5G New Radio Coexistence in Wireless Communications

Ensure your 5G New Radio (NR) designs will operate in adjacent bands or within the same spectrum as other wireless communications.

Top 5 Coexistence Considerations for Successful Operation

1. **5G Coexistence with LTE**
   - NR needs to coexist with LTE in adjacent bands and sometimes within the same frequency bands. NR bandwidths vary, while LTE and NR signals share a context, introducing new challenges with interference due to closely spaced and overlapping signals.
   - Reduce interference by increasing guard band at higher frequencies, and by using advanced modulation. Test for coexistence interference using different time and frequency resources.

2. **5G Coexistence in Unlicensed Spectrum**
   - NR’s use in unlicensed spectrum such as 2.4 GHz and 5 GHz means NR must coexist with other wireless communications systems at adjacent or sub-harmonic frequencies.
   - Evaluate unwanted emissions from harmonics, intermodulation spurs, and spurious emissions in NR signals to share a carrier, introducing new challenges with NR coexistence.

3. **5G Device Coexistence (DDC)**
   - Multiple radio transceivers in a device can interfere with other devices in the same device that are operating either in adjacent or sub-harmonics frequencies.
   - Carefully evaluate in-band and out-of-band emissions using simplified spectrum measurements such as adjacent channel leakage ratio (ACLR) and spurious emissions mask (SEM) to gain insight into the signal’s interference potential and ensure sufficient filtering.

4. **5G In-Band and Out-of-Band Emissions**
   - Performance of a device transmitter at the edge of the band and, in the same device that are operating either in adjacent or sub-harmonic frequencies.
   - Evaluate unwanted emissions from harmonics, intermodulation spurs, and spurious emissions in NR signals to share a carrier, introducing new challenges.

5. **5G Spectrum Sharing with Satellite and Radar Systems**
   - NR will utilize shared spectrum in sub-6 GHz and mmWave bands across the globe and will coexist with satellite communications systems such as active and passive (SAR) satellite overlaps with terrestrial systems. NR needs to share the spectrum with satellite communications systems such as active and passive (SAR) satellite overlaps with terrestrial systems.
   - Ensure your 5G New Radio (NR) designs will operate in adjacent bands or within the same spectrum as other wireless communications.

5G Solutions for Coexistence Testing

- **Analyze 5G System and Device Inter- and Intra-Protocol Behavior Under Different Shared Spectrum Scenarios**
- **Simulate Coexistence Scenarios Before Developing Prototypes**
- **Verify In-Band and Out-of-Band Emissions with Confidence**
- **Validate Wireless Network Performance with Accurate Emulation**
- **Test for Coexistence in the Field**

www.keysight.com/find/5G

References:
- http://www.3gpp.org/ftp/Specs/html-info/38.300.htm

Product specifications and descriptions are subject to change without notice. © Copyright Keysight Technologies, Inc. All rights reserved. 6/1/2020.
5G New Radio Coexistence
In Wireless Communications

POSTER