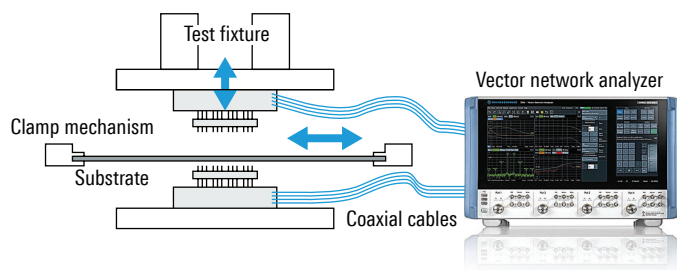


# RELIABLE TESTING OF FLEXIBLE PRINTED CIRCUIT BOARDS

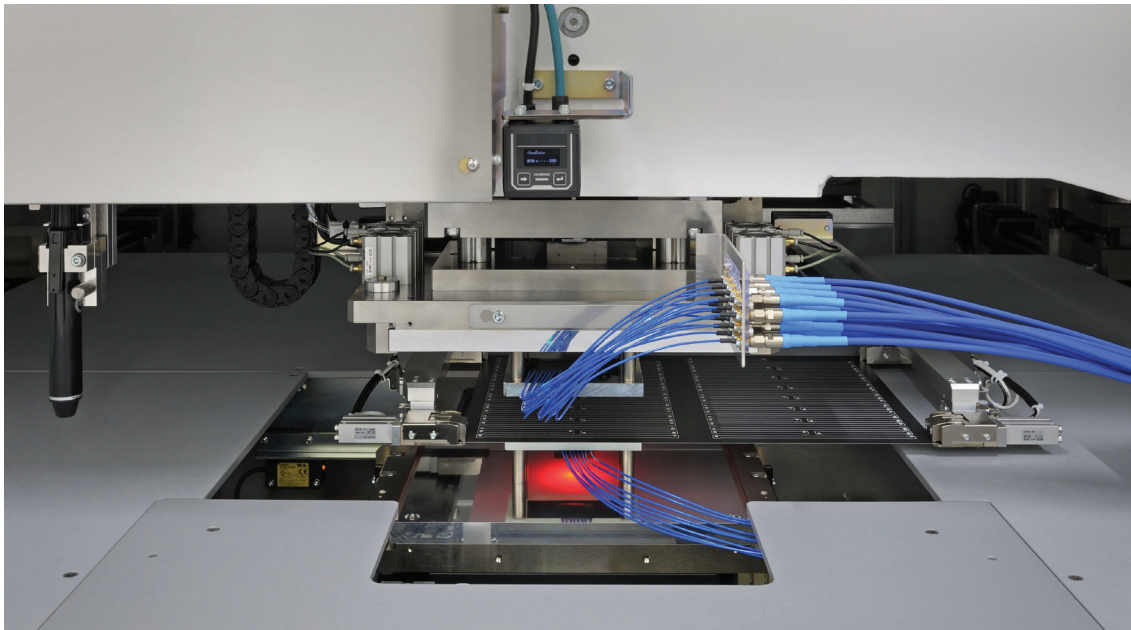
With the start and spread of 5G communications services and new form factors such as wearables and foldable phones, an increasing number of flexible printed circuit boards (PCB) that support high frequency signals are being produced. These boards must exhibit excellent frequency characteristics. In the past, a PCB's frequency characteristics were subjected to sampling inspection using a test coupon. For flexible PCBs, a new method is needed to provide repeatable and proper verification. The Yamaha® MP Series combined with the R&S® ZNBT vector network analyzer measure the high frequency characteristics of a production lot at high speed and high accuracy, enabling 100% measurement of mass produced rigid and flexible PCBs.

## Equipment configuration



## Your task

Antenna modules in 5G applications are produced using PCBs with low dielectric loss materials such as liquid crystal polymer (LCP) and modified polyimide (MPI). The high frequency transmission characteristics of PCB antennas cannot be ignored because they significantly influence the overall RF quality of the antenna module. This means PCB suppliers have to execute additional tests. In addition to conventional open and short tests, high frequency characteristic inspections of 20 GHz or more are required for these boards.



Automated testing is preferable to reduce test time and increase quality.

Application Card | Version 02.00

**ROHDE & SCHWARZ**

Make ideas real



**Yamaha® Fine Technologies solution**

The MP Series from Yamaha® Fine Technologies is a high precision microprobing system for high frequency PCBs. It accurately contacts the dedicated board panel jigs used in product design. The unique test fixture mechanism ensures proper positioning of flexible, rigid flexible and rigid PCBs for reliable and repeatable testing. By using a multiport vector network analyzer (VNA) from Rohde&Schwarz, multiple DUTs in the panel can be tested simultaneously with high accuracy and high speed.

Until now, the quality check was based on sampling and one-by-one manual inspection or was replaced by test coupon checks. With these methods, measurement errors due to operator mistakes occurred and accurate inspection was impossible.

Thanks to the features of the Yamaha® MP Series, it is now possible to automatically inspect all traces on the PCB.



The R&S®ZNB1 is a multiport vector network analyzer offering up to 24 integrated test ports. This VNA platform provides excellent multiport measurements when speed counts.



The Yamaha® Micro Prober MP Series precisely and automatically measures the frequency characteristics of high speed transmission PCBs.

This ultimately results in higher quality PCBs thanks to the detailed and precise automated measurements. The automation and high measurement speed provided by the R&S®ZNB-T allows customers to start mass production with a higher throughput.

### Rohde & Schwarz solution

The R&S®ZNB-T vector network analyzer performs high speed, high precision VNA measurements in a very compact multiport unit with up to 24 ports at frequencies up to 40 GHz. With a complete VNA channel behind each port, the R&S®ZNB-T offers short measurement times even in scenarios with a large number of ports. Other highlights include a wide dynamic range, high output power levels and inputs featuring high power-handling capacity. This allows testing beyond just test coupon measurements of insertion loss and reflection loss on 5G antenna PCBs. In combination with the functions of the Yamaha® MP Series, you can measure all the transmission characteristics of the traces on the board, enabling more reliable and automated quality assurance.

A plug & play test solution for mass production of high frequency printed circuit boards.

### See also

- ▶ [www.rohde-schwarz.com/product/ZNB-T](http://www.rohde-schwarz.com/product/ZNB-T)
- ▶ [www.yamahafinotech.co.jp/en/fa\\_products/mp\\_micro\\_prober/mp502/](http://www.yamahafinotech.co.jp/en/fa_products/mp_micro_prober/mp502/)



Simultaneous multiport network analyzer measurements with the R&S®ZNB-T

## Service that adds value

- ▶ Worldwide
- ▶ Local und personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

## Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Sustainable product design

- ▶ Environmental compatibility and eco-footprint
- ▶ Energy efficiency and low emissions
- ▶ Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

## Rohde & Schwarz training

[www.training.rohde-schwarz.com](http://www.training.rohde-schwarz.com)

## Rohde & Schwarz customer support

[www.rohde-schwarz.com/support](http://www.rohde-schwarz.com/support)

