Anritsu Advancing beyond

Anritsu Taps Xilinx Zynq® UltraScale+™ RFSoC for High-Performance and Scalable 5G NR Test and Measurement Platform

Anritsu Leverages Xilinx Device to Deliver Multi-band and High-Speed ADC/DAC Functionality While Minimizing Power Consumption in its MT8000A Radio Communication Test Station

AT A GLANCE:

Anritsu's flagship measuring instrument business provides products and services that are critical to the development, manufacture, and maintenance of communication systems. The company also has products in other fields, such as IP networking and inspection equipment for food and pharmaceutical products.

Industry: Test & Measurement
Location: Kanagawa, Japan
https://www.anritsu.com/

Figure 1. Anritsu MT8000A Radio Communication Test Station

SUMMARY:

Anritsu's products and services are used in the development and maintenance of a wide range of communications systems. The company was looking to create a versatile and scalable test platform for developing chipsets and mobile devices for 5G NR applications. It wanted the tool to support RF and protocol testing for sub-6 GHz and mmWave environments with broadband signal processing and beamforming technology and be expandable for future technology evolutions. To achieve these results and be market-competitive, the tool would need to deliver multi-band and high-speed analog-to-digital (ADC) and digital-to-analog (DAC) conversions without significantly increasing power consumption.

The result was Anritsu's MT8000A radio communication test station. Using programmable logic on the Xilinx Zynq platform, Anritsu was able to create a tool that delivered the desired functionality without a significant increase in power use, while leveraging its modular, software-defined architecture to create a path for easier product upgrades down the road. "And, because of the Zynq RFSoC's high level of integration, the company was able to achieve faster time-to-market (TTM)."

CHALLENGE:

To support a broad range of features from sub-6 GHz basic to mmWave testing, the MT8000A would need to deliver multiple channels of high-speed throughput over a 5 Giga samples-per-second (5Gsps) DAC. This type of solution would typically require a significant amount of power.

The company's goal was to achieve the desired functionality in a robust, new test platform while keeping power consumption to a minimum.

SOLUTION:

With a 5G base station emulation function, the MT8000A test platform provides all-in-one support for RF measurements and protocol tests in both the FR1 (to 7.125 GHz) and FR2 (millimeter wave) bands used by 5G. Combining it with an over-the-air RF chamber (MA8171A), it enables both millimeter-wave band RF measurements and beamforming tests using call connections specified by the 3GPP.

The MT8000A system supports existing LTE test environments and offers a modular architecture that provides a flexible environment for future 5G test requirements, including Ultra-Reliable Low Latency Communications (URLLC) and massive Machine Type Communications (mMTC). With its SmartStudio NR MX800070A software platform, some functional tests can even be performed by GUI operation only without requiring difficult scenario development.

Anritsu had considered an SoC solution with external ADC and DAC that could deliver the needed 5Gsps throughput, however the Xilinx solution was able to offer the ADC and DAC integrated into a single-chip package. This saved the company both in overall cost and time-to-market, and also helped reduce power consumption.

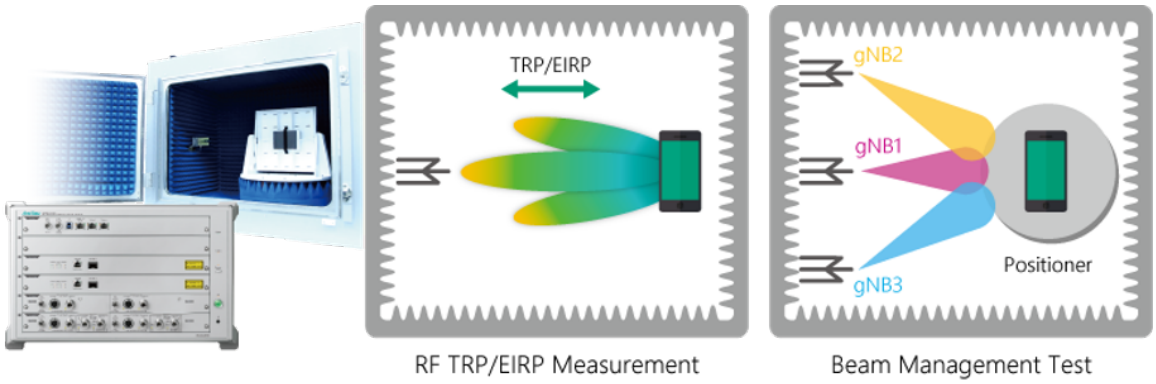

Figure 2. Example of Millimeter-wave Band RF/Protocol Test in Combination with RF Chamber

RESULTS:

“The features of the Zynq UltraScale+ RFSoC are very good, and the one-chip solution really helped us reduce our design resources,” said Hiroyuki Kato, Director for Marketing Dept. at Anritsu.

“Thanks to Xilinx, we were able to release our 5G test product with fast TTM and expand our business,” Kato said.

ADDITIONAL RESOURCES:

Learn More about Xilinx’s Zynq UltraScale+ MPSoC
Learn More about Anritsu

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