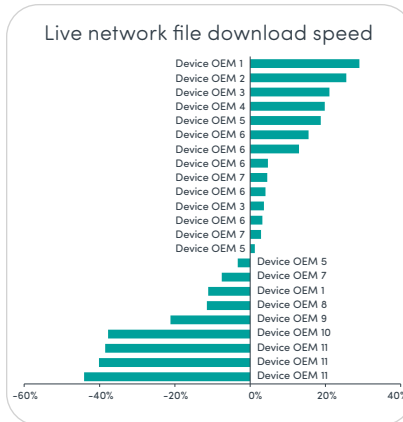


# Spirent Managed Solutions

## Fit4Launch—Testing Service for 5G Mobile Devices

### The Challenge: All Devices are Not Created Equal

The device and its interaction with the network shape all aspects of the user’s experience of mobile services. The device is the lens through which the customer perceives both the network and the service. In this sense, the device IS the experience. As competition to attract and retain subscribers becomes increasingly intense, understanding which devices deliver the best experience is more important than ever.



#### How is the best delivered experience determined for mobile devices?

**Support complex validation criteria.** Devices perform differently depending on a complex set of factors including radio environment and band, specific network and device configuration settings, chipsets and other components, and the overall device design. The bottom line: the only way to know which device models deliver a superior user experience is to evaluate the device in the actual live network, or in some cases, in lab conditions which emulate the live network.

**Measure against gold standard reference handsets.** Performance should be defined relative to reference devices and to the operator’s handset portfolio. Proven test methodologies and established best practices should be applied by a well-established vendor-neutral industry expert in mobile device testing, with specialized expertise in 5G.

**Focus on end-user experience.** To ensure user experience on a mobile device before launch, mobile quality of experience (QoE) testing is required to measure the perceived user experience on new devices. Testing parameters must cover voice quality, data performance, video quality, application performance, and location accuracy—to predict real-world performance and acceptance. This must be performed in multiple locations and conditions: venues, urban and rural—driving, walking and stationary. Device performance results must be verifiable and repeatable, and subject to independent audits.

#### How can this be achieved in a cost-effective way?








Device Ranking Balanced Scorecard

Device Model	Weighted overall rank	Voice experience	Video experience	Data experience	Location experience
Model A	1	1	2	2	3
Model B	2	3	1	1	2
Model C	3	2	4	5	1
Model D	4	2	3	4	5
Model E	5	5	5	3	4

**Proper 5G device certification must enable all your devices to be rated based on user experience.**

## Highlights

- Data experience (5G, LTE)—Live network and Lab (emulated network)
- Video experience—Live network and Lab (emulated network)—OTT & Video chat
- Voice experience (VoNR, VoLTE, VoWi-Fi, 3G)—Live network and Lab (emulated network/channel)
- Cloud Gaming—Live network and emulated gaming service
- Location and Emergency Services accuracy—Live network

-  Web browsing
-  File transfer
-  Video
-  Speech
-  Call
-  Cloud Gaming
-  Location

## The Solution: Fit4Launch— Testing Service for 5G Mobile Devices

Spirent Fit4Launch testing solution for 5G Mobile Devices stems from our work of over 16 years with leading operators and device manufacturers evaluating the user experience of thousands of device models. We have developed a set of best practices for evaluating and comparing user experience across devices. These best practices work for any device and any network technology from 5G to VoLTE to Wi-Fi to 3G. Most importantly, the best practices include a robust statistical approach that ensures the best and worst performing devices are reliably identified.



### Business value:

- Rank the user experience of all devices on your network with a turnkey service managed by Spirent
- Implement effective marketing campaigns and customer retention initiatives by understanding which devices deliver the best experience on your network
- Prevent high rate of device returns and reduce customer churn by finding issues before they get to the customer
- Improve user experience by working with device manufacturers to improve inferior performing device models

**The Fit4Launch Solution.** Fit4Launch evaluates the key factors that impact the user experience of calls: data, video, and voice for 5G, 4G LTE, Wi-Fi, and 3G services. Our user experience metrics include web browsing speed, file download speed, latency, video smoothness, video MOS, call setup time, call setup success and retention, speech quality, conversational speech delay, and more.

#### Data experience (5G, LTE)

- **Live network:** File transfer speed (HTTP/FTP) in stationary & mobile environments; Streaming data speed (UDP) in stationary & mobile environments; Web browsing speed in stationary & mobile environments; File transfer during simultaneous voice & data service usage; One-way latency (jitter, packet delays and packet loss)
- **Lab (emulated network):** File transfer speed in degraded channel; Wi-Fi throughput; Tethered file transfer speed; LTE file transfer speed

#### Video experience

- **Live network:** Video calling in stationary & mobile environments; Video streaming for OTT applications
- **Lab (emulated network):** OTT video streaming and video calling

#### Voice experience (VoNR, VoLTE, VoWi-Fi, 3G)

- **Live network:** Speech quality in stationary & mobile environments; Call initiation & retention in stationary & mobile environments; Network edge retention; Speech & calling during handover; Speech and calling during simultaneous voice & data service usage
- **Lab (emulated network):** Speech quality in degraded channel; Speech quality by codec; Speech quality in noise (p.835, PESQ, g.160); Handset & speakerphone acoustic speech quality and loudness; Bluetooth speech quality; Echo cancellation & double talk

#### Location experience

- **Live network:** Control and user plane location accuracy, time to first fix and yield, z-axis testing

## Why Spirent Fit4Launch?

Our customizable testing for 5G Mobile Devices solution doesn't just measure the experience – we also provide critical data for triaging the root causes of poor user experience. Our analytics use RTP and RF data to help isolate root causes impacting the device, network, or QoE, IP and RF device-network interaction. Our lab-based tests use emulated network nodes to isolate device-specific issues related to RF performance, codec, or noise-cancelling algorithms. Our packet capture and RF logs provide in-depth understanding of the issues affecting specific devices. We know how critical time to market is. That's why we provide results for each device we evaluate in a matter of days. Depending on the specific evaluation program, results are available 5-15 days after receipt of devices.

## Benefits to the 5G Ecosystem

### Device OEMs

- Improves device quality and identifies issues prior to market release
- Reduces device returns and NTFs
- Reduces time to market and accelerates acceptance with R&D/Pre-Test

### Service Providers

- Assures new mobile devices meet carrier performance standards before they go to customers on their network
- Optimizes overall user experience by comparing device performance across suppliers and enables improvements over time

### Chipset Vendors

- Improves chipset quality
- Gains critical tools for measuring performance of new technologies (5G data or HD/4K video)

## Case Study: Fit4Launch Certifies Mobile Devices

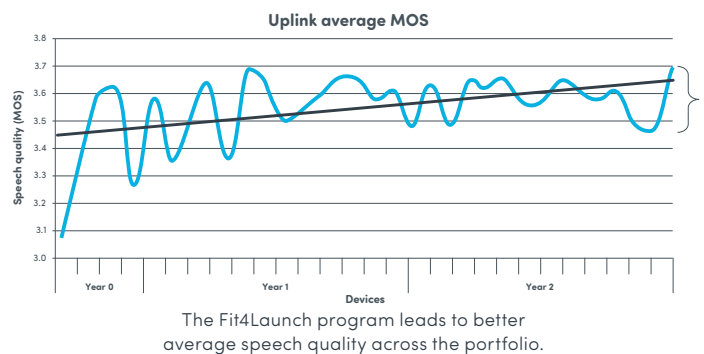
**The Challenge.** A national operator needed to assure customer QoE and protect their brand. Poor performance by devices significantly impacted the user experience, increased churn, device returns and support costs.

**The Solution.** Spirent Fit4Launch program has been in place for over 18 years and has expanded today with cutting-edge services from 3G through 5G. The operator works with Spirent to evolve the test scope as new services and networks are launched.

**The Impact.** The program continuously captured QoE problems that negatively impacted customer experience and the operator brand and continues to do so. As a program partner for over a decade, the operator works with Spirent to evolve the test scope as new services and networks are launched. The Fit4Launch program demonstrates measurable improvement in key QoE metrics such as speech quality and throughput and fosters a consistent and excellent experience across the device portfolio.

Solution benefits included:

- Improved QoE across the device product line
- Worked with leading vendor-neutral experts in the field
- Reduced Capex and Opex expenditures with targeted testing and remediation of issues



## The Global Services Delivery Process



**Discover:** Gather requirements; perform gap analysis

**Define:** Identify solutions that scale seamlessly to integrate flexibly with disparate systems; present roadmap; illustrate ROI

**Develop:** Create next-gen end-to-end solutions driven by our technology and service portfolio

**Deliver:** Manage projects; ensure outcomes are measurable, tracked by KPIs and improved over time

**Debrief:** Ensure customer requirements and expectations have been met

### Our Customers

Spirent has been a pioneer since the advent of network, wireless and GNSS testing, validation and assurance, and has provided services to customers across a broad range of global industries. These varied business sectors include global navigation satellite systems, aircraft and automotive manufacturers, as well as telecommunications and wireless service providers, network equipment manufacturers, petroleum, education, the media, financial institutions and stock exchanges, technology enterprises and publishing giants. Spirent also services governments worldwide, which includes military and space agency projects.

### Spirent Expertise

Spirent provides services expertise for all major communications vendors — **from Lab to Live**. This end-to-end proficiency draws from a deep bench of seasoned professionals who are qualified experts in our technology portfolio. Our services cover devices, infrastructure, cloud infrastructure, networks, network applications, security and assurance, all powered by state-of-the-art lab and test automation. Such industry expertise maximizes your solution capabilities and ensures you deliver your product or service to market on time and with optimal quality.

## Spirent Services Portfolio

Spirent's Fit4Launch Testing for 5G Mobile Devices is part of a comprehensive suite of services and solutions. Spirent's portfolio of services for an initiative's entire lifecycle – **from Lab to Live** – helps organizations achieve their short-term testing and validation goals, while building a strong framework for future and enduring business success.



### Managed Solutions

Performing strategic operational functions for customers:

- Lab as a Service
- Test as a Service
- Certification as a Service
- Deployment as a Service



### Product Services

Enabling customers to realize optimal use of Spirent products:

- Implementation & Integration
- Product Training
- Resident Engineers
- Product Support



### Consulting Services

Supporting custom projects, helping customers with specific strategies and objectives:

- Assessments & strategy
- Planning & design
- Network architecture & engineering
- Test methodologies

For more information on Spirent's Product Services, please visit: [www.spirent.com/products/services-managed-solutions](http://www.spirent.com/products/services-managed-solutions)

### About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled. For more information visit: [www.spirent.com](http://www.spirent.com)

#### Americas 1-800-SPIRENT

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

#### Europe and the Middle East

+44 (0) 1293 767979 | emeainfo@spirent.com

#### Asia and the Pacific

+86-10-8518-2539 | salesasia@spirent.com