

Spirent Elevate®

Audio Quality Testing

Delivering higher quality of experience for next-generation wireless services

The experience matters. VoLTE and VoWi-Fi are positioned to deliver a better user experience than Over-the-Top (OTT) and legacy services. Accurate measurement of Key Performance Indicators (KPIs) is essential to evaluate everything that can affect that experience. Spirent offers industry-leading audio quality (AQ) test solutions that are designed to closely replicate live networks in a lab environment for repeatable, reliable, diagnostic results.

Benefits

- Reduce expenses: low-cost, small footprint platform tests devices across multiple network technologies
- Increase productivity: parallel testing enables faster overall test completion
- Trusted results: same industry-leading measurement system used in the field and lab for accurate MOS comparison

Why Spirent?

- Accuracy: state-machine-driven core more closely resembles live network behavior than script-driven alternatives
- Breadth: internal IP impairments replicate real network scenarios on the uplink and downlink
- Expertise: Spirent AQ experts contribute to key standards development and can assist in creation of associated test plans

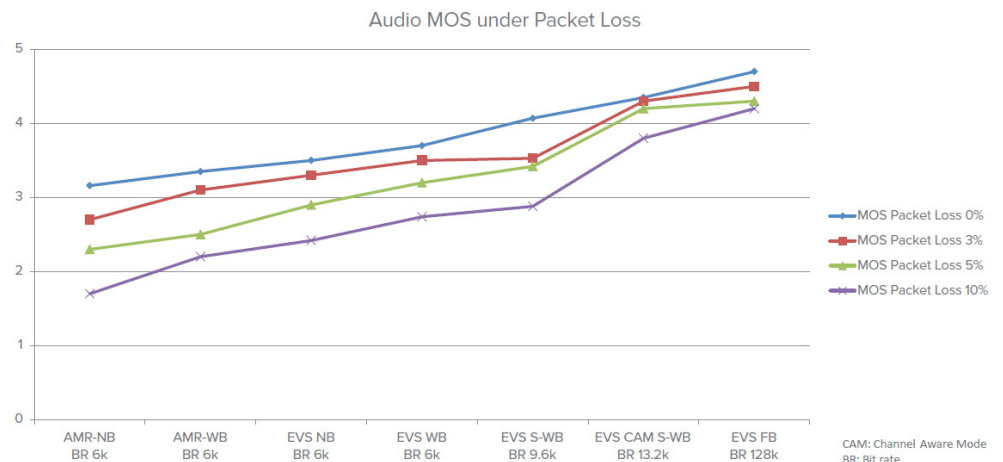
As wireless devices expand capabilities and grow to cover multiple network technologies, it is crucial to maintain a high Quality of Experience (QoE) for essential voice services. This is complicated due to possible service interaction and the necessary integration of the underlying network technologies within the device. As a result, comprehensive AQ device testing must encompass detailed evaluation of functional and QoE KPIs, including:

- Latency, jitter, packet loss, and signal-to-noise ratio (SNR)
- Mean Opinion Score (MOS) on the downlink and uplink via PESQ and POLQA voice quality algorithms

Applications

Spirent has been working with leading chipset/device manufacturers and carriers to understand device characteristics and develop test plans that fully evaluate VoLTE and VoWi-Fi, to ensure they deliver an improved user experience. Spirent's expertise can help determine the right course for testing based on an organization's primary concerns, guide the creation of test plans that meet criteria focused on those concerns, and implement those test plans on our industry-leading solutions. Test applications include:

- Issues related to low MOS, such as packet loss and codec (AMR-NB/AMR-WB/EVS) negotiation failure
- AQ during various mobility and Wi-Fi offload scenarios
- Evaluation of the potential for implementing EVS codecs to improve QoE and network efficiency
- Effects of delay, noise floor and other parametric areas on overall QoE



Evaluation of MOS under varying codecs, bit rates, and packet loss

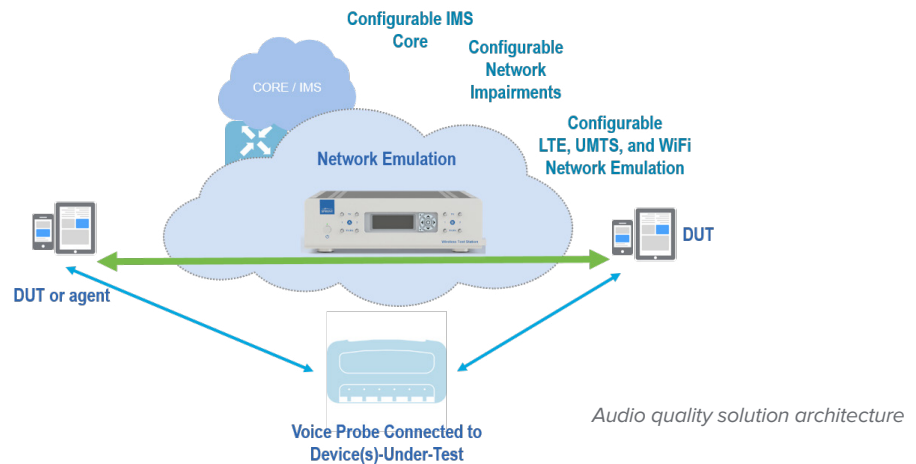
Spirent services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirent.com or contact your Spirent sales representative.

EVS implementation experience

For superior audio performance. The Enhanced Voice Services (EVS) codec is rapidly gaining momentum with chipset and device manufacturers, as well as global wireless carriers. It delivers audio at levels of quality similar to those available through streaming and downloading, and enables clarity for conversations even when there is significant background noise. Additionally, it can help operators save precious network resources while maintaining similar expected QoE, and compensates for packet loss and other audio impairments.

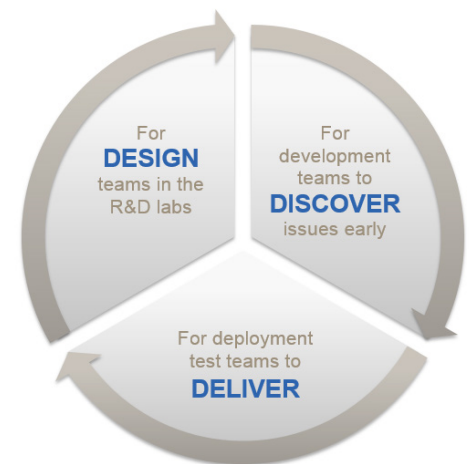
Spirent understands EVS challenges. Testing the implementation of EVS codecs is challenging due to the sheer size of its feature set; extensive and realistic testing is necessary to ensure devices provide the expected superior QoE. Spirent experts have been instrumental in developing EVS test plans for major wireless carriers, working side-by-side with them, both in the field and the lab, to determine the correct objectives for functional and QoE testing, draft the appropriate test cases to align with those goals, and run through the implementation of the plan to completion and adaptation.



Spirent Elevate provides access to an end-to-end network in a compact and flexible solution to support device testing of multiple emerging wireless needs:

- **Audio Quality** for voice services, such as VoLTE and VoWi-Fi
- **Video Quality** for rich media experiences; streaming, chat
- **Battery Life** for testing drain and power consumption
- **Inter-carrier Traffic** to ensure QoE for device interoperability
- **Cellular Off-Load** to ensure QoE for LTE/3G to Wi-Fi mobility
- **Location Services** for testing emergency call scenarios over LTE and Wi-Fi
- **Internet of Things (IoT):** to address new types of devices with unique challenges and testing needs

Spirent Elevate integrates the Wireless Test Station, ProLab IMS Testing Suite and User Experience measurement systems, along with other key components, to deliver unparalleled device-to-device testing capabilities.



Spirent Elevate provides a comprehensive all-in-one approach throughout the mobile device lifecycle

spirent.com

AMERICAS 1-800-SPIRENT
+1-800-774-7368 | sales@spirent.com

US Government & Defense
info@spirentfederal.com | spirentfederal.com

EUROPE AND THE MIDDLE EAST
+44 (0) 1293 767979 | emeainfo@spirent.com

ASIA AND THE PACIFIC
+86-10-8518-2539 | salesasia@spirent.com