# Comments of 802.16 WG on Draft "Coexistence Lessons Learned" (802.19-14-0080-00)

IEEE 802.16 WG

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# IEEE 802.16h Coexistence Lessons Learned

- IEEE 802.16 as most commonly deployed is time-division duplex (TDD) system based on Orthogonal Frequency Division Multiple Access (OFDMA)
- IEEE 802.16h [4] is an amendment to the 802.16 standard on "Improved Coexistence Mechanisms for License~~d~~-Exempt Operation"
- One band considered for 802.16h operation is the 3650-3700 MHz band, also considered for 802.11y operation
- During the development of 802.16h a coexistence assurance document [5] was developed which studied the coexistence of 802.16h and 802.11y

# IEEE 802.16h Coexistence Lessons Learned

- Note: Of all the 802 systems, 802.16h is the closest analog to LTE in unlicensed bands
- The time-synchronization requirements of 802.16h systems are incompatible with implementations of deployed 802.11 systems
- Coordination access requires a ~~high-cost high-speed~~ control channel between 802.16h and 802.11 systems, which ~~is~~ may be impractical
- Coordination of policy between 802.16h and multiple independent 802.11 systems ~~does not work~~ is challenging ~~since each 802.11 system is independent~~

# IEEE 802.16h Coexistence Mechanisms

- **The 802.16h base station collects information from the subscriber stations about interference ~~from the subscriber stations~~**
- **Candidate Channel and Master Frame Assessment (CCMFA) is used to evaluate candidate channels, based on passive scanning, which ~~has low interference~~ is non-interfering**
- **A coexistence frame (CX-Frame) is introduced which is based on two time intervals**
  - Coordinated Coexistence Schedule Based Interval (CXXBI)
  - Coordinated Coexistence Contention Based Interval (CXCBI)

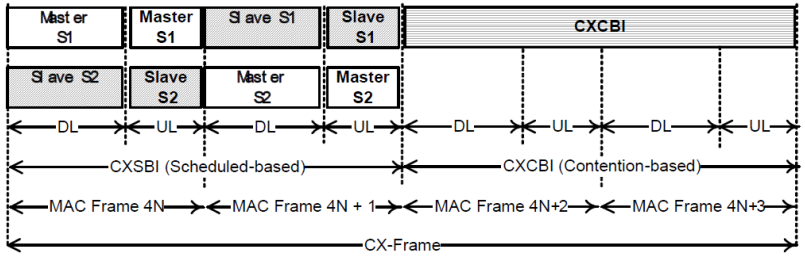


**Figure 410—CX-Frame structure for CX-CBP**

- **For a simulation coexistence analysis see document [5]**

# References


1. IEEE Std 802.11-2012, "Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications," March 29, 2012
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3. Nada Golmie, "Coexistence in Wireless Networks: Challenges and System-Level Solutions in the Unlicensed Bands," Cambridge University Press, 2006
4. IEEE Std 802.16h, "Air Interface for Broadband Wireless Access: Amendment 2 Improved Coexistence Mechanisms for License~~d~~-Exempt Operation," July 30, 2010
5. Shahar Hauzner and Mariana Goldhamer, "Coexistence Assurance Document for 802.16h CX-CBP," IEEE 802.19-09/7r0, March 9, 2009
6. IEEE Std 802.19.1-2014, "TV White Space Coexistence Methods," May 16, 2014
7. Apurva Mody, et. al., "Introduction to IEEE Std. 802.22-2011 and its Amendment PAR for P802.22b: Broadband Extension and Monitoring," IEEE 802.22-11/132r3, November 2011