Progressive Test for 5G Wireless Communications Advancement

Submitted by Keysight Technologies

Current cellular standards are in need of higher data throughput, greater cell capacity and more reliability. Technology and performance advancements are being investigated in wireless communications as 5G research and development progress. Part of the new 5G standards development includes consideration of new air interfaces at frequencies below 6 GHz (3.6 and 5 GHz) as well as higher mmWave frequencies.

To develop new channel models, an understanding of how the radio signal will propagate at the given frequency is needed. Channel Sounding is the Test and evaluation of new potential frequency bands and requires highly complex, multi-channel instrumentation with precise timing and synchronization as well as the ability to accurately capture channel data for characterization. Generation and analysis of wideband, MIMO signals at mmWave frequencies are significant challenges.

Proper calibration is critical for wideband transmitter and receiver test including vector pre-correction, IQ frequency response and IQ imbalance, and channel to channel skews. Test system Tx/Rx timing and synchronization is also necessary to ensure accurate measurements. In addition to these test challenges, the test system must be capable of capturing and managing huge amounts of data as it is collected over a long periods of time.

A 5G Channel Sounding Reference Solution, offered by Keysight Technologies, provides a test system with hardware, software and measurement expertise to address the challenges and provide the accurate measurements needed for channel sounding characterization. The flexible 5G Channel Sounding test configuration was designed so users can characterize new potential air interfaces for development of new channel models and offers mmWave frequency band signal generation and analysis with ultra-broad bandwidth, MIMO and capture, storage, calibration and synchronization. The Channel sounding Reference solution provides the fast and accurate channel impulse response data for further channel estimation analysis.

For more information, click here.