

Identifying Problems Using Signalling Tester to Save Time for Quick Release

PAX Technology's Strategic Partnership with Anritsu

* The following presents an interview with PAX Computer Technology (Shenzhen) Co., Ltd. (hereinafter "PAX Technology") and Anritsu Corporation (hereinafter "Anritsu"), originally published in Chinese in EE Times China, translated and partially edited by Anritsu.

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The smart payment terminal market is experiencing a dynamic phase of growth, driven by innovation and evolving consumer demands.

This article explores the challenges of developing wireless POS terminals to achieve broader global acceptance.

The GUI-based software configuration test environment is intuitive and convenient; we can more easily focus on testing the functionality and performance of the payment terminals.

— Mr. Shi Lei, RF Manager, Hardware Department
PAX Computer Technology (Shenzhen) Co., Ltd.



Figure 1 Anritsu's Signalling Tester MD8475B at PAX Technology

PAX Technology is a world-leading provider of electronic payment terminal solutions and related services. They offer world-class, cost-effective, and superior-quality payment solutions.

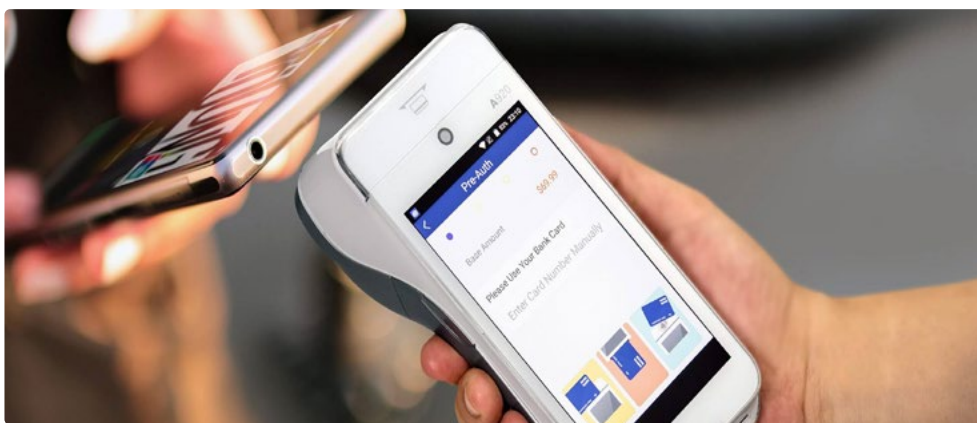


Figure 2 Example of PAX Technology's Smart Payment Solutions

Regulatory Testing is a Challenge to Tapping into Overseas Markets

Mr. Shi Lei, RF Manager, Hardware Department of PAX Technology, said that its smart payment terminal products need to obtain local approval before they can be introduced into individual regions around the world. "The laboratory responsible for regulatory testing in a certain country uses Anritsu's Signalling Tester (Base Station Simulator) MD8475B to perform some of the required tests." Mr. Shi Lei explains that at first, "we would encounter failure problems" during regulatory testing, and "when we returned to the R&D side in China, we might not be able to reproduce the problems due to the different testing environments and instrumentation." So, it was natural for PAX Technology to deploy the MD8475B in its local R&D center as well. This is probably the greatest advantage of building an "ecosystem" in the field of test and measurement.

Xu Jiang, business development manager of Anritsu (China) Co., Ltd., said that the general testing process for terminal products includes board-level R&D testing, terminal R&D testing, certification testing, and ultimately product launch. The R&D and certification testing phases include performance testing, safety testing, electromagnetic compatibility (EMC) testing, wireless communications quality testing, and reliability testing. One aspect of the wireless communications quality testing covers protocol, RF, and application, which are well covered by Anritsu's test solutions.

From the perspective of communication, smart payment terminals are similar to ordinary mobile phone terminals (one of the differences lies in the fact that the former is capable of reading bank IC cards, a function which needs to meet the relevant testing and certification requirements), and involve the testing of cellular communication such as 4G, Bluetooth®, and Wireless LAN (WLAN). Payment terminals are found in a variety of places and environments, and end customers always require the signal to be stable. So, it is imperative during laboratory and field tests to simulate whether signal fading can be switched to a base station with a good signal for communication. It's not easy to simulate," says Mr. Shi Lei.

As mentioned earlier, the MD8475B can be applied to terminal R&D testing and certification testing sessions. PAX Technology has introduced the MD8475B for pre-testing and the simulation of problems at the customer's site, especially for detecting problems before the regulatory tests, to improve the testing pass rate of legislative certification in global markets. It is said that the MD8475B contributes to saving time and reducing testing costs.

More specifically, PAX Technology uses the MD8475B for the 4G service application testing of smart payment terminals. PAX Technology maintains its own verification environment to confirm whether the RF signal transmitter and receiver performance of the terminal hardware meets the standard requirements. Within that verification environment, MD8475B enables PAX Technology to accelerate the time to the global market of their smart payment terminals.

However, PAX Technology's use of the MD8475B is not limited to the regulatory testing for expanding its worldwide business. Mr. Shi Lei also mentioned that the MD8475B's "GUI-based software configuration test environment is very intuitive and convenient, and given that we don't have to create test cases or understand signalling protocols, we can more easily focus on testing the functionality and performance of the payment terminals."

Testing Solutions to Save Time and Reduce R&D Costs

Anritsu offers two wireless signalling testers in its portfolio for application testing across different network standards: MD8475B and MT8000A. The MD8475B is primarily used for mobile terminal service application testing. It supports 2G/3G/4G — making it an ideal choice for PAX Technology's 4G service application testing of smart payment terminals. The MD8475B, as well as its wireless signalling testers, are essentially mobile communication base station simulators.

"The predecessor to the MD8475B was the Signalling Tester MD8470A, released in 2004, which was the first wireless network emulator for cellular application development. At that time, 3G cellular communication technology was emerging, in addition to basic voice communication, and rich services such as Multimedia Messaging Service (MMS), streaming media, web browsing, instant messaging, location-based functions, and video telephony," said Xu Jiang. "Therefore, mobile phone developers, network operators, and wireless communication engineers at the time urgently needed tools and platforms to test all 3G mobile phone applications, enabling faster development and deployment of 3G technologies."

Therefore, the MD8475B, which supports 2G/3G/4G, and the Radio Communication Test Station MT8000A, which supports application testing for 5G with Anritsu's software platform "SmartStudio NR," inheriting and enhancing the functions of MD8475B, have a solid pedigree. Judging from the press releases at the time of the product launch, the MD8475B was primarily focused on mobile phone terminals — at a time when smartphones had more diversified functions and applications, and when the volume of communications data was exploding.

"The key to achieving faster speeds is carrier aggregation, which can combine several component carriers together, and MIMO technology, which uses multiple-input and multiple-output antennas. The test environment becomes more complex due to the growing volume of wireless communications data. In addition, the requirement for inter-system radio access technology (Inter-RAT) testing with existing legacy systems requires a tester that can support simple and stable testing to evaluate UE performance. That's why PAX Technology adopted the MD8475B, which provides a 2CA-5CA test environment for LTE-Advanced terminal R&D, and of course, it also supports 2G/3G Inter-RAT test performance evaluation."



Figure 3 All-in-One MD8475B with Interactive SmartStudio Interface Supports Versatile Tests of Mobile Terminals

In addition to the parameters already marked on the product specification page, Xu Jiang summarizes the three major features of this signalling tester, including:

(1) Rich service testing capabilities, easy operation through a graphical user interface

The service test functions are designed to cover the maximum throughput, stress, power consumption, CS Fallback (CSFB), the reliability/stability of a call connection during cell switching, weak signal scenarios, LTE to WLAN offload, multi-PDN simultaneous services, SMS, etc.

(2) Single-unit support for multi-cell test environments, including cell re-selection, redirection, cell switching, CSFB, etc.

(3) Anritsu's software "SmartStudio Manager", which enables test automation

There are many instances where Anritsu has taken the initiative to mention the value of this product, given that the software can be edited to support different MD8475B test cases, while also supporting the automated and continuous operation of test cases.

Therefore, PAX Technology specifically mentioned in the interview that they selected MD8475B for the intuitive and convenient GUI-based software configuration of the test environment, which doesn't even require the creation of test cases or even an understanding of signalling protocols, allowing focus to be placed on the testing of the functionality and performance of the payment terminal, as well as the necessity for Latin American market access testing needs.

"The MD8475B supports rich terminal service testing with a single instrument and does not require the test engineers to be familiar with cellular communication protocols or programming. Even I don't know!" Xu Jiang said. This also cuts down on testing time and costs, ultimately speeding up the product's market launch.

Mr. Shi Lei added that Anritsu does not need to provide customized solutions for smart payment terminals because these are very similar to ordinary mobile phone terminals from the point of view of hardware testing. However, "Anritsu's technical engineers gave our test engineers operational training and usage guidance, which helped us to quickly get up to speed and develop our testing capabilities. After all, the MD8475B supports the customization and edition of test cases for automated testing. I believe this aspect of its capabilities will allow us to further realize the potential of the MD8475B in the future."

"When purchasing this type of test equipment, in addition to the requirement for the vendor to deliver the hardware on schedule and be able to realize the required functionality, a very important point is the after-sales warranty and technical support services. Anritsu has local technical engineers in Shenzhen who can respond quickly to our technical support needs." Mr. Shi Lei said of Anritsu's service offerings. "In addition, the upgradeability of the product should also be considered - something Anritsu is committed to providing. Customers of upstream products also emphasize sustainability and potential value."

Keep Exploring More Possibilities in the Future

The adoption of the MD8475B by PAX Technology can be considered a typical application of this base station simulator. "In our view, it's also a part of Anritsu's existing business development ideas to explore the potential market composition," Xu Jiang said. The MD8475B is primarily used by mobile device vendors, mobile phone terminal chipset vendors, cellular communication module vendors, mobile terminal software/system vendors, mobile operators, certification laboratories, and so on.

"Some customers use the MD8475B to validate the performance of terminals or chipsets for various services; others use it as part of a test system to complete terminal conformance certification testing." In the case of PAX Technology, overseas certification and testing organizations are also Anritsu's customers.



Figure 4 PAX Technology Refines the Intuitive Smart Payment Experience for End Customers

It is worth mentioning that Xu Jiang also stated that "we have also provided the MT8000A to customers requiring the evaluation of 5G applications. With the evolution of customers' product iterations, further application opportunities are likely to arise." The MT8000A supports the 4G/5G network standards and provides integrated support for RF testing, protocol testing, and application testing.

Anritsu's test solutions assist PAX Technology in refining the intuitive smart payment experience for end customers by delivering an optimized process that ensures the stability of their wireless POS terminals.

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