



# Pegatron Ups Test Capacity to Meet Wi-Fi 6E and 5G Requirements

## LEARN HOW...

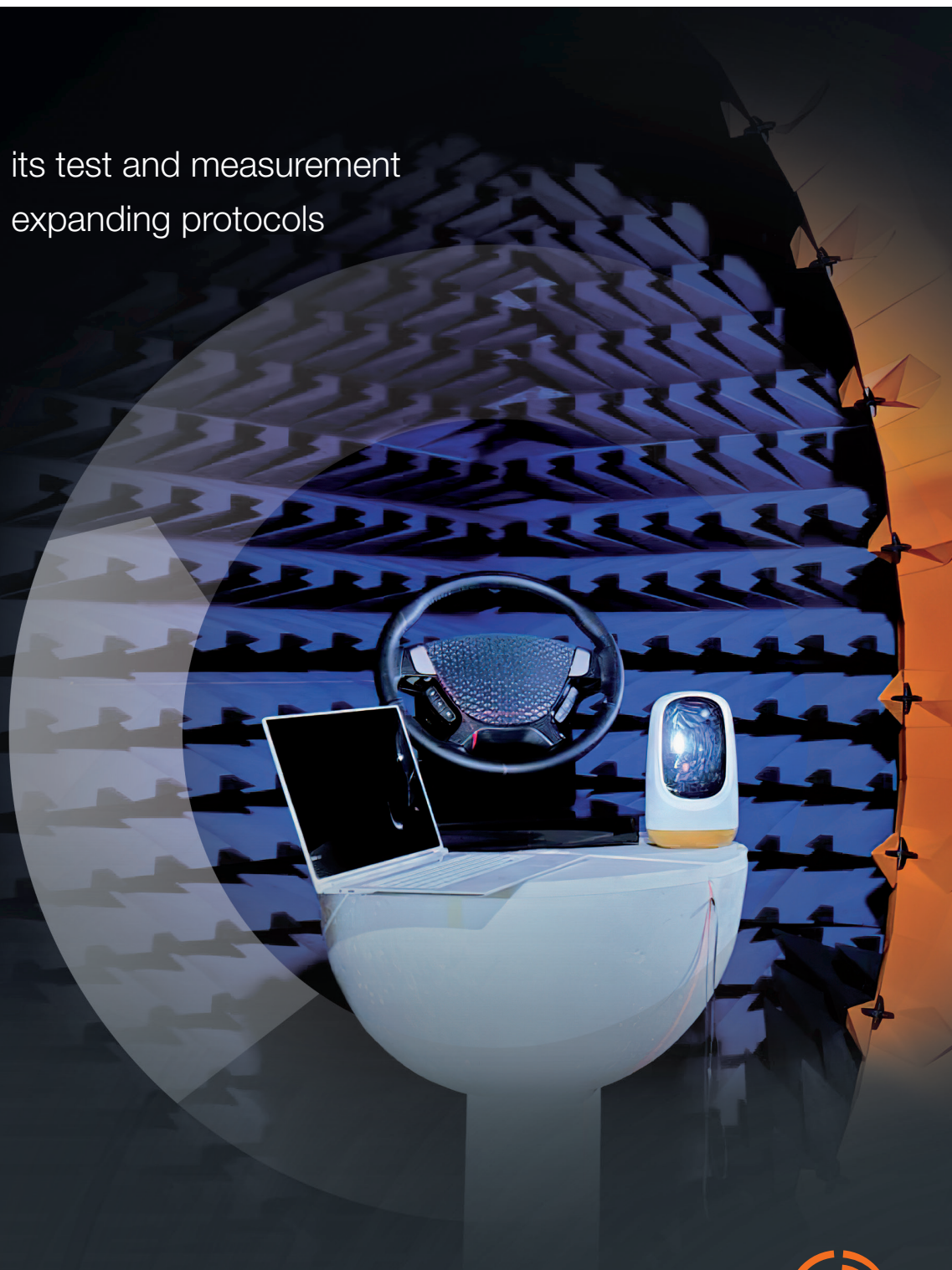
Pegatron increased its test and measurement capacity to support expanding protocols and 5G standards



**Dr. William Wu**  
*Senior Director  
of RF & Antenna  
Division  
at Pegatron*

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## PEGATRON





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## THE CHALLENGE

Pegatron, headquartered in Taiwan, is one of the world's largest designers and manufacturers of consumer electronics for branded vendors. The company's broad portfolio of products includes smartphones, laptops, tablets, IoT, smart home devices, and vehicle telematics and sensors.

An ongoing challenge for Pegatron is to ensure product design lifecycles are as short as possible. This not only lowers operational costs, but also allows the company to meet the time-to-market demands of its brand-name customers.

Pegatron must also strictly adhere to evolving standards and certification requirements for next generation wireless devices. Getting fast and accurate measurements of antenna performance in each new device is therefore vital.

De-risking wireless product design and shortening time-to-revenue becomes more difficult, however, with the arrival of Wi-Fi 6E and 5G New Radio. "There are more test items associated with the new 6E protocol than Wi-Fi 6 and LTE," says William Wu, RF & Antenna Division Senior Director at Pegatron.

Another challenge for Dr. Wu and his team is to have fast and accurate antenna-testing capabilities in frequencies above 6 GHz, covering the entire FR1 spectrum and extending into FR2 frequencies and beyond. Not only to support Wi-Fi 6E, but also to help Pegatron's push into automotive electronics. In November 2021, Pegatron's board of directors approved a \$164m investment in new manufacturing equipment and facilities in North America to handle growing demand from electric-vehicle manufacturers.



## MVG PARTNERSHIP

To achieve the desired fast and accurate antenna testing, both for passive antenna measurement and active Over the Air (OTA) testing, Pegatron purchased its first SG 24 from MVG in 2012. "We selected MVG because of its multi-probe array technology," explains Dr. Wu. "Compared with tests using single-probe systems, the SG 24 reduces our development schedule by half."

Pegatron acquired a second SG 24 from MVG in 2014 to alleviate testing bottlenecks in R&D. And, just recently, a new SG 24 has been installed, replacing the first purchased ten years earlier. Taking advantage of the new installation, the second SG 24 was upgraded to support frequencies up to 10 GHz (up from the previous 6 GHz limit), joining the newly installed system in its higher frequency and active measurement capabilities.

Dr. Wu welcomes the SG 24 10 GHz upgrade. "It will benefit our product development and those devices equipped with 5G NR, Wi-Fi 6E and UWB technology," he says. "The SG24 has helped us tremendously, especially on antenna designs, active measurements, and telecom carrier certifications. The multi-probe technology also allows us to expedite the design process."

The SG 24 multi-probe system makes a rapid scan of the test object in seconds

and completes a full spherical measurement in only a few minutes. There is flexibility, too. MVG systems can perform test measurements on standalone antennas, as well as test the performance of an integrated device -- such as a smartphone or laptop - in which antennas are already installed. SG 24 covers all types of test evaluations.

To adhere to specifications laid out by various standards committees, such as 3GPP and CTIA, and receive telecom operator certification, Pegatron necessarily pays close attention to TRP and TIS measurements. Dr. Wu and his team are particularly interested in testing 6E signalling in TRP.

Dr. Wu points out that the arrival of 5G is changing the way devices can be tested, mainly due to the increasing number of FR2 antenna modules integrated within one 5G device. This not only limits Pegatron's design freedom, but also the methods used for testing. He mentions how traditional passive measurements are no longer feasible for integrated antenna systems, and OTA testing will have to overcome this barrier. One reason why Pegatron upgraded one SG 24 antenna measurement system and acquired another was to increase capacity for OTA active testing.

## ROADMAP

According to Dr. Wu, MVG's strength, compared to its competitors, is its capacity to support a wide range of products across different industry segments. After a productive working relationship with MVG for over ten years, Dr. Wu expects MVG's competitive edge to continue and support Pegatron as it expands its portfolio into the connected vehicle and satcom sectors, with the latter fueled by the rapid development of LEO satellites. The company sees high potential for 5G-enabled devices in each of these sectors.

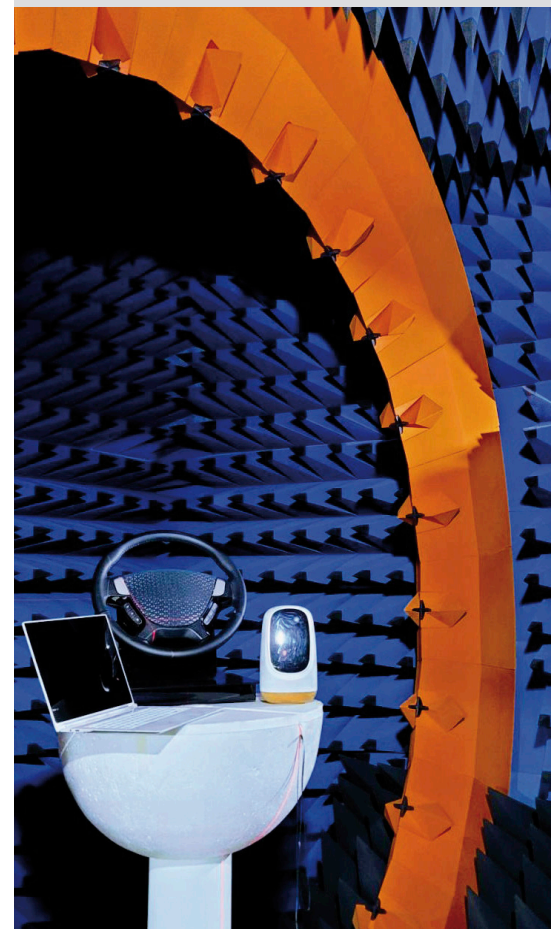
"Devices with built-in wireless sensors, like radar operating at 60 GHz or 77 GHz, is one potential product we will focus on, as they are for vital sign detection on driver monitoring and medical care systems," adds Dr. Wu.

MVG, then, is key for Pegatron. SG 24 installations meet the demand for greater test and measurement capacity, including active OTA testing to test an increasing number of 5G devices with antennas already integrated. There is also a reassuring MVG roadmap to meet Pegatron's needs going forward, allowing antenna testing in FR1 & FR2 frequencies, as well as testing wireless components designed for different industry sectors.

"From my perspective, the main challenge will be to achieve accurate measured results at the high frequencies planned for 5G technology and beyond," explains Dr. Wu. "We believe MVG will have ready solutions to meet our needs when the time comes."

## BENEFITS at a Glance – MVG SG 24 multi-probe test system

- 1 Time saving multi-probe spherical near-field measurements
- 2 Capacity to support different industry demands
- 3 Wide band measurement range (650 MHz – 10 GHz)
- 4 Upgradable test system able to meet evolving needs and requirements in terms of protocols, standards, and higher frequency measurements
- 5 Coordination and cooperation between MVG systems and RF instruments from a wide variety of vendors

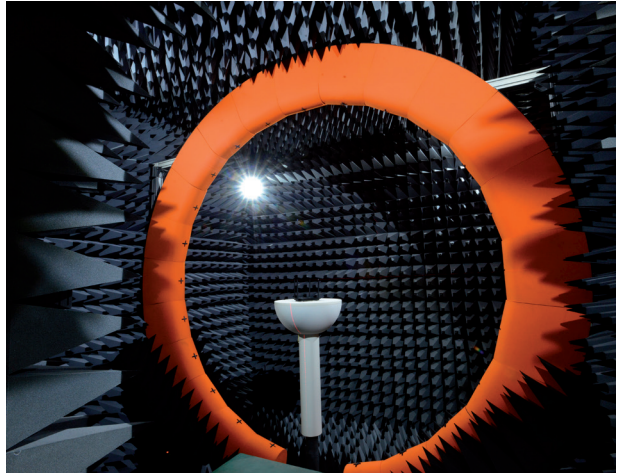




## The SG 24

Developed for testing antennas and wireless devices, MVG's SG systems are the most accurate solutions on the market for measuring stand-alone antennas, antennas integrated into subsystems, or large consumer electronic devices.

SG 24 offers a wide range of measurement capabilities including gain, directivity, beamwidth, cross-polar discrimination, sidelobe levels, radiation patterns, antenna efficiency as well as TRP, TIS, EIRP and EIS OTA testing, covering all state-of-the-art protocols. It has a typical dynamic range of 70 dB, oversampling capability, and can comfortably accommodate a DUT of up to 1.15m at 10 GHz. It is ideal for CTIA certifiable measurement facilities.



## 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.

