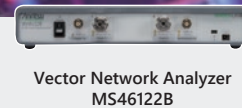


Meiko Electronics Vietnam Co., Ltd.



Enabling Next-Generation High-Frequency Electronic Circuit Board Manufacturing and Quality Assurance with Anritsu's Vector Network Analyzers

Purpose of the Introduction

Quality assurance for high-frequency electronic circuit boards with a vector network analyzer

Background and Challenges

Developing a quality evaluation environment in response to the growing high-frequency demands of electronic circuit boards and enabling rapid responses to customers' needs

Reason for the Selection and the Results of the Introduction

Enhancing the reliability and proposal capabilities of electronic circuit boards through evaluations of high-frequency characteristics that are enabled by the introduction of vector network analyzers

Prospects

Advancing high-frequency readiness for the high-performance computing market with next-generation circuit board inspections that are powered by automation and cloud management

Engineering Department
Deputy General Manager

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Engineering Department
Intermediate Specialist

Ms. ĐỖ PHƯƠNG THỦY



Name	Meiko Electronics Co., Ltd. Meiko Electronics Vietnam Co., Ltd. (hereinafter "Meiko Corporation Information")
Established	November 25, 1975
Capital	12,888 million yen
Number of associates	13,288 (as of March 31, 2025)
Business	Design, manufacturing, and sales of PCBs and other electronics-related businesses
Products	Double-Sided and Multi-Layer Through-Hole PCBs, HDI PCBs, Flexible PCBs, Flex-Rigid PCBs, High Electric Current PCBs, Heat Dissipation PCBs, Embedded Devices PCBs, Solder Stencils, PCB Testers, Imaging Devices, Imaging Systems
Head Office	5-14-15, Ogami, Ayase-shi, Kanagawa, Japan
URL	https://www.meiko-elec.com/



Background and Challenges

Meiko Electronics Co., Ltd. (hereinafter "Meiko") is a global company that is engaged in developing and manufacturing high-performance printed circuit boards (PCBs), which are used across a wide range of fields, including automotive, smartphones, and information and communications technologies. Ahead of its competitors, Meiko proactively expanded its global production footprint into regions such as Vietnam and China (Guangzhou and Wuhan) to establish a large-scale and highly efficient manufacturing structure at an early stage.

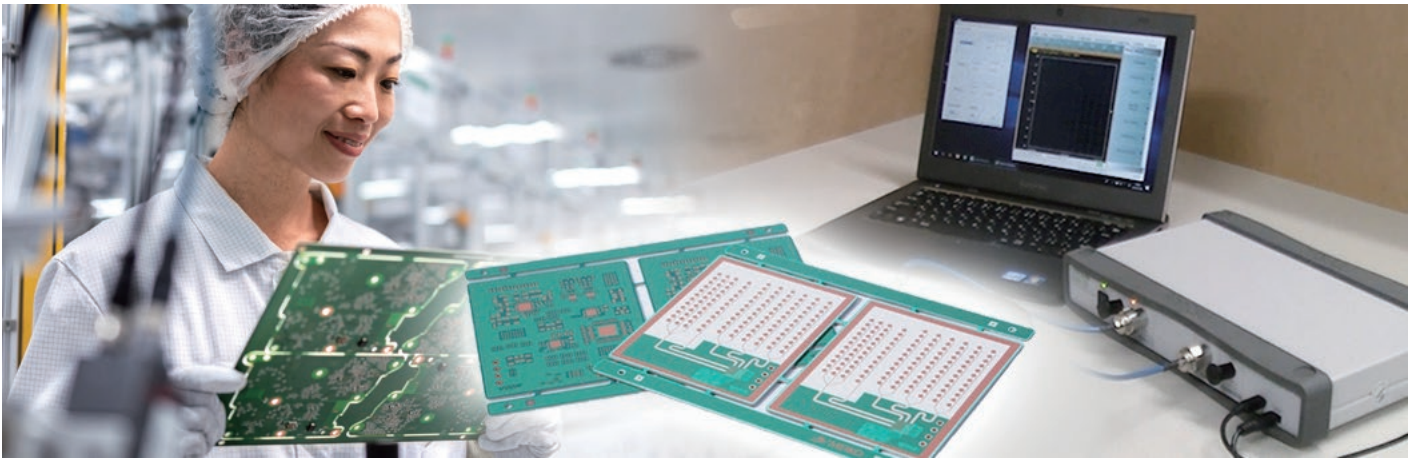
Among its global sites, Meiko Electronics Vietnam Co., Ltd. (hereinafter "Meiko Vietnam") is a key manufacturing site. As the company's largest production base, among its numerous global locations, Meiko Vietnam boasts one of the largest production floor areas among Japanese PCB manufacturers, which enables it to rapidly and flexibly respond to high-volume production requirements. Despite increasingly complex manufacturing processes, the site consistently maintains high quality, and its ability to respond swiftly to any issues has earned strong trust from customers, both in Japan and other countries. In addition, by integrating design and manufacturing functions in the same facility, Meiko Vietnam

Developing a quality evaluation environment in response to the growing high-frequency demands of electronic circuit boards and enabling rapid responses to customers' needs

offers the flexibility to address diverse customer requirements through a one-stop solution, which is one of its key strengths.

In recent years, fields such as high-performance computing, including AI servers, and advanced driver assistance systems (ADAS) have demanded ever-faster speeds and larger-capacity data transmissions. As a result, the requirements for PCBs that are capable of supporting high-frequency electrical characteristics have been rapidly increasing. Reflecting these market trends, Meiko Vietnam has also seen growing demand from its customers for assured electrical performance of PCBs in the high-frequency domain.

Previously, Meiko Vietnam relied on evaluation facilities at its headquarters in Japan for evaluating high-frequency characteristics. However, transporting PCBs to Japan for evaluations took time. This made it difficult to quickly provide evaluation results to the design and manufacturing sites and to further enhance its responsiveness to increasingly diverse customer requirements and shorter lead times. Therefore, Meiko Vietnam recognized the need to establish an environment that would enable evaluating high-frequency characteristics in its factory.



Reason for the Selection and the Results of the Introduction

Enhancing the reliability and proposal capabilities of electronic circuit boards through evaluations of high-frequency characteristics that are enabled by the introduction of vector network analyzers

At the core of ensuring high quality is the Vector Network Analyzer (VNA). Mr. Watanabe of the Engineering Department explains:

“Anritsu’s VNAs have a strong reputation for delivering highly accurate and stable high-frequency measurements, and we felt that their specifications fully met our internal requirements. In addition, while support for other vendors’ instruments is typically provided from abroad, Anritsu has a local presence in Vietnam that is near our site, which gave us confidence that we would receive fast and reliable support. These factors were decisive in our choice, leading us to introduce two models: the two-port VNA MS46122B and the four-port VNA MS46524B.”

The two-port VNA is primarily used for evaluations in mass-production PCB processes, including verification of characteristic impedance, whereas the four-port VNA is utilized by the quality assurance department to evaluate transmission loss and multi-port characteristics, enabling signal quality assessments that are tailored to a wide range of customer requirements. In recent years, requests, particularly for AI server applications, for transmission loss data in specific frequency bands have increased, further expanding the scope of four-port VNAs.

In addition to leveraging these VNAs, comprehensive support from Anritsu, such as holding technical seminars, has accelerated the growth of

in-house high-frequency expertise. As a result, high-frequency characteristics in ranges that were previously difficult to evaluate can now be directly measured, enabling the systematic accumulation of high-frequency characteristics data.

These achievements have had a positive impact on the business. Mr. Watanabe notes: “With the introduction of Anritsu’s VNAs, we are now able to provide high-frequency characteristics data to customers whenever it is required. This has enabled more concrete discussions regarding high-frequency specifications and has strengthened our communications with new customers as well.” Through this initiative, Meiko Vietnam has significantly enhanced not only its quality assurance capabilities but also the strength of its technical proposals.

Prospects

Advancing high-frequency readiness for the high-performance computing market with next-generation circuit board inspections that are powered by automation and cloud management

Looking ahead, Meiko Vietnam is preparing to address further increases in PCB operating frequencies, as well as continued improvements in production efficiency.

Recent technology trends, particularly in high-performance computing fields, such as AI servers, are driving ever-faster data transmission speeds, and some customers are placing increasingly stringent demands on the high-frequency characteristics of PCBs. To meet these requirements, Meiko Vietnam is considering the introduction of wider-bandwidth VNAs and probe stations that go beyond its current evaluation environment.

Automation of measurement processes and enhanced traceability are also key challenges. As PCB types continue to diversify, the number of evaluation jigs is expected to increase, making asset management more complicated. To address this, Meiko Vietnam is exploring the deployment of efficient evaluation systems, including automated measurement solutions that combine VNAs with high-frequency probes, as well as multiplexers that enable automatic switching among multiple evaluation jigs. In addition, by integrating automated measurement systems into the production line and centrally managing measurement results for each PCB in a database, it aims to establish an environment in which high-frequency characteris-

tics data can be provided to customers on a per-product basis.

Through the construction of advanced high-frequency measurement environments and continuous technological innovation, Meiko consistently delivers solutions that exceed customer expectations. By accurately capturing evolving market needs and technology trends and further strengthening its ability to address higher-frequency requirements while improving production efficiency, Meiko is set to continue leading advances in the electronics industry — with Anritsu’s test and measurement solutions supporting its journey.