

# 5G and the LTE Evolution

With the industry's focus on 5G technology deployment, the next generation of wireless communication as we know it is seemingly right around the corner. As with any new technology turn, there will be a number of challenges and opportunities that arise alongside its commercial launch. Regardless, it's exciting to witness the evolution that will ultimately reshape the way people—and things—communicate.



From a financial perspective, 5G revenue potential will greatly impact the industry, bolstered by wider bandwidths and faster networks. By 2025, worldwide revenues from 5G services expect to top nearly \$250 billion annually, according to industry forecasts. Expectations are high for 5G. 5G technology will build on existing investments and infrastructure from today's advanced LTE networks, in addition to introducing some entirely new

technologies never before used on such a massive, commercial scale. Soon mobile operators will have to make the decision as to whether or not they will continue to squeeze out more bandwidth and performance out of their existing LTE technology with higher levels of carrier aggregation, modulation, and unlicensed spectrum, or make the leap to 5G NR, with its 10-20X improvement in bandwidth but requirement for new equipment and infrastructure.

But perhaps the most impressive expectation is that 5G will allow cellular technology to expand into markets (and uses) that have not been imagined yet. First, this new technology will create endless opportunities as it enters the world of machines, with applications such as autonomous vehicles, wearable consumer devices and the ability to connect millions of remote industrial sensors.

## LTE Sets the Foundation for 5G

It's undeniable that 5G has plenty of moving parts—from sophisticated beam-forming antennas to the use of very high frequencies at millimeter wave. None of this would be possible without the foundation already built by LTE. Continuing advancements in LTE are establishing the foundation for 5G. Gigabit LTE, for example, has the ability to deliver much higher data rates than standard LTE by leveraging some key capabilities that were previously introduced by 3GPP, such as MIMO,



Carrier Aggregation and 256 QAM. As both a precursor and foundation for 5G, the continuing evolution of LTE will accelerate the expansion of mobile into new vertical markets such as C-V2X, the Internet of Things (IoT) and much more.

In order to ensure a smooth and timely deployment, it's critical that all aspects of testing have been taken into account and seamlessly integrated into the development and deployment cycles. Rohde and Schwarz was influential in making the 5G testing standard a reality – and it's reflected in our market-leading 5G product portfolio.

As the leader in LTE test and measurement, and one of the first industry partners to generate and analyze pre-5G signals, Rohde & Schwarz is an industry leader in 5G testing, offering

equipment that fits all aspects of 5G testing from R&D, to manufacturing and conformance test, to field deployment. Our innovative test solutions are solving many of the key test and measurement challenges being introduced by 5G.

Viewing 5G as an evolution that began with LTE, the technology expands the robust product portfolio of Rohde & Schwarz along with the leadership role we play in the world of wireless technology. Helping us to stand out in this space is our past success with LTE and the role it will play in laying the foundation for 5G.

For more information, visit [www.mobilewirelesstesting.com](http://www.mobilewirelesstesting.com)

