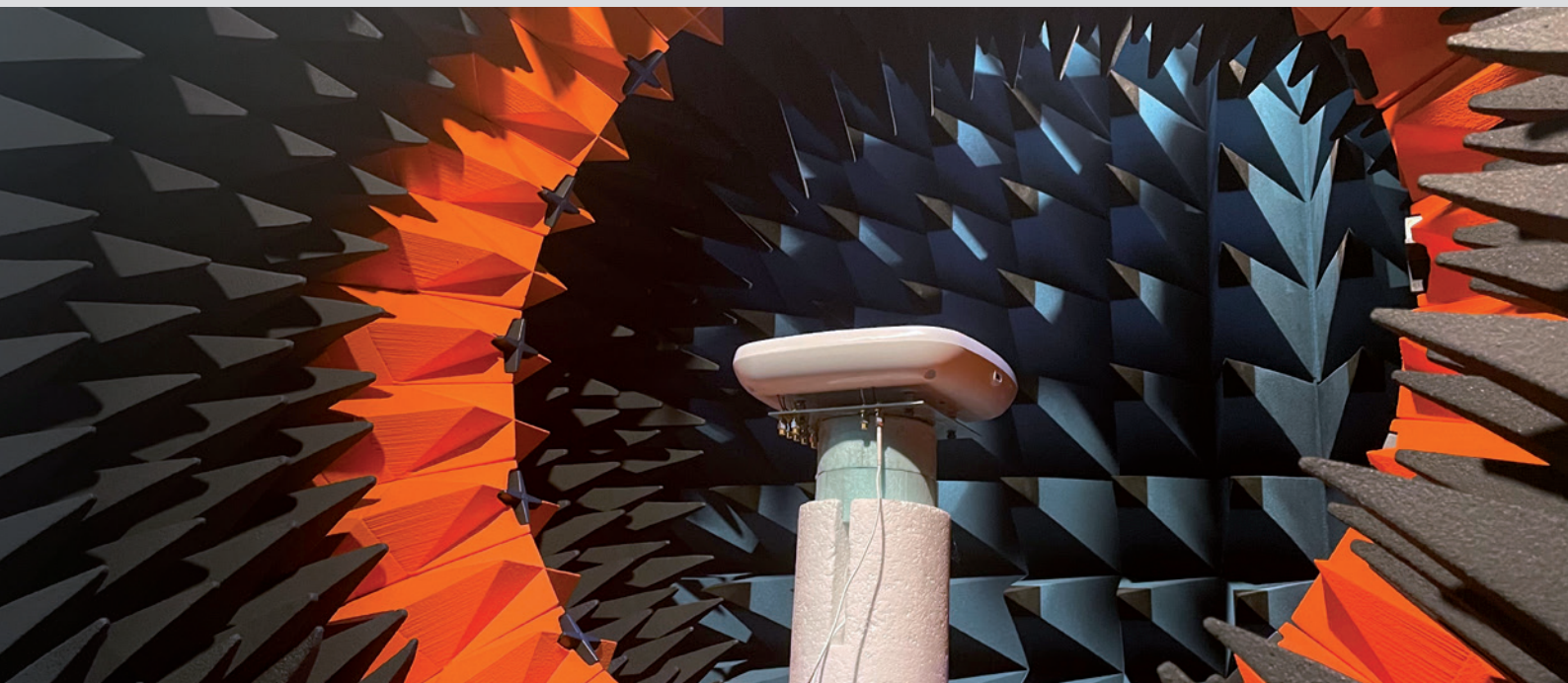
It can measure several parameters in the 6 GHz (650 MHz to 6 GHz) and 18 GHz (650 MHz to 18 GHz) frequency bands, including: gain, directivity, beam width, antenna efficiency, radiation pattern, TRP, TIS, EIRP and EIS.

Overcoming the issue of footprint opens the doors for equipment manufacturers, looking to refine their product development processes through the accurate measurement of electromagnetic waves. The measurement result helps deliver to market products offering unrivalled antenna performance.



MVG WaveStudio

The WaveStudio automated software suite has been developed to support both antenna measurements and OTA testing of wireless devices. It performs fast and accurate passive and active measurements, has advanced post-processing capabilities, and generates reports per the requirements set forth by standards bodies such as CTIA & 3GPP. WaveStudio offers significant time-saving features: batching and batch cloning from a pre-measurement configuration console, advanced predictive algorithms, and a free results viewer.



MVG - Testing Connectivity for a Wireless World

The Microwave Vision Group offers cutting-edge technologies for the visualization of electromagnetic waves. Enhancing the speed and accuracy of wireless connectivity testing, as well as the performance and reliability of anechoic and EMC technologies, our systems are integral to meeting the testing challenges of a fully connected world.



WORLDWIDE GROUP, LOCAL SUPPORT

Our teams, in offices around the world, guide and support you from purchase, through design, to delivery and installation. Because we are local, we can assure speed and attention in project follow through. This includes customer support and maintenance once the system is in place.

For the exact addresses and up-to-date contact information:

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