



Samsung Semiconductor India Research Automates 5G Field-to-Lab Validation

Wireless Communications and 5G Device Test

Based on press release June 25, 2024



Keysight Streamlines and Automates Samsung
Semiconductor India Research's 5G Field-to-Lab Workflow

01**Company**

R&D arm of Samsung Semiconductor based in Bengaluru, India

02**Solutions**

Keysight Signaling Field-to-Lab (S-FTL) test automation solution

03**Challenge**

Replicate complex 5G field issues quickly and accurately in the lab

04**Results**

Faster field-to-lab replication and more time spent improving user experience

As 5G deployments scale, mobile operators, device makers, and chipset manufacturers must resolve field-reported issues quickly to protect quality of experience. Replicating a complex real-world scenario in the lab, however, means analyzing field logs that are often incomplete or contain errors, a slow, manual process.

Samsung Semiconductor India Research (SSIR) is using the Keysight Signaling Field-to-Lab (S-FTL) solution to automate this workflow in its Bengaluru lab, converting device field logs into precisely replicated protocol test scripts.

“**Balajee Sowrirajan****Corporate EVP & MD, SSIR**

Our partnership with Keysight has leveraged each of our strengths to recreate real-world field scenarios in a lab environment. This collaboration has accelerated the resolution of communication and connectivity issues for our wireless modem customers. With a comprehensive set of tools and techniques for testing, the S-FTL solution enables our engineers to identify and resolve communication issues more accurately. This has also helped to significantly save validation costs and turnaround time. In a nutshell, it has ensured reliability and cost-effectiveness, the two most critical components in today's rapidly evolving telecommunications landscape.

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The Challenge

As 5G continues to be deployed, the focus has shifted to ensuring users receive the highest quality of experience (QoE) by rapidly resolving issues reported from the field.

A significant challenge is replicating complicated field scenarios in a lab environment to identify possible solutions. This involves the complex, time-consuming process of analyzing field logs, which are often missing data or contain errors, in order to replicate the issues.

To assist its global customer base, SSIR sought an intelligent test automation solution that could replicate field issues in its Bengaluru test lab, and that would let its engineers focus on addressing field issues rather than analyzing logs or creating test cases.

The Solution

SSIR chose the Keysight S-FTL solution because it enables automated test case creation from device field logs. Based on the S8701A 5G Protocol R&D Toolset, the solution analyzes field logs for 5G / 4G and IMS, makes protocol-based adjustments to ensure protocol-compliant behavior, and then replicates the field scenario as a test script.

The S-FTL solution features an open input log template that accommodates various formats, enabling faster adoption into the workflow. By using the solution, SSIR has significantly reduced the time it takes to replicate field scenarios in the lab and increased the time its engineers spend on improving end-user QoE.

The **S8701A Protocol R&D Toolset** provides the underlying 5G / 4G and IMS protocol engine for the S-FTL solution, enabling automated, protocol-compliant test case generation directly from device field data.

By using the Keysight S-FTL solution, SSIR has helped resolve a wide range of issues from real-world scenarios such as voice / data calls, handovers, 5G to 4G mobility, and carrier aggregation for deployments ranging from single SIM, dual SIM, and dual connectivity. See the **Signaling Field to Lab Demo Video** for a look at the solution in action.



Protocol Control Software

UXM 5G Wireless Test Platform

Figure 1. The S8701A Protocol R&D Toolset running SSIR's protocol control software (left) alongside the Keysight UXM 5G Wireless Test Platform (right) used to replicate field scenarios in the lab.

Results

"We are pleased to support SSIR's strategic goals in the current 5G technology phase of network rollout and field integration testing," said Cao Peng, Vice President and General Manager for Keysight's Wireless Test Group. "Keysight's automated software-based chipset and device test solutions for replicating field issues are designed to help improve the efficiency of the process. Keysight is committed to delivering test solutions that help accelerate the commercial introduction of 5G devices and networks to 5G leaders such as SSIR."

For SSIR, the collaboration has translated into faster root-cause analysis, lower validation costs, and more engineering time devoted to improving the end-user experience across its wireless modem portfolio.

The Keysight S-FTL solution continues to support SSIR as 5G networks and use cases keep evolving, helping ensure reliable, cost-effective testing as complexity increases.

Conclusion

Samsung Semiconductor India Research's adoption of the Keysight S-FTL solution shows how test automation can close the gap between field-reported issues and lab-based root-cause analysis.

By automating the translation of device field logs into replicated protocol test scripts, SSIR's engineers can spend less time building test cases and more time resolving the issues that matter most to end-user quality of experience.

As 5G networks and devices continue to evolve, Keysight remains committed to helping chipset manufacturers, device makers, and mobile operators like SSIR accelerate the commercial introduction of reliable, high-performing 5G technology.

Related Information

- [S8701A Protocol R&D Toolset product page](#)
- [Signaling Field to Lab Demo Video](#)
- [5G Signaling Field to Lab Solution flyer](#)
- [Keysight Streamlines and Automates Samsung Semiconductor India Research's 5G Field-to-Lab Workflow](#), June 25, 2024 press release

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