

Overcoming 802.11ax Test Challenges

Submitted by [Keysight Technologies](#)

The new 802.11ax wireless LAN standard is aimed at improving data throughput in dense user environments. 802.11ax operates in both 2.4 GHz and 5 GHz band making it backwards compatible with previous 802.11a/b/g/n/ac wireless LAN standards. The new wireless LAN standard utilizes up to 1024 QAM and multi-user MIMO. With this, the increase in test complexity can be a major challenge for engineers.

This article describes a webcast that includes 802.11ax challenges and what to look for in a test solution.

802.11ax can use higher order modulation schemes up to 1024 QAM with closer subcarrier spacing and UL-OFDMA to accommodate multiple users per timeslot. The 1024 QAM symbol points are $\frac{1}{2}$ the distance versus previous 256 QAM, requiring better SNR sensitivity in the receiver and better EVM performance in the test equipment used to verify the system. Close-in phase noise is a key component of the EVM performance in test equipment. Test equipment that is able to achieve -45dB EVM can be hard to find and is expensive. It's recommended to use test equipment with 10 dB better performance than the device under test to ensure measurement of the device under test and not just the test equipment measurement floor.

Multi-user MIMO adds new test requirements and puts greater demand on transmission accuracy and synchronization. Any variation in magnitude and phase between the test equipment measurement channels can impact the test systems measurement performance, making it difficult to accurately emulate in an R&D environment. Partnering with a proven test equipment provider can save valuable development time and increase the confidence in your design.

802.11ax test challenges can be overcome with solutions that have the EVM performance needed to test the denser modulation schemes and the multi-channel synchronization need to support MIMO test. For more information on 802.11ax test and solutions please see the [IEEE Webinar on 802.11ax WLAN support for crowded environments](#).