

Emulating Real-World RF Impairments: A solution with Calian DSA and SFD



In today's cable access networks, performance under real-world conditions is non-negotiable. The SCTE 40: Digital Cable Network Interface Standard outlines a demanding set of impairments – AWGN, AM hum, phase noise, narrowband interferers, and micro-reflections – that must be present simultaneously to accurately simulate operational environments.

Traditionally, these impairments are emulated using physical setups involving cables, splitters, and attenuators. This method is time-consuming, inconsistent, and difficult to scale – especially in fast-paced lab and production environments.

Calian is reimagining this process with a digitally-driven, high-fidelity approach to DOCSIS RF impairment emulation.

Smarter Channel Emulation with Calian DSA & SFD

Calian has formulated a powerful new approach to DOCSIS channel emulation – one that brings together its advanced signal analysis and generation technologies to digitally replicate real-world RF impairments with precision and flexibility.

By combining the capabilities of the Calian DSA DOCSIS Signal Analyzer and the SFD DOCSIS Signal Generator, this solution is designed to emulate impairments such as AWGN, AM hum, phase noise, narrowband interferers, and micro-reflections directly on signals generated by a CMTS or Remote PHY Device (RPD). This enables SCTE 40-compliant testing without the need for complex physical setups.

The solution leverages high-fidelity signal processing to deliver real-time emulation, making it ideal for lab environments, R&D workflows, and production testing. Scalable to support various spectrum bandwidths and rack-mountable for compact deployment, this solution is engineered to streamline DOCSIS validation and accelerate innovation.



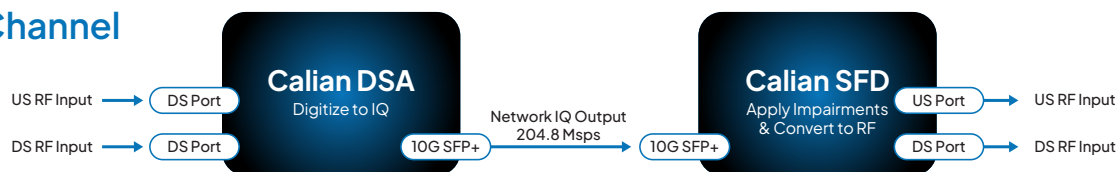
Solution for Lab Integration

- Scalable to meet various spectrum bandwidth requirements
- Rack-mountable in a standard 19" server rack
- Compact and turnkey for lab environments, R&D, and production testing

Key Benefits

- Streamlined SCTE 40 compliance testing
- Reduced reliance on physical test setups
- Scriptable control for repeatability and accuracy
- Real-time impairment emulation on live DOCSIS signals

Single Channel



Multi Channel



Contact Calian today

to learn more about enhancing your real-time impairments emulation capabilities