CLAIMS

1. A method for wireless communication for a user equipment (UE), comprising: receiving information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; transmitting a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

2. The method of claim 1, wherein the first portion of the uplink transmission is transmitted using as many full slots that fit in the first contiguous uplink transmission duration.

3. The method of claim 1, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

4. The method of claim 1, wherein the transmitting the first portion of the uplink transmission in the first contiguous uplink transmission duration comprises: transmitting the first portion of the uplink transmission using all symbols in a first slot in the first number of slots and a first subset of symbols in a second slot in the first number of slots such that a total duration of transmission is less than the first contiguous uplink transmission duration.

5. The method of claim 4, further comprising: rate matching the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of transmitted and unused symbols in the first contiguous uplink transmission duration, wherein any unused symbols in a slot for which only a subset of symbols are transmitted are punctured.

6. The method of claim 4, further comprising: rate matching the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of symbols in the first slot and the first subset of symbols in the second slot, wherein the first subset of symbols in the second slot corresponds to symbols available for uplink transmissions.

7. The method of claim 4, wherein a pilot pattern is selected for a slot for which only a subset of symbols are transmitted based on a number of transmitted symbols.

8. The method of claim 7, wherein the pilot pattern corresponding to the slot for which only a subset of symbols are transmitted is obtained by puncturing the pilot pattern for a full slot on any unused symbols.

9. The method of claim 5, further comprising: transmitting the second portion of the uplink transmission in a second contiguous uplink transmission duration starting from the unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration.

10. The method of claim 5, further comprising: transmitting the second portion of the uplink transmission using all symbols in a third slot in a second number of slots, wherein any unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration are punctured.

11. The method of claim 1, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in a same radio frame.

12. The method of claim 1, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in different radio frames.

13. An apparatus for wireless communication for a user equipment (UE), comprising: means for receiving information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; means for transmitting a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

14. The apparatus of claim 13, wherein the first portion of the uplink transmission is transmitted using as many full slots that fit in the first contiguous uplink transmission duration.

15. The apparatus of claim 13, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

16. The apparatus of claim 13, wherein the means for transmitting the first portion of the uplink transmission in the first contiguous uplink transmission duration is configure to: transmit the first portion of the uplink transmission using all symbols in a first slot in the first number of slots and a first subset of symbols in a second slot in the first number of slots such that a total duration of transmission is less than the first contiguous uplink transmission duration.

17. The apparatus of claim 16, further comprising: means for rate matching the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of transmitted and unused symbols in the first contiguous uplink transmission duration, wherein any unused symbols in a slot for which only a subset of symbols are transmitted are punctured.

18. The apparatus of claim 16, further comprising: means for rate matching the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of symbols in the first slot and the first subset of symbols in the second slot, wherein the first subset of symbols in the second slot corresponds to symbols available for uplink transmissions.

19. The apparatus of claim 16, wherein a pilot pattern is selected for a slot for which only a subset of symbols are transmitted based on a number of transmitted symbols.

20. The apparatus of claim 19, wherein the pilot pattern corresponding to the slot for which only a subset of symbols are transmitted is obtained by puncturing the pilot pattern for a full slot on any unused symbols.

21. The apparatus of claim 17, further comprising: means for transmitting the second portion of the uplink transmission in a second contiguous uplink transmission duration starting from the unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration.

22. The apparatus of claim 17, further comprising: means for transmitting the second portion of the uplink transmission using all symbols in a third slot in a second number of slots, wherein any unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration are punctured.

23. The apparatus of claim 13, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in a same radio frame.

24. The apparatus of claim 13, wherein the first contiguous uplink transmission duration and a

second contiguous uplink transmission duration are located in different radio frames.

25. An apparatus for wireless communication for a user equipment (UE), comprising: a memory; and at least one processor coupled to the memory and configured to: receive information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; transmit a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

26. The apparatus of claim 25, wherein the first portion of the uplink transmission is transmitted using as many full slots that fit in the first contiguous uplink transmission duration.

27. The apparatus of claim 25, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

28. The apparatus of claim 25, wherein the at least one processor is configured to transmit the first portion of the uplink transmission in the first contiguous uplink transmission duration by: transmitting the first portion of the uplink transmission using all symbols in a first slot in the first number of slots and a first subset of symbols in a second slot in the first number of slots such that a total duration of transmission is less than the first contiguous uplink transmission duration.

29. The apparatus of claim 28, wherein the at least one processor is further configured to: rate match the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of transmitted and unused symbols in the first contiguous uplink transmission duration, wherein any unused symbols in a slot for which only a subset of symbols are transmitted are punctured.

30. The apparatus of claim 28, wherein the at least one processor is further configured to: rate match the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of symbols in the first slot and the first subset of symbols in the second slot, wherein the first subset of symbols in the second slot corresponds to symbols available for uplink transmissions.

31. The apparatus of claim 28, wherein a pilot pattern is selected for a slot for which only a subset of symbols are transmitted based on a number of transmitted symbols.

32. The apparatus of claim 31, wherein the pilot pattern corresponding to the slot for which only a subset of symbols are transmitted is obtained by puncturing the pilot pattern for a full slot on any unused symbols.

33. The apparatus of claim 29, wherein the at least one processor is further configured to: transmit the second portion of the uplink transmission in a second contiguous uplink transmission duration starting from the unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration.

34. The apparatus of claim 29, wherein the at least one processor is further configured to: transmit the second portion of the uplink transmission using all symbols in a third slot in a second number of slots, wherein any unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration are punctured.

35. The apparatus of claim 25, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in a same radio frame.

36. The apparatus of claim 25, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in different radio frames.

37. A non-transitory computer-readable medium storing computer executable code for a user equipment (UE), comprising code to: receive information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; transmit a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

38. The non-transitory computer-readable medium of claim 37, wherein the first portion of the uplink transmission is transmitted using as many full slots that fit in the first contiguous uplink transmission duration.

39. The non-transitory computer-readable medium of claim 37, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

40. The non-transitory computer-readable medium of claim 37, wherein the code to transmit the first portion of the uplink transmission in the first contiguous uplink transmission duration is configured to: transmit the first portion of the uplink transmission using all symbols in a first slot in the first number of slots and a first subset of symbols in a second slot in the first number of slots such that a total duration of transmission is less than the first contiguous uplink transmission duration.

41. The non-transitory computer-readable medium of claim 40, further comprising code to: rate match the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of transmitted and unused symbols in the first contiguous uplink transmission duration, wherein any unused symbols in a slot for which only a subset of symbols are transmitted are punctured.

42. The non-transitory computer-readable medium of claim 40, further comprising code to: rate match the first portion of the uplink transmission in the first contiguous uplink transmission duration based on a total number of symbols in the first slot and the first subset of symbols in the second slot, wherein the first subset of symbols in the second slot corresponds to symbols available for uplink transmissions.

43. The non-transitory computer-readable medium of claim 40, wherein a pilot pattern is selected for a slot for which only a subset of symbols are transmitted based on a number of transmitted symbols.

44. The non-transitory computer-readable medium of claim 43, wherein the pilot pattern corresponding to the slot for which only a subset of symbols are transmitted is obtained by puncturing the pilot pattern for a full slot on any unused symbols.

45. The non-transitory computer-readable medium of claim 41, further comprising code to: transmit the second portion of the uplink transmission in a second contiguous uplink transmission duration starting from the unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration.

46. The non-transitory computer-readable medium of claim 41, further comprising code to: transmit the second portion of the uplink transmission using all symbols in a third slot in a

second number of slots, wherein any unused symbols of the slot for which only a subset of symbols are transmitted in the first contiguous uplink transmission duration are punctured.

47. The non-transitory computer-readable medium of claim 37, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in a same radio frame.

48. The non-transitory computer-readable medium of claim 37, wherein the first contiguous uplink transmission duration and a second contiguous uplink transmission duration are located in different radio frames.

49. A method for wireless communication for a base station, comprising: transmitting information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; receiving a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

50. The method of claim 49, wherein the first portion of the uplink transmission is received using as many full slots that fit in the first contiguous uplink transmission duration.

51. The method of claim 49, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

52. An apparatus for wireless communication for a base station, comprising: means for transmitting information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; means for receiving a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first

contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

53. The apparatus of claim 52, wherein the first portion of the uplink transmission is received using as many full slots that fit in the first contiguous uplink transmission duration.

54. The apparatus of claim 52, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

55. An apparatus for wireless communication for a base station, comprising: a memory; and at least one processor coupled to the memory and configured to: transmit information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; receive a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

56. The apparatus of claim 55, wherein the first portion of the uplink transmission is received using as many full slots that fit in the first contiguous uplink transmission duration.

57. The apparatus of claim 55, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.

58. A non-transitory computer-readable medium storing computer executable code for a base station, comprising code to: transmit information associated with a narrowband time-division duplex (TDD) frame structure having a first contiguous uplink transmission duration; and wherein: when a subcarrier spacing associated with the narrowband TDD frame structure is 15 kHz, a full slot includes seven orthogonal frequency division multiplexing (OFDM) symbols and is 0.5 milliseconds (ms) in length; and when the subcarrier spacing associated with the narrowband TDD frame structure is 3.75 kHz, a full slot includes seven OFDM symbols and is 2 ms in length; receive a first portion of an uplink transmission comprising a first number of slots in the first contiguous uplink transmission duration, wherein the uplink transmission has a

duration longer than the first contiguous uplink transmission duration, the uplink transmission including a second portion, wherein the first portion and the second portion of the uplink transmission are separated by a downlink transmission.

59. The non-transitory computer-readable medium of claim 58, wherein the first portion of the uplink transmission is received using as many full slots that fit in the first contiguous uplink transmission duration.

60. The non-transitory computer-readable medium of claim 58, wherein a number of orthogonal frequency division multiplexing (OFDM) symbols that make up a slot is a function of subcarrier spacing such that as the subcarrier spacing decreases the number of OFDM symbols that make up a slot decreases.