CLAIMS

1. A method of wireless communications by a user equipment (UE) in a network, comprising:

receiving, from the network, signaling indicating, for a set of one or more uplink subframes, a first configuration for transmitting zero or more sounding reference signal (SRS) transmissions of a first type in a first component carrier (CC) and a second configuration for transmitting zero or more SRS transmissions of a second type in the first CC;

detecting, based on the configuration, a potential collision in a time domain of a subframe between one or more SRS transmissions in the first CC and a scheduled physical uplink shared channel (PUSCH) transmission in a second CC;

determining whether to drop or apply power scaling to at least one of the SRS transmissions or the PUSCH transmission based on at least one of a transmission type, symbol number, symbol location, or allocated power of the SRS transmissions or PUSCH transmission; and

transmitting at least one of the PUSCH or SRS in accordance with the determination.

2. The method of claim 1, wherein:

the SRS transmission is scheduled for transmission in the first CC using a first radio frequency (RF) chain; and

the PUSCH transmission is scheduled for transmission in the second CC using a second RF chain.

3. The method of claim 1, wherein the determination is to drop at least one of the SRS transmissions or the PUSCH transmission if the UE is not capable of transmitting both SRS and PUSCH in a same subframe.

4. The method of claim 1, further comprising signaling a capability of the UE to support or not support transmitting both SRS and PUSCH in a same subframe.

5. The method of claim 1, wherein:

the determination is to not drop or power scale SRS transmissions if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is less than a transmit power threshold.

6. The method of claim 1, wherein:

the determination is to drop at least one SRS transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

7. The method of claim 6, wherein:

a shortened PUSCH is also scheduled for transmission on the first CC in the subframe; and

the determination is also to transmit the shortened PUSCH or drop the shortened PUSCH transmission depending on a length of the shortened PUSCH transmission.

8. The method of claim 7, wherein the determination is to drop the shortened PUSCH transmission if its length is less than a slot duration.

9. The method of claim 1, wherein:

the determination is to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

10. The method of claim 9, wherein the determination is:

to drop a part of the PUSCH transmission in a slot of the subframe that fully or partially overlaps with the SRS transmissions; and

to transmit another part of the PUSCH transmission in a slot of the subframe that does not fully or partially overlap with the SRS transmissions.

11. The method of claim 1, wherein:

the determination is to apply power scaling to at least one of the SRS transmissions or the PUSCH transmission if allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

12. The method of claim 11, wherein:

the power scaling is applied with a priority based on a power difference between symbols of the PUSCH transmission and SRS transmissions, if the power difference between symbols of the PUSCH transmission and SRS transmissions is no larger than a threshold power difference.

13. The method of claim 12, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

14. The method of claim 1, wherein:

the SRS transmissions include SRS of both the first type and the second type.

15. The method of claim 14, wherein the determination is to drop at least one of an SRS transmission of the first type or the second type of SRS comprise at least SRS of a first type and at least one SRS of a second type if allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

16. The method of claim 1, wherein:

the SRS transmission is scheduled for transmission in the first CC using a first radio frequency (RF) chain; and

the PUSCH transmission is scheduled for transmission in the second CC also using the first RF chain.

17. The method of claim 16, wherein:

the determination is also based on a power change condition involving symbols in the first CC <u>being</u> satisfied; and

the power change condition involves a power difference between any two symbols of: an SRS transmission of the first type, an SRS transmission of the second type, a shortened PUSCH, or an empty symbol, being less than or equal to a threshold power difference.

18. The method of claim 17, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

19. The method of claim 17, wherein the determination is:

to not drop or power scale SRS transmission if the power change condition is satisfied and total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is less than a transmit power threshold; or

to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if the power change condition is not satisfied and total allocated transmit power for a symbol or a group of symbols including the SRS transmissions does not exceed a transmit power threshold.

20. The method of claim 19, wherein:

the determination is to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission in an effort to satisfy the power change condition based on a priority order; and

the priority order is based on at least one of: a number of SRS transmissions of the first type, a number of SRS transmissions of the second type, a length of the shortened PUSCH transmission, or a type of uplink control information (UCI) carried in the shortened PUSCH transmission.

21. The method of claim 17, wherein the determination is to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if:

the power change condition is satisfied; and

total allocated transmit power for a symbol or a group of symbols including the SRS transmissions exceeds a transmit power threshold.

22. The method of claim 21, wherein the determination is:

to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission;

to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold; or

to apply power scaling to at least one of the PUSCH transmission or SRS transmission based on a priority order.

23. The method of claim 22, wherein the determination is:

to drop the shortened PUSCH transmission if its length is less than a slot duration.

24. The method of claim 17, wherein the determination is to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if:

the power change condition is not satisfied; and

total allocated transmit power for a symbol or a group of symbols including the SRS transmissions exceeds a transmit power threshold.

25. The method of claim 24, wherein the determination is:

to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission in an effort to satisfy the power change condition based on a priority order, wherein the priority order is based on at least one of: a number of SRS transmissions of the first type, a number of SRS transmissions of the second type, a length of the shortened PUSCH transmission, or a type of uplink control information (UCI) carried in the shortened PUSCH transmission;

to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold; or

to apply power scaling to at least one of the PUSCH transmission or SRS transmission based on a priority order.

26. The method of claim 1, wherein:

the determination is to apply power scaling to at least one of the SRS transmissions or the PUSCH transmission if a power difference between SRS transmission in a first CC and PUSCH transmission in a second CC is no less than a threshold power difference.

27. The method of claim 26, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

28. A method of wireless communications by a network entity, comprising:

transmitting signaling indicating, for a set of one or more uplink subframes, a first configuration for transmitting zero or more sounding reference signal (SRS) transmissions of a first type in a first component carrier (CC) and a second configuration for transmitting zero or more SRS transmissions of a second type in the first CC;

detecting, based on the configuration, a potential collision in a time domain of a subframe between one or more SRS transmissions in the first CC and a scheduled physical uplink shared channel (PUSCH) transmission in a second CC;

determining whether the UE is to drop or apply power scaling to at least one of the SRS transmissions or the PUSCH transmission based on at least one of a transmission type, symbol number, symbol location, or allocated power of the SRS transmissions or PUSCH transmission; and

receiving at least one of the PUSCH transmission or SRS transmissions in accordance with the determination.

29. An apparatus for wireless communications by a user equipment (UE) in a network, comprising:

a receiver configured to receive, from the network, signaling indicating, for a set of one or more uplink subframes, a first configuration for transmitting zero or more sounding reference signal (SRS) transmissions of a first type in a first component carrier (CC) and a second configuration for transmitting zero or more SRS transmissions of a second type in the first CC;

at least one processor configured to detect, based on the configuration, a potential collision in a time domain of a subframe between one or more SRS transmissions in the first CC and a

scheduled physical uplink shared channel (PUSCH) transmission in a second CC and to determine whether to drop or apply power scaling to at least one of the SRS transmissions or the PUSCH transmission based on at least one of a transmission type, symbol number, symbol location, or allocated power of the SRS transmissions or PUSCH transmission; and

a transmitter configured to transmit at least one of the PUSCH transmission or SRS transmissions in accordance with the determination.

30. The apparatus of claim 29, wherein:

the SRS transmission is scheduled for transmission in the first CC using a first radio frequency (RF) chain; and

the PUSCH transmission is scheduled for transmission in the second CC using a second RF chain.

31. The apparatus of claim 29, wherein the determination is to drop at least one of the SRS transmissions or the PUSCH transmission if the UE is not capable of transmitting both SRS and PUSCH in a same subframe.

32. The apparatus of claim 29, wherein the transmitter is further configured to signal a capability of the UE to support or not support transmitting both SRS and PUSCH in a same subframe.

33. The apparatus of claim 29, wherein:

the determination is to not drop or power scale SRS transmissions if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is less than a transmit power threshold.

34. The apparatus of claim 29, wherein:

the determination is to drop at least one SRS transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

35. The apparatus of claim 34, wherein:

a shortened PUSCH is also scheduled for transmission on the first CC in the subframe; and

the determination is also to transmit the shortened PUSCH or drop the shortened PUSCH transmission depending on a length of the shortened PUSCH transmission.

36. The apparatus of claim 35, wherein the determination is to drop the shortened PUSCH transmission if its length is less than a slot duration.

37. The apparatus of claim 29, wherein:

the determination is to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

38. The apparatus of claim 37, wherein the determination is:

to drop a part of the PUSCH transmission in a slot of the subframe that fully or partially overlaps with the SRS transmissions; and

to transmit another part of the PUSCH transmission in a slot of the subframe that does not fully or partially overlap with the SRS transmissions.

39. The apparatus of claim 29, wherein:

the determination is to apply power scaling to at least one of the SRS transmissions or the PUSCH transmission if allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

40. The apparatus of claim 39, wherein:

the power scaling is applied with a priority based on a power difference between symbols of the PUSCH transmission and SRS transmissions, if the power difference between symbols of the PUSCH transmission and SRS transmissions is no larger than a threshold power difference.

41. The apparatus of claim 40, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

42. The apparatus of claim 29, wherein:

the SRS transmissions include SRS of both the first type and the second type.

43. The apparatus of claim 42, wherein the determination is to drop at least one of an SRS transmission of the first type or the second type of SRS comprise at least SRS of a first type and at least one SRS of a second type if allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold.

44. The apparatus of claim 29, wherein:

the SRS transmission is scheduled for transmission in the first CC using a first radio frequency (RF) chain; and

the PUSCH transmission is scheduled for transmission in the second CC also using the first RF chain.

45. The apparatus of claim 44, wherein:

the determination is also based on a power change condition involving symbols in the first CC being satisfied; and

the power change condition involves a power difference between any two symbols of: an SRS transmission of the first type, an SRS transmission of the second type, a shortened PUSCH, or an empty symbol, being less than or equal to a threshold power difference.

46. The apparatus of claim 45, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

47. The apparatus of claim 45, wherein the determination is:

to not drop or power scale SRS transmission if the power change condition is satisfied and total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is less than a transmit power threshold; or

to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if the power change condition is not satisfied and total allocated transmit power for a symbol or a group of symbols including the SRS transmissions does not exceed a transmit power threshold.

48. The apparatus of claim 47, wherein:

the determination is to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission in an effort to satisfy the power change condition based on a priority order; and

the priority order is based on at least one of: a number of SRS transmissions of the first type, a number of SRS transmissions of the second type, a length of the shortened PUSCH transmission, or a type of uplink control information (UCI) carried in the shortened PUSCH transmission.

49. The apparatus of claim 45, wherein the determination is to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if:

the power change condition is satisfied; and

total allocated transmit power for a symbol or a group of symbols including the SRS transmissions exceeds a transmit power threshold.

50. The apparatus of claim 49, wherein the determination is:

to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission;

to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold; or

to apply power scaling to at least one of the PUSCH transmission or SRS transmission based on a priority order.

51. The apparatus of claim 50, wherein the determination is:

to drop the shortened PUSCH transmission if its length is less than a slot duration.

52. The apparatus of claim 45, wherein the determination is to drop or apply power scaling to at least one of the SRS transmission or PUSCH transmission if:

the power change condition is not satisfied; and

total allocated transmit power for a symbol or a group of symbols including the SRS transmissions exceeds a transmit power threshold.

53. The apparatus of claim 52, wherein the determination is:

to drop or apply power scaling to at least one of the SRS transmission or a shortened PUSCH transmission in an effort to satisfy the power change condition based on a priority order, wherein the priority order is based on at least one of: a number of SRS transmissions of the first type, a number of SRS transmissions of the second type, a length of the shortened PUSCH transmission, or a type of uplink control information (UCI) carried in the shortened PUSCH transmission;

to drop at least part of the PUSCH transmission if total allocated transmit power for a symbol or a group of symbols including the SRS transmissions is greater than a transmit power threshold; or

to apply power scaling to at least one of the PUSCH transmission or SRS transmission based on a priority order.

54. The apparatus of claim 29, wherein:

the determination is to apply power scaling to at least one of the SRS transmissions or the PUSCH transmission if a power difference between SRS transmission in a first CC and PUSCH transmission in a second CC is no less than a threshold power difference.

55. The apparatus of claim 54, wherein the threshold power difference is determined based on at least one of: a capability of the UE, a predefined value, or radio resource control (RRC) signaling.

56. An apparatus for wireless communications by a network entity, comprising:

a transmitter configured to transmit signaling indicating, for a set of one or more uplink subframes, a first configuration for transmitting zero or more sounding reference signal (SRS) transmissions of a first type in a first component carrier (CC) and a second configuration for transmitting zero or more SRS transmissions of a second type in the first CC;

at least one processor configured to detect, based on the configuration, a potential collision in a time domain of a subframe between one or more SRS transmissions in the first CC and a scheduled physical uplink shared channel (PUSCH) transmission in a second CC, determine whether the UE is to drop or apply power scaling to at least one of the SRS transmissions or the PUSCH transmission based on at least one of a transmission type, symbol number, symbol location, or allocated power of the SRS transmissions or PUSCH transmission; and receive at least one of the PUSCH transmission or SRS transmissions in accordance with the determination.