CLAIMS

1. A method of wireless communications for a base station, comprising:

determining a time division-duplex (TDD) frame structure and a TDD frame structure configuration for narrowband communications from a group of TDD frame structures of different downlink and uplink subframe configurations;

determining one or more narrowband carriers and subframes within the one or more narrowband carriers to transmit at least one of a broadcast channel (BCH) or a system information block **1** (SIB1) based on the TDD frame structure configuration; and

transmitting a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and the at least one of the BCH or the SIB1 using the TDD frame structure determined for the narrowband communications, wherein a first carrier is used to transmit the at least one of the BCH or the SIB1, the first carrier being different than a second carrier used to transmit one or more of the PSS or the SSS.

2. The method of claim 1, wherein a narrowband carrier used for transmitting the BCH is different than a narrowband carrier used to transmit one or more of the PSS or the SSS.

3. The method of claim 1, wherein the BCH is transmitted using one or more subframes in every radio frame.

4. The method of claim 1, wherein:

the SSS is transmitted using a particular subframe in every other frame; and

the BCH is transmitted using the particular subframe in each frame in which the SSS is not transmitted.

5. The method of claim 1, wherein a periodicity associated with the transmitting the BCH indicates that the TDD frame structure is used for the narrowband communications.

6. The method of claim 1, wherein at least one of a periodicity associated with the transmitting the BCH, a location in time associated with the transmitting the BCH, or a location in frequency associated with the transmitting the BCH is related to one or more of the TDD frame structure determined for narrowband communications, the second carrier containing the PSS or the SSS, or information sent on the PSS or the SSS.

7. The method of claim 6, wherein the first carrier used to transmit the BCH is located at a fixed frequency offset with respect to the second carrier used to transmit the one or more of the PSS or

the SSS.

8. The method of claim 1, wherein the BCH indicates at least one of the TDD frame structure configuration determined for the narrowband communications, or a carrier location or subframe location associated with the SIB1.

9. The method of claim 8, wherein the information is included in the BCH by at least one of including additional bits in a payload, by using different CRC masks based on the additional bits, or by using different scrambling codes based on the additional bits.

10. The method of claim 1, wherein the first carrier is used to transmit both the BCH and the SIB1 when the first carrier is different than the second carrier used to transmit the PSS and SSS.

11. The method of claim 1, wherein the SIB1 is transmitted using a different carrier than the first carrier used to transmit the BCH.

12. The method of claim 1, wherein at least one of a narrowband carrier location relative to the PSS carrier location or a subframe used to transmit the SIB1 is associated with the narrowband frame structure determined for the narrowband communications.

13. An apparatus for wireless communications for a base station, comprising:

means for determining a time division-duplex (TDD) frame structure and a TDD frame structure configuration for narrowband communications from a group of TDD frame structures of different downlink and uplink subframe configurations;

means for determining one or more narrowband carriers and subframes within the one or more narrowband carriers to transmit at least one of a broadcast channel (BCH) or a system information block **1** (SIB1) based on the TDD frame structure configuration; and

means for transmitting a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and the at least one of the BCH or the SIB1 using the TDD frame structure determined for the narrowband communications, wherein a first carrier is used to transmit the at least one of the BCH or the SIB1, the first carrier being different than a second carrier used to transmit one or more of the PSS or the SSS.

14. The apparatus of claim 13, wherein a narrowband carrier used for transmitting the BCH is different than a narrowband carrier used to transmit one or more of the PSS or the SSS.

15. The apparatus of claim 13, wherein the BCH is transmitted using one or more subframes in every radio frame.

16. The apparatus of claim 13, wherein:

the SSS is transmitted using a particular subframe in every other frame; and

the BCH is transmitted using the particular subframe in each frame in which the SSS is not transmitted.

17. The apparatus of claim 13, wherein a periodicity associated with the transmitting the BCH indicates that the TDD frame structure is used for the narrowband communications.

18. The apparatus of claim 13, wherein at least one of a periodicity associated with the transmitting the BCH, a location in time associated with the transmitting the BCH, or a location in frequency associated with the transmitting the BCH is related to one or more of the TDD frame structure determined for narrowband communications, the second carrier containing the PSS or the SSS, or information sent on the PSS or the SSS.

19. The apparatus of claim 18, wherein the first carrier used to transmit the BCH is located at a fixed frequency offset with respect to the second carrier used to transmit the one or more of the PSS or the SSS.

20. The apparatus of claim 13, wherein the BCH indicates at least one of the TDD frame structure configuration determined for the narrowband communications, or a carrier location or subframe location associated with the SIB1.

21. The apparatus of claim 20, wherein the information is included in the BCH by at least one of including additional bits in a payload, by using different CRC masks based on the additional bits, or by using different scrambling codes based on the additional bits.

22. The apparatus of claim 13, wherein the first carrier is used to transmit both the BCH and the SIB1 when the first carrier is different than the second carrier used to transmit the PSS and SSS.

23. The apparatus of claim 13, wherein the SIB1 is transmitted using a different carrier than the first carrier used to transmit the BCH.

24. The apparatus of claim 13, wherein at least one of a narrowband carrier location relative to the PSS carrier location or a subframe used to transmit the SIB1 is associated with the narrowband frame structure determined for the narrowband communications.

25. An apparatus for wireless communications for a base station, comprising:

a memory; and

at least one processor coupled to the memory and configured to:

determine a time division-duplex (TDD) frame structure and a TDD frame structure configuration for narrowband communications from a group of TDD frame structures of different downlink and uplink subframe configurations;

determine one or more narrowband carriers and subframes within the one or more narrowband carriers to transmit at least one of a broadcast channel (BCH) or a system information block **1** (SIB1) based on the TDD frame structure configuration; and

transmit a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and the at least one of the BCH or the SIB1 using the TDD frame structure determined for the narrowband communications, wherein a first carrier is used to transmit the at least one of the BCH or the SIB1, the first carrier being different than a second carrier used to transmit one or more of the PSS or the SSS.

26. The apparatus of claim 25, wherein a narrowband carrier used for transmitting the BCH is different than a narrowband carrier used to transmit one or more of the PSS or the SSS.

27. The apparatus of claim 25, wherein the BCH is transmitted using one or more subframes in every radio frame.

28. The apparatus of claim 25, wherein:

the SSS is transmitted using a particular subframe in every other frame; and

the BCH is transmitted using the particular subframe in each frame in which the SSS is not transmitted.

29. The apparatus of claim 25, wherein a periodicity associated with the transmitting the BCH indicates that the TDD frame structure is used for the narrowband communications.

30. The apparatus of claim 25, wherein at least one of a periodicity associated with the transmitting the BCH, a location in time associated with the transmitting the BCH, or a location in frequency associated with the transmitting the BCH is related to one or more of the TDD frame structure determined for narrowband communications, the second carrier containing the PSS or the SSS, or information sent on the PSS or the SSS.

31. The apparatus of claim 30, wherein the first carrier used to transmit the BCH is located at a fixed frequency offset with respect to the second carrier used to transmit the one or more of the PSS or the SSS.

32. The apparatus of claim 25, wherein the BCH indicates at least one of the TDD frame structure configuration determined for the narrowband communications, or a carrier location or subframe location associated with the SIB1.

33. The apparatus of claim 32, wherein the information is included in the BCH by at least one of including additional bits in a payload, by using different CRC masks based on the additional bits, or by using different scrambling codes based on the additional bits.

34. The apparatus of claim 25, wherein the first carrier is used to transmit both the BCH and the SIB1 when the first carrier is different than the second carrier used to transmit the PSS and SSS.

35. The apparatus of claim 25, wherein the SIB1 is transmitted using a different carrier than the first carrier used to transmit the BCH.

36. The apparatus of claim 25, wherein at least one of a narrowband carrier location relative to the PSS carrier location or a subframe used to transmit the SIB1 is associated with the narrowband frame structure determined for the narrowband communications.

37. A non-transitory computer-readable medium storing computer executable code for a base station, comprising code to:

determine a time division-duplex (TDD) frame structure and a TDD frame structure configuration for narrowband communications from a group of TDD frame structures of different downlink and uplink subframe configurations;

determine one or more narrowband carriers and subframes within the one or more narrowband carriers to transmit at least one of a broadcast channel (BCH) or a system information block **1** (SIB1) based on the TDD frame structure configuration; and

transmit a primary synchronization signal (PSS), a secondary synchronization signal (SSS), and the at least one of the BCH or the SIB1 using the TDD frame structure determined for the narrowband communications, wherein a first carrier is used to transmit the at least one of the BCH or the SIB1, the first carrier being different than a second carrier used to transmit one or more of the PSS or the SSS.

38. The non-transitory computer-readable medium of claim 37, wherein a narrowband carrier used for transmitting the BCH is different than a narrowband carrier used to transmit one or more of the PSS or the SSS.

39. The non-transitory computer-readable medium of claim 37, wherein the BCH is transmitted using one or more subframes in every radio frame.

40. The non-transitory computer-readable medium of claim 37, wherein:

the SSS is transmitted using a particular subframe in every other frame; and

the BCH is transmitted using the particular subframe in each frame in which the SSS is not transmitted.

41. The non-transitory computer-readable medium of claim 37, wherein a periodicity associated with the transmitting the BCH indicates that the TDD frame structure is used for the narrowband communications.

42. The non-transitory computer-readable medium of claim 37, wherein at least one of a periodicity associated with the transmitting the BCH, a location in time associated with the transmitting the BCH, or a location in frequency associated with the transmitting the BCH is related to one or more of the TDD frame structure determined for narrowband communications, the second carrier containing the PSS or the SSS, or information sent on the PSS or the SSS.

43. The non-transitory computer-readable medium of claim 42, wherein the first carrier used to transmit the BCH is located at a fixed frequency offset with respect to the second carrier used to transmit the one or more of the PSS or the SSS.

44. The non-transitory computer-readable medium of claim 37, wherein the BCH indicates at least one of the TDD frame structure configuration determined for the narrowband communications, or a carrier location or subframe location associated with the SIB1.

45. The non-transitory computer-readable medium of claim 44, wherein the information is included in the BCH by at least one of including additional bits in a payload, by using different CRC masks based on the additional bits, or by using different scrambling codes based on the additional bits.

46. The non-transitory computer-readable medium of claim 37, wherein the first carrier is used to transmit both the BCH and the SIB1 when the first carrier is different than the second carrier used to transmit the PSS and SSS.

47. The non-transitory computer-readable medium of claim 37, wherein the SIB1 is transmitted using a different carrier than the first carrier used to transmit the BCH.

48. The non-transitory computer-readable medium of claim 37, wherein at least one of a narrowband carrier location relative to the PSS carrier location or a subframe used to transmit the

SIB1 is associated with the narrowband frame structure determined for the narrowband communications.