Spirent **Umetrix® Data | 5G**

Assuring the user experience of wireless
data services at challenging new thresholds

Make Way for Ultra-Fast Data Speeds

The telecom industry is facing many complex challenges as wireless network infrastructure and devices begin to approach new 5G standards, which assume much loftier goals than 4G LTE.

The ITU-R (ITU Radiocommunication Sector) has an ongoing program to develop guidance for "International Mobile Telecommunications for 2020 and beyond," known as IMT-2020. IMT-2020 broadly categorizes 5G application and usage scenarios into the following three fields:

1. Ultra-reliable and low latency communications (URLLC)
2. Massive machine type communications (mMTC)
3. Enhanced Mobile Broadband (eMBB)

Challenging new goals compared to 4G

100x peak data rates (20Gbps+)
100x density (1M devices/km²)
100x traffic capacity
10x experienced throughput
10x decrease in latency (1-5ms)
3x spectrum efficiency

✓ Where Umetrix Data can help

The third category is what most consumers think of when they talk about "5G." Assuring that 5G meets the promise of delivering data rates approaching 20Gbps+ as specified in eMBB requires more than just FTP and a fast server. That's why Spirent has been working with key industry partners to design a high-speed test bench that allows a 5G cellular data system to be benchmarked, measured, and tuned for maximum performance while minimizing a user's exposure to its underlying complexity.

Evaluating 5G Data Throughput Performance

The Umetrix Data 5G platform **enables mobile application data throughput testing in both the lab and the live network** across a common solution to support eMBB requirements and speeds. With Umetrix Data, users can compare and evaluate user experience for any data service over 5G, Wi-Fi or LTE. Test scenarios mimic real-world user activities such as upload, download, browsing, streaming, and latency test cases.

The Umetrix Data client is a mobile application that runs on iOS, Android or Windows devices and can be configured to coordinate critical multi-service voice and data tests via establishing data sessions then initiating voice calls during data transfer (in conjunction with Umetrix Voice).
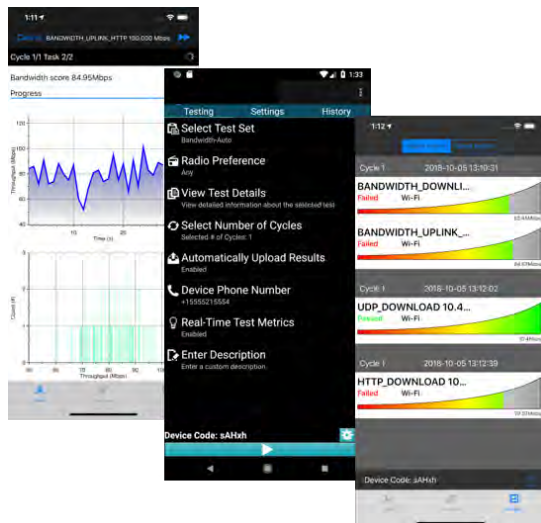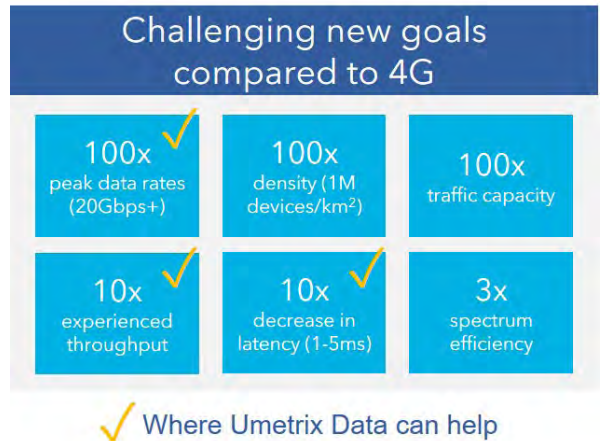
Umetrix Data 5G evaluates:
- Web browsing
- File transfer
- Multi-service
- RF status
- Diagnostics

## Specifically Designed for 5G Requirements

Due to new high-performance data requirements, 5G application testing requires not only high-speed data throughput capabilities but also massive amounts of storage for packet logging: a 10Gbit/s network at full capacity can generate over 100TB of log data per day, while a 20Gbit/s network can generate twice that.

With this in mind, Umetrix Data 5G supports 10Gbit/s+ capacity and RAID 10 storage for the best combination of redundancy and I/O performance, which is critical for network logging to ensure 100% of the data is captured. The solution includes hosted-cloud and/or lab endpoints, which allow organizations to experiment with new 5G application requirements in the lab and then use components of the same platform to measure results in the live network.

Use Cases | 5G Application Testing

For networks: Connecting a 5G network between two instances of Umetrix Data 5G test servers allows users to tweak settings in the network, observe the impact on data throughput performance and user experience, then inspect the logged packets to determine root cause of any issues.

For devices: A 5G device can be inserted in place of one of the test servers to evaluate the data throughput performance of the device while streaming multiple applications.
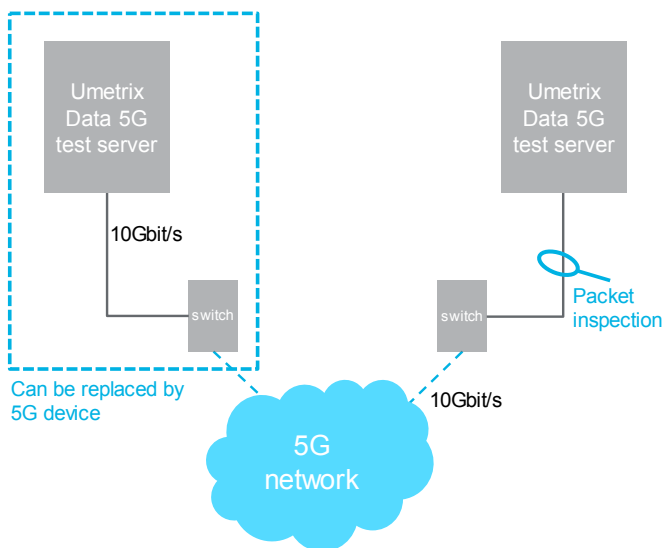
Umetrix Data 5G use case

Solution Benefits

- **Augments field evaluation** with lab testing earlier in the development process

- **Ensures test methodology** is consistent across lab and field; easily correlate lab and field test results for faster root cause analysis

- **Guarantees theoretical 5G application throughput** in simulated networks

- **Significantly reduces R&D test costs** via easy 5G test setup and configuration compared to other systems

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Testing 5G Apps | Practical Observations

Spirent has made several beneficial observations in designing a high-speed test bench through early performance evaluations with key industry partners:

- Testing **multiple application protocols** is important to account for **differences in network routing**

- Testing application data in **multi-stream scenarios** is important to measure **maximum network bandwidth**

- It is essential that all nodes in a given 5G test environment support a **Maximum Transmission Unit (MTU) of 9000 bytes** to achieve the highest possible throughput

To learn more about 5G data throughput test setups, trials and performance evaluation, Contact Us. For a more detailed overview on Umetrix Data capabilities, reference our datasheet.

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