~~CLAIMS~~

~~**What is claimed is:**~~

CLAIMS

1. A method for wireless communication, comprising:

identifying a hybrid automatic repeat request (HARQ) timing for a first component carrier configured with a first transmission time interval (TTI) or shortened TTI (sTTI) and associated with downlink transmissions, wherein the HARQ timing for the first component carrier ~~based at least in part on~~corresponds to a second sTTI configured for a second component carrier associated with uplink transmissions, and wherein the second sTTI is shorter than the first TTI or sTTI;

receiving a downlink transmission over the first component carrier using the first TTI or sTTI; and

transmitting a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

2. The method of claim 1, wherein identifying the HARQ timing for the first component carrier comprises:

receiving an indication of the HARQ timing over the first component carrier.

3. The method of claim 1, further comprising:

transmitting an indication of one or more user equipment (UE) capabilities, wherein the HARQ timing is further based at least in part on the one or more UE capabilities.

4. The method of claim 3, wherein the one or more UE capabilities comprise a transport block size (TBS), a number of layers, a reference signal type, a physical downlink control channel (PDCCH) transmission duration, an sTTI PDCCH transmission duration, a number of blind decodes, a search space size for the PDCCH or the sTTI PDCCH, or a combination thereof.

5. The method of claim 3, wherein the one or more UE capabilities correspond

to a UE transmitting the downlink HARQ ACK/NACK message, the method further comprising:

determining a number of component carriers configured with the first TTI or sTTI, a total number of component carriers configured for the UE, or a combination thereof, wherein the indication of the one or more UE capabilities is based at least in part on the number of component carriers configured with the first TTI or sTTI, the total number of component carriers configured for the UE, or the combination thereof.

6. The method of claim 3, further comprising:

determining a maximum timing advance (TA) based at least in part on the second sTTI, the one or more UE capabilities, or a combination thereof.

7. The method of claim 1, wherein the downlink HARQ ACK/NACK message is transmitted over the second component carrier using the second sTTI.

8. The method of claim 1, wherein the first component carrier and the second component carrier correspond to a same PUCCH group.

9. The method of claim 1, wherein the first component carrier is configured in a time division duplex (TDD) mode, a licensed assisted access (LAA) mode, an enhanced LAA (eLAA) mode, or a combination thereof.

10. The method of claim 1, wherein the first component carrier or the second component carrier is configured in a frequency division duplex (FDD) mode.

11. The method of claim 1, wherein the first TTI or sTTI comprises an sTTI spanning seven orthogonal frequency division multiplexing (OFDM) symbols.

12. The method of claim 1, wherein the first TTI or sTTI comprises a TTI spanning fourteen orthogonal frequency division multiplexing (OFDM) symbols.

13. The method of claim 12, wherein the TTI is split into two slots, and the downlink transmission is received over each of the two slots.

14. The method of claim 1, wherein the second sTTI spans two or three orthogonal frequency division multiplexing (OFDM) symbols.

15. The method of claim 1, wherein:

the first component carrier comprises a secondary cell (SCell) component carrier; and

the second component carrier comprises a primary cell (PCell) component carrier or a physical uplink control channel SCell (PSCell) component carrier.

16. A method for wireless communication, comprising:

configuring a first component carrier with a first transmission time interval (TTI) or shortened TTI (sTTI) for downlink transmissions and a second component carrier with a second sTTI for uplink transmissions, wherein the second sTTI is shorter than the first TTI or sTTI;

identifying a hybrid automatic repeat request (HARQ) timing for the first component carrier and associated with downlink transmissions ~~based at least in part on~~, wherein the HARQ timing for the first component carrier corresponds to the second sTTI configured for the second component carrier;

performing a downlink transmission over the first component carrier using the first TTI or sTTI; and

receiving a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

17. The method of claim 16, further comprising:

transmitting an indication of the HARQ timing over the first component carrier.

18. The method of claim 16, further comprising:

identifying one or more user equipment (UE) capabilities, wherein identifying the HARQ timing is further based at least in part on the one or more UE capabilities.

19. The method of claim 18, wherein the one or more UE capabilities comprise a transport block size (TBS), a number of layers, a reference signal type, a physical downlink control channel (PDCCH) transmission duration, an sTTI PDCCH transmission duration, a number of blind decodes, a search space size for the PDCCH or the sTTI PDCCH, or a combination thereof.

20. The method of claim 18, wherein:

the one or more UE capabilities correspond to a UE transmitting the downlink HARQ ACK/NACK message; and

the one or more UE capabilities are based at least in part on a number of component carriers configured with the first TTI or sTTI, a total number of component carriers configured for the UE, or a combination thereof.

21. The method of claim 18, wherein identifying the one or more UE capabilities comprises:

receiving an indication of the one or more UE capabilities.

22. The method of claim 16, wherein the downlink HARQ ACK/NACK message is received over the second component carrier using the second sTTI.

23. The method of claim 16, wherein the first component carrier and the second component carrier correspond to a same PUCCH group.

24. The method of claim 16, further comprising:

configuring the first component carrier in a time division duplex (TDD) mode, a licensed assisted access (LAA) mode, an enhanced LAA (eLAA) mode, or a combination thereof.

25. The method of claim 16, further comprising:

configuring the first component carrier or the second component carrier in a frequency division duplex (FDD) mode.

26. The method of claim 16, wherein the first TTI or sTTI comprises an sTTI spanning seven orthogonal frequency division multiplexing (OFDM) symbols.

27. The method of claim 16, wherein the first TTI or sTTI comprises a TTI spanning fourteen orthogonal frequency division multiplexing (OFDM) symbols.

28. The method of claim 27, further comprising:

splitting the TTI into two slots, wherein the downlink transmission is performed over each of the two slots.

29. The method of claim 16, wherein the second sTTI spans two or three orthogonal frequency division multiplexing (OFDM) symbols.

30. The method of claim 16, wherein:

the first component carrier comprises a secondary cell (SCell) component carrier; and

the second component carrier comprises a primary cell (PCell) component carrier or a physical uplink control channel SCell (PSCell) component carrier.

31. An apparatus for wireless communication, comprising:

means for identifying a hybrid automatic repeat request (HARQ) timing for a first component carrier configured with a first transmission time interval (TTI) or shortened TTI (sTTI) and associated with downlink transmissions, wherein the HARQ timing for the first component carrier ~~based at least in part on~~corresponds to a second sTTI configured for a second component carrier associated with uplink transmissions, and wherein the second sTTI is shorter than the first TTI or sTTI;

means for receiving a downlink transmission over the first component carrier using the first TTI or sTTI; and

means for transmitting a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

32. An apparatus for wireless communication, comprising:

means for configuring a first component carrier with a first transmission time interval (TTI) or shortened TTI (sTTI) for downlink transmissions and a second component carrier with a second sTTI for uplink transmissions, wherein the second sTTI is shorter than the first TTI or sTTI;

means for identifying a hybrid automatic repeat request (HARQ) timing for the first component carrier and associated with downlink transmissions ~~based at least in part on~~, wherein the HARQ timing for the first component carrier corresponds to the second sTTI configured for the second component carrier;

means for performing a downlink transmission over the first component carrier using the first TTI or sTTI; and

means for receiving a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

33. An apparatus for wireless communication, comprising:

a processor;

memory in electronic communication with the processor; and

instructions stored in the memory and executable by the processor to cause the apparatus to:

identify a hybrid automatic repeat request (HARQ) timing for a first component carrier configured with a first transmission time interval (TTI) or shortened TTI (sTTI) and associated with downlink transmissions, wherein the HARQ timing for the first component carrier ~~based at least in part on~~corresponds to a second sTTI configured for a second component carrier associated with uplink transmissions, and wherein the second sTTI is shorter than the first TTI or sTTI;

receive a downlink transmission over the first component carrier using the first TTI or sTTI; and

transmit a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

34.———— The apparatus of claim 33, wherein the instructions to identify the HARQ timing for the first component carrier are executable by the processor to cause the apparatus to:

receive an indication of the HARQ timing over the first component carrier.

35.———— The apparatus of claim 33, wherein the instructions are further executable by the processor to cause the apparatus to:

transmit an indication of one or more user equipment (UE) capabilities, wherein the HARQ timing is further based at least in part on the one or more UE capabilities.

36.———— The apparatus of claim 35, wherein the one or more UE capabilities comprise a transport block size (TBS), a number of layers, a reference signal type, a physical downlink control channel (PDCCH) transmission duration, an sTTI PDCCH transmission duration, a number of blind decodes, a search space size for the PDCCH or the sTTI PDCCH, or a combination thereof.

37.———— The apparatus of claim 35, wherein the one or more UE capabilities correspond to a UE transmitting the downlink HARQ ACK/NACK message, the instructions further executable by the processor to cause the apparatus to:

determine a number of component carriers configured with the first TTI or sTTI, a total number of component carriers configured for the UE, or a combination thereof, wherein the indication of the one or more UE capabilities is based at least in part on the number of component carriers configured with the first TTI or sTTI, the total number of component carriers configured for the UE, or the combination thereof.

38.———— The apparatus of claim 35, wherein the instructions are further executable by the processor to cause the apparatus to:

determine a maximum timing advance (TA) based at least in part on the second sTTI, the one or more UE capabilities, or a combination thereof.

39.———— The apparatus of claim 33, wherein the downlink HARQ ACK/NACK message is transmitted over the second component carrier using the second sTTI.

40.———— The apparatus of claim 33, wherein the first component carrier and the second component carrier correspond to a same PUCCH group.

41.———— The apparatus of claim 33, wherein the first component carrier is configured in a time division duplex (TDD) mode, a licensed assisted access (LAA) mode, an enhanced LAA (eLAA) mode, or a combination thereof.

42.———— The apparatus of claim 33, wherein the first component carrier or the second component carrier is configured in a frequency division duplex (FDD) mode.

43.———— The apparatus of claim 33, wherein the first TTI or sTTI comprises an sTTI spanning seven orthogonal frequency division multiplexing (OFDM) symbols.

44.———— The apparatus of claim 33, wherein the first TTI or sTTI comprises a TTI spanning fourteen orthogonal frequency division multiplexing (OFDM) symbols.

45.———— The apparatus of claim 44, wherein the TTI is split into two slots, and the downlink transmission is received over each of the two slots.

46.———— The apparatus of claim 33, wherein the second sTTI spans two or three orthogonal frequency division multiplexing (OFDM) symbols.

47.———— The apparatus of claim 33, wherein:

the first component carrier comprises a secondary cell (SCell) component carrier; and

the second component carrier comprises a primary cell (PCell) component carrier or a physical uplink control channel SCell (PSCell) component carrier.

48.———— An apparatus for wireless communication, comprising:

———————— a processor;

———————— memory in electronic communication with the processor; and

instructions stored in the memory and executable by the processor to cause the apparatus to:

configure a first component carrier with a first transmission time interval (TTI) or shortened TTI (sTTI) for downlink transmissions and a second component carrier with a second sTTI for uplink transmissions, wherein the second sTTI is shorter than the first TTI or sTTI;

identify a hybrid automatic repeat request (HARQ) timing for the first component carrier and associated with downlink transmissions ~~based at least in part on~~, wherein the HARQ timing for the first component carrier corresponds to the second sTTI configured for the second component carrier;

perform a downlink transmission over the first component carrier using the first TTI or sTTI; and

receive a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

49. The apparatus of claim 48, wherein the instructions are further executable by the processor to cause the apparatus to:

transmit an indication of the HARQ timing over the first component carrier.

50. The apparatus of claim 48, wherein the instructions are further executable by the processor to cause the apparatus to:

identify one or more user equipment (UE) capabilities, wherein identifying the HARQ timing is further based at least in part on the one or more UE capabilities.

51. The apparatus of claim 50, wherein the one or more UE capabilities comprise a transport block size (TBS), a number of layers, a reference signal type, a physical downlink control channel (PDCCH) transmission duration, an sTTI PDCCH transmission duration, a number of blind decodes, a search space size for the PDCCH or the sTTI PDCCH, or a combination thereof.

52. The apparatus of claim 50, wherein:

the one or more UE capabilities correspond to a UE transmitting the downlink HARQ ACK/NACK message; and

the one or more UE capabilities are based at least in part on a number of component carriers configured with the first TTI or sTTI, a total number of component carriers configured for the UE, or a combination thereof.

53. The apparatus of claim 50, wherein the instructions to identify the one or more UE capabilities are executable by the processor to cause the apparatus to:

receive an indication of the one or more UE capabilities.

54. The apparatus of claim 48, wherein the downlink HARQ ACK/NACK message is received over the second component carrier using the second sTTI.

55. The apparatus of claim 48, wherein the first component carrier and the second component carrier correspond to a same PUCCH group.

56. The apparatus of claim 48, wherein the instructions are further executable by the processor to cause the apparatus to:

configure the first component carrier in a time division duplex (TDD) mode, a licensed assisted access (LAA) mode, an enhanced LAA (eLAA) mode, or a combination thereof.

57. The apparatus of claim 48, wherein the instructions are further executable by the processor to cause the apparatus to:

configure the first component carrier or the second component carrier in a frequency division duplex (FDD) mode.

58. The apparatus of claim 48, wherein the first TTI or sTTI comprises an sTTI spanning seven orthogonal frequency division multiplexing (OFDM) symbols.

59. The apparatus of claim 48, wherein the first TTI or sTTI comprises a TTI spanning fourteen orthogonal frequency division multiplexing (OFDM) symbols.

60.———— The apparatus of claim 59, wherein the instructions are further executable by the processor to cause the apparatus to:

split the TTI into two slots, wherein the downlink transmission is performed over each of the two slots.

61.———— The apparatus of claim 48, wherein the second sTTI spans two or three orthogonal frequency division multiplexing (OFDM) symbols.

62.———— The apparatus of claim 48, wherein:

the first component carrier comprises a secondary cell (SCell) component carrier; and

the second component carrier comprises a primary cell (PCell) component carrier or a physical uplink control channel SCell (PSCell) component carrier.

63.———— A non-transitory computer-readable medium storing code for wireless communication, the code comprising instructions executable by a processor to:

identify a hybrid automatic repeat request (HARQ) timing for a first component carrier configured with a first transmission time interval (TTI) or shortened TTI (sTTI) and associated with downlink transmissions, wherein the HARQ timing for the first component carrier ~~based at least in part on~~corresponds to a second sTTI configured for a second component carrier associated with uplink transmissions, and wherein the second sTTI is shorter than the first TTI or sTTI;

receive a downlink transmission over the first component carrier using the first TTI or sTTI; and

transmit a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.

64.—— A non-transitory computer-readable medium storing code for wireless communication, the code comprising instructions executable by a processor to:

configure a first component carrier with a first transmission time interval (TTI) or shortened TTI (sTTI) for downlink transmissions and a second component carrier

with a second sTTI for uplink transmissions, wherein the second sTTI is shorter than the first TTI or sTTI;

identify a hybrid automatic repeat request (HARQ) timing for the first component carrier and associated with downlink transmissions ~~based at least in part on~~, wherein the HARQ timing for the first component carrier corresponds to the second sTTI configured for the second component carrier;

perform a downlink transmission over the first component carrier using the first TTI or sTTI; and

receive a downlink HARQ positive or negative acknowledgment (ACK/NACK) message corresponding to the downlink transmission according to the identified HARQ timing.