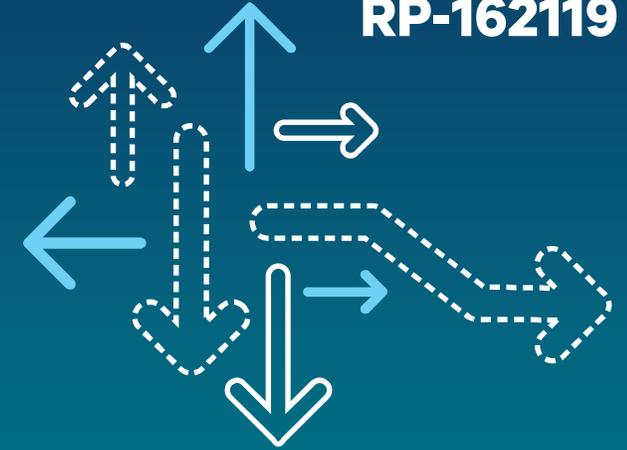


**3GPP RAN #74**

**Vienna, Austria, December 5-8, 2016**

**Agenda item: 10.1.1**

**RP-162119**



---

# Motivation for WID for Wideband LAA in LTE

---

**Qualcomm, Nokia**

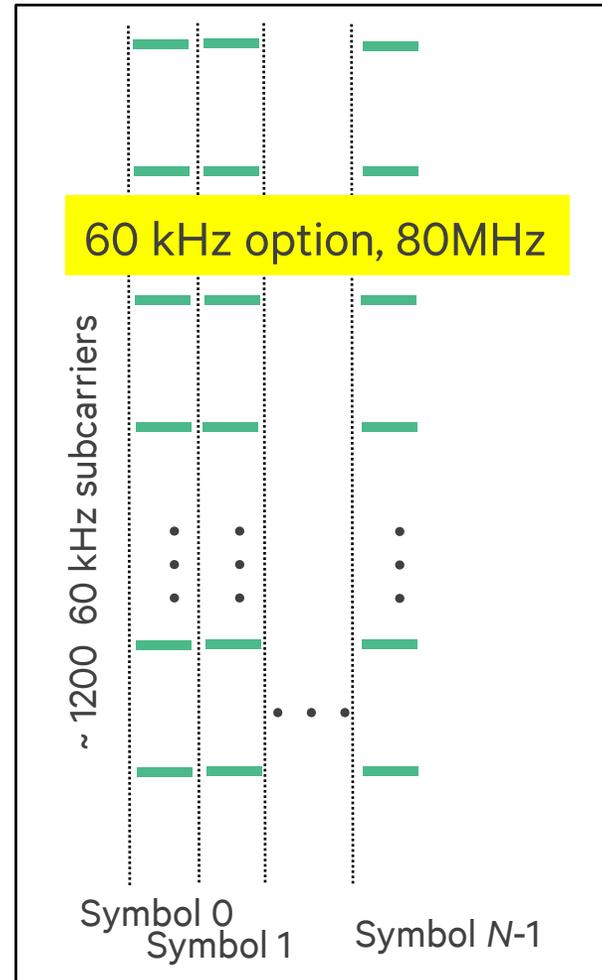
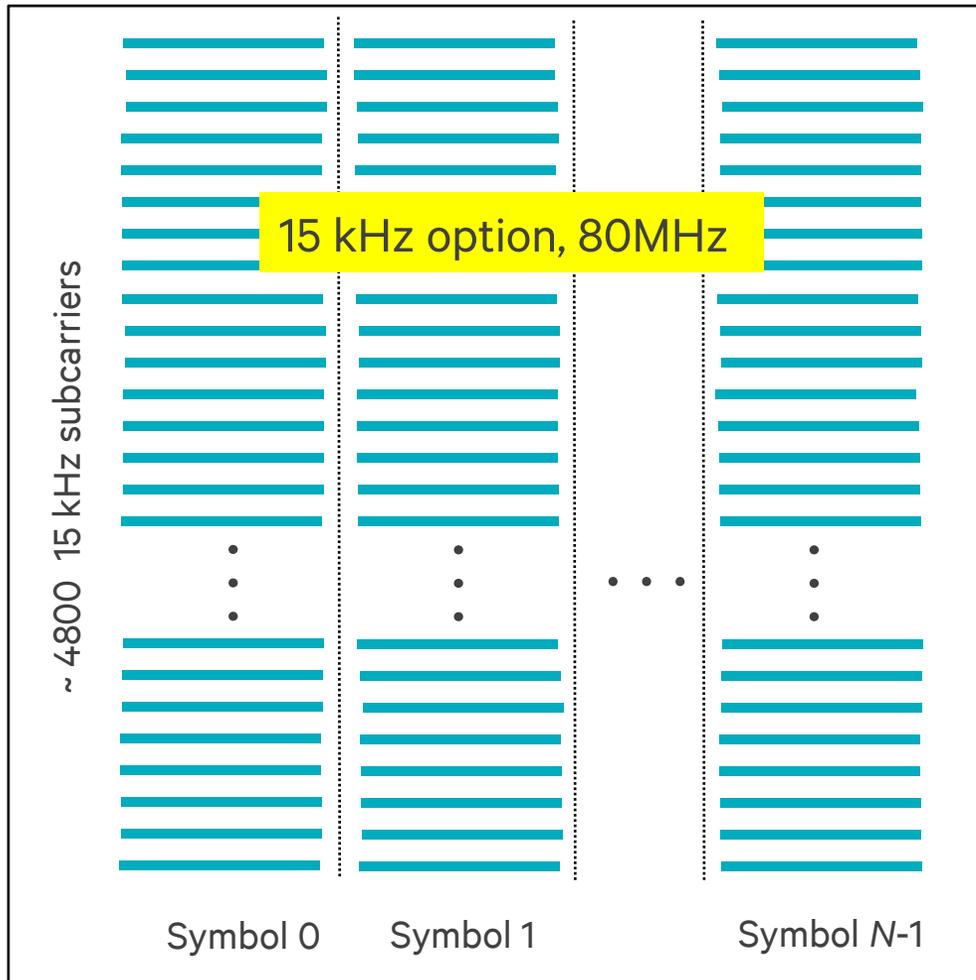
---

# General motivation

- 3GPP are defining many features to help support the growing data demand
- In Rel-13, Licensed Assisted Access (LAA, DL-only) was defined; while in Rel-14, Enhanced Licensed Access (eLAA, DL+UL) was added
- The unlicensed component significantly increases the bandwidth available beyond what would be available with licensed component carriers only
  - However, the symbol and subframe structure hasn't yet evolved to take full advantage of the efficiencies offered by the wider contiguous BW available
- It is proposed that new subcarrier spacing and frame structure following NR design is defined for LTE in order to take advantage of the wider BW available

# Complexity benefits

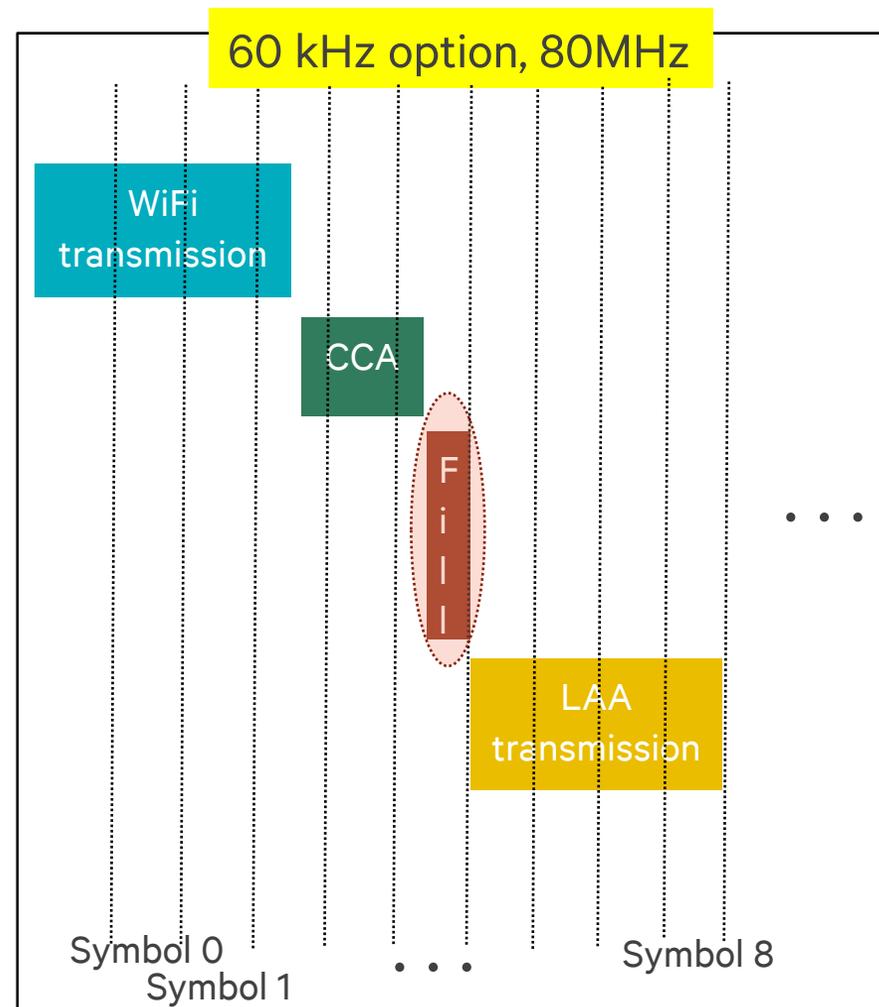
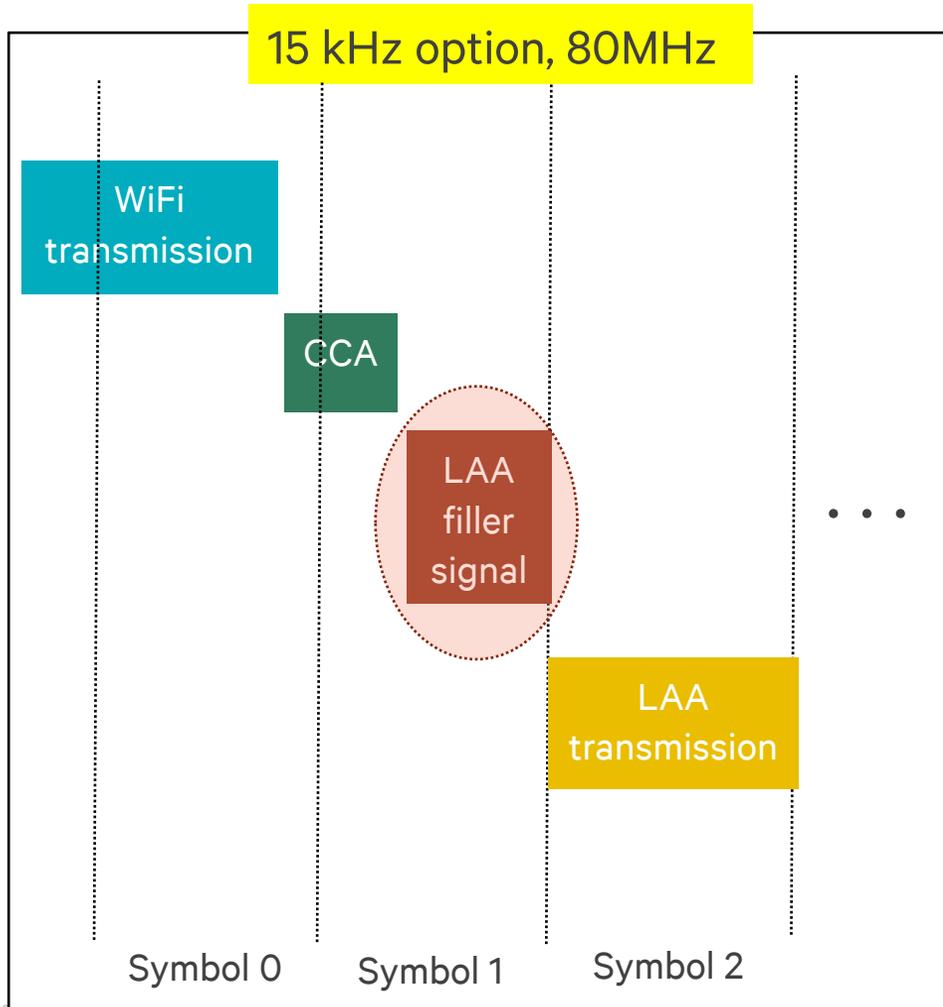
- Compare two versions – 15 kHz SCS and 60 kHz SCS – of an 80MHz LTE implementation



- Assume that the basic decoding unit is  $N$  symbols
- The 15 kHz SCS receiver needs to buffer  $4800 N$  modulation symbols
- The 60 kHz SCS receiver needs to buffer only  $1200 N$  modulation symbols
- Reduced complexity

# Coexistence benefits

- Compare two versions – 15 kHz SCS and 60 kHz SCS – of an 80MHz LTE implementation



- The 60 kHz SCS version requires shorter filler signal
- Improved spectral efficiency and coexistence fairness

---

# Summary of objectives

- Study support for a Wideband LAA SCell, i.e. wider carrier bandwidth(s) for licensed assisted access SCell, larger than 20 MHz (RAN1, RAN2, RAN4)
  - Choices of subcarrier spacing, frame structure, and physical layer design will harmonize with decisions made as part of the NR study
- Study support for a radio access architecture where a Wideband LAA SCell connects with a PCell in “Non-Standalone” mode [RAN1, RAN2, RAN4]

---

# Thank you

Follow us on:  

For more information on Qualcomm, visit us at:  
[www.qualcomm.com](http://www.qualcomm.com) & [www.qualcomm.com/blog](http://www.qualcomm.com/blog)

© 2013 Qualcomm Incorporated. All rights reserved. Qualcomm, Snapdragon, and Gobi are trademarks of Qualcomm Incorporated, registered in the United States and other countries. Vuforia and Wireless Reach are trademarks of Qualcomm Incorporated. Atheros and Skifta are trademarks of Qualcomm Atheros, Inc., registered in the United States and other countries. Hy-Fi is a trademark of Qualcomm Atheros, Inc. Alljoyn is a trademark of Qualcomm Innovation Center, Inc., registered in the United States and other countries. Other products and brand names may be trademarks or registered trademarks of their respective owners.

