



RF Test Challenges Posed by the 5G Production Rollout

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The upcoming mobile 5G standard is creating an explosion in data that's affecting the semiconductor industry in two different but similar ways. The new uWave data radios are a challenge for RF Design and Test Engineering with specs that are similar frequency-domain tests to existing cellular radios, but now they're functional to 45Ghz. This is an interesting challenge for us as our standard production ATE systems support RF up to between 6Ghz & 12Ghz only. And there's a second test challenge here with the 5G rollout as well. All this data must then get on & off our phones and cell towers to the network. This data overload is driving a new class of high speed Serdes interfaces up to 400Gbps. These are multi-lane uWave channels with wideband data bandwidths to 30Ghz with a different set of time-domain test requirements. Both the uWave RF narrow band frequency-domain and wide band time-domain test challenges need to be economically addressed to put 5G into production.

I will discuss how these two worlds – the traditional narrow band RF frequency-domain testing & the more digital based wide band time-domain testing – are now converging as both domains extend well into the uWave band and both are on the *same* chips. Maxlinear has designed several chips in this new class of devices for which we have developed unique test solutions. I will discuss our uWave test solutions up to 45Ghz using standard production ATE systems and some of the more interesting challenges that we addressed. And finally, I'll discuss what I'd like to see in our next generation standard production ATE RF & uWave test subsystems to better address these production test challenges as we ramp 5G into production.