CLAIMS

~~**WHAT IS CLAIMED IS:**~~

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

transmitting a supported configuration of the UE for ~~at least one of~~ sounding reference signal (SRS) transmission ~~or channel state information reference signal (CSI-RS) reception for communication~~ with ~~a plurality of~~one or more transmission reception points (TRPs);

receiving~~, in response to transmitting the supported configuration,~~ configuration information for ~~at least one of~~ the SRS transmission ~~or the CSI-RS reception~~, wherein the configuration information is ~~generated~~ based on the supported configuration; and

communicating~~,~~ with ~~at least a subset of~~ the ~~plurality of~~one or more TRPs, using ~~at least one of~~ the SRS transmission ~~or the CSI-RS reception~~ on resource elements assigned based on the configuration information~~.~~,

wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports one or more of transmitting the SRS transmission over a first span of an integer number of resource blocks during a slot, transmitting the SRS transmission using every resource element over a second span of one or more resource blocks during the slot, or transmitting the SRS transmission using one of every N resource elements over a third span of one or more resource blocks during the slot, wherein N is greater than 4.

2. The method of claim 1, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communicating with ~~at least the subset of the plurality of~~one or more TRPs includes transmitting the SRS transmission on the resource elements, which are assigned based on the SRS comb density supported by the UE.

3. The method of claim 2, wherein the SRS transmission is based on a cyclic shift that is based on a number of the resource elements assigned for the SRS transmission.

4. The method of claim 1, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the

SRS transmission or a number of the resource elements assigned for the SRS transmission.

5. The method of claim 1, wherein the configuration information is received from ~~the plurality~~at least one of the one or more TRPs in one or more of a radio resource control (RRC) message, a medium access control (MAC) control element (CE), a non-access stratum (NAS) message, or a downlink control information (DCI).

6. The method of claim 1, wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports ~~one or more of transmitting the SRS transmission over a first span of an integer number of resource blocks during a slot, transmitting the SRS transmission using every resource element over a second span of one or more resource blocks during the slot, or~~ transmitting the SRS transmission using one of every N resource elements over ~~a~~the third span of one or more resource blocks during the slot, wherein N is greater than 4.

7. The method of claim ~~6, wherein~~1, wherein the supported configuration comprises the SRS transmission using every resource element over the second span of the one or more resources blocks during the slot, and the configuration information received by the UE comprises information configuring the UE to transmit a first set of SRS on each resource element over the first span of a first integer number of resource blocks during the slot.

8. The method of claim 7, wherein communicating with ~~at least the subset of the plurality of~~one or more TRPs comprises transmitting the first set of SRS on each resource element over the first span of the first integer number of resource blocks during a first slot.

9. The method of claim 8, wherein the configuration information configures the UE to transmit a second set of the SRS on one of every J resource elements over a fourth span of a second integer number of resource blocks during the slot using a cyclic shift for a sequence associated with the second set of the SRS, wherein J is greater than 1.

10. The method of claim 9, wherein J is greater than four.

11. The method of claim 1, wherein the supported configuration of the UE is for an SRS transmission with a plurality of TRPs.

12. The method of claim 1, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission having N being greater than 4.

13. A method of wireless communication by a user equipment (UE), comprising:

transmitting a supported configuration of the UE for channel state information reference signal (CSI-RS) reception with one or more transmission reception points (TRPs), wherein the supported configuration of the UE comprises a CSI-RS density supported by the UE and indicates that the UE supports one or more of receiving the CSI-RS on one of every N resource elements over a first span of one or more resource blocks during a slot, wherein N is greater than 24, or receiving the CSI-RS over a second span of K resource blocks during the slot, wherein K is less than 2~~.~~;

receiving, in response to transmitting the supported configuration, configuration information for the CSI-RS reception, wherein the configuration information is based on the supported configuration; and

communicating~~,~~ with the one or more TRPs, using the CSI-RS reception on resource elements assigned based on the configuration information.

~~12~~14. The method of claim ~~11~~13, wherein the configuration information configures the UE to receive the CSI-RS on one of every M resource elements over a third span of J resource blocks during the slot, wherein M is greater than or equal to N, and wherein communicating with ~~at least~~ the ~~subset of the plurality of~~one or more TRPs comprises receiving, from one of the ~~plurality of~~one or more TRPs, the CSI-RS on one of every said M resource elements over the third span of J resource blocks during a first slot.

~~13.~~15. The method of claim ~~1,~~13, wherein the supported configuration of the UE is for the CSI-RS reception with a plurality of TRPs.

16. A method of wireless communication by a user equipment (UE), comprising:

transmitting a supported configuration of the UE for channel state information reference signal (CSI-RS) reception with one or more transmission reception points

(TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports receiving more than a threshold number of CSI-RS resources during a slot, wherein the threshold number of CSI-RS resources during the slot comprises a threshold number of non-zero power (NZP) CSI-RS resources received in a component carrier during the slot, wherein the threshold number of NZP CSI-RS resources is greater than 32.;

receiving, in response to transmitting the supported configuration, configuration information for the CSI-RS reception, wherein the configuration information is based on the supported configuration; and

communicating, with the one or more TRPs, using the CSI-RS reception on resource elements assigned based on the configuration information.

17. The method of claim 16, wherein the supported configuration of the UE is for the CSI-RS reception with a plurality of TRPs.

1418. A method of wireless communication by a base station, comprising:

receiving, from a user equipment (UE), a supported configuration of the UE for at least one of sounding reference signals (SRS) transmission or channel state information reference signals (CSI-RS) reception for communication with a plurality ofone or more transmission reception points (TRPs);

generating, by the base station, configuration information for at least one of the SRS transmission or the CSI-RS reception by the UE, wherein the configuration information is generated based on the supported configuration received fromof the UE;

transmitting the configuration information generated by the base station to the UE; and

communicating, through at least a subset of the plurality ofone or more TRPs with the UE, including at least one of SRS reception from the UE or CSI-RS transmission to the UE on resource elements assigned based on the configuration information.,

15. The method of claim 14, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communicating with at least the subset of the plurality of TRPs includes receiving the SRS transmission on the resource

~~elements assigned by the base station based on the SRS comb density supported by the UE.~~

~~16. The method of claim 14, wherein the SRS transmission is based on a cyclic shift that is based on a number of the resource elements assigned for the SRS transmission.~~

~~17. The method of claim 14, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission or a number of the resource elements assigned for the SRS transmission.~~

~~18. The method of claim 14, wherein the configuration information generated by the base station is transmitted to the UE in one or more of a radio resource control (RRC) message, a medium access control (MAC) control element (CE), a non-access stratum (NAS) message, or a downlink control information (DCI).~~

~~19. The method of claim 14,~~ wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports one or more of transmitting the SRS transmission over a first span of an integer number of resource blocks during a slot, transmitting the SRS transmission using every resource element over a second span of one or more resource blocks during the slot, or transmitting the SRS transmission using one of every N resource elements over a third span of one or more resource blocks during the slot, wherein N is greater than 4.

19. The method of claim 18, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communicating with at least the subset of the one or more TRPs includes receiving the SRS transmission on the resource elements assigned by the base station based on the SRS comb density supported by the UE.

20. The method of claim ~~19~~18, wherein the SRS transmission is based on a cyclic shift that is based on a number of the resource elements assigned for the SRS transmission.

21. The method of claim 18, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission or a number of the resource elements assigned for the SRS transmission.

22. The method of claim 18, wherein the configuration information is generated by the base station and is transmitted to the UE in one or more of a radio resource control (RRC) message, a medium access control (MAC) control element (CE), a non-access stratum (NAS) message, or a downlink control information (DCI).

23. The method of claim 18, wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports transmitting the SRS transmission using one of every N resource elements over the third span of one or more resource blocks during the slot, wherein N is greater than 4.

24. The method of claim 18, wherein the supported configuration comprises the SRS transmission using every resource element over the second span of the one or more resources blocks during the slot, and the configuration information is generated by the base station and comprises information configuring the UE to transmit a first set of SRS on one of every M resource elements over the first span of the first integer number of resource blocks during the slot, wherein M is greater than or equal to 1.

~~21~~25. The method of claim ~~20~~24, wherein communicating with the UE comprises receiving from the UE, the first set of the SRS on one of every said M resource elements over the first span of the first integer number of resource blocks during a first slot, the method further comprising:

estimating, by the base station, one or more downlink channels with the UE based on the first set of the SRS for determining precoding for one or more downlink transmissions; and

transmitting the one or more downlink transmissions to the UE.

~~22~~26. The method of claim ~~20~~24, wherein the configuration information comprises information configuring the UE to transmit a second set of the SRS on one of every J resource elements over a fourth span of a second integer number of resource blocks

during the slot using a cyclic shift for a sequence associated with the second set of the SRS, wherein J is greater than M, and wherein the cyclic shift is determined in part based on a number of subcarriers in a symbol used to transmit the second set of SRS, and wherein communicating with the UE comprises receiving, from the UE, the second set of the SRS on one of every said J resource elements over the fourth span of the second integer number of resource blocks during a second slot using the cyclic shift for the sequence.

~~23~~27. The method of claim ~~22~~26, further comprising:

obtaining by the base station a link quality estimate of one or more uplink channels or one or more downlink channels with the UE based on the first set of the SRS and the second set of the SRS for a coordinated multipoint communication (CoMP) with the UE.

~~24.~~28. The method of claim ~~14,~~18, wherein the supported configuration is for an SRS transmission with a plurality of TRPs.

29. The method of claim 18, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission having N being greater than 4.

30. A method of wireless communication by a base station, comprising:

receiving, from a user equipment (UE), a supported configuration of the UE for channel state information reference signals (CSI-RS) reception with one or more transmission reception points (TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports one or more of receiving the CSI-RS on one of every N resource elements over a first span of one or more resource blocks during a slot, wherein N is greater than 24, or receiving the CSI-RS over a second span of K resource blocks during the slot, wherein K is less than 2~~.~~;

~~25. The method of claim 24~~ generating, by the base station, configuration information for the CSI-RS reception by the UE, wherein the configuration information is based on the supported configuration of the UE;

transmitting the configuration information to the UE; and

communicating, through the one or more TRPs with the UE, including CSI-RS transmission to the UE on resource elements assigned based on the configuration information.

31. The method of claim 30, wherein the configuration information is generated by the base station and comprises information configuring the UE to receive the CSI-RS on one of every M resource elements over a third span of J resource blocks during a slot, wherein M is greater than or equal to N, and wherein communicating with the UE comprises transmitting the CSI-RS on one of every said M resource elements over the third span of J resource blocks during a first slot.

~~26.~~32. The method of claim ~~14,~~30, wherein the supported configuration is for the CSI-RS reception with a plurality of TRPs.

33. A method of wireless communication by a base station, comprising:

receiving, from a user equipment (UE), a supported configuration of the UE for channel state information reference signals (CSI-RS) reception with one or more transmission reception points (TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports receiving more than a threshold number of CSI-RS resources during a slot, and wherein the threshold number of CSI-RS resources during the slot comprises a threshold number of non-zero power (NZP) CSI-RS resources received in a component carrier during the slot, wherein the threshold number of NZP CSI-RS resources is greater than 32~~.~~;

generating, by the base station, configuration information for the CSI-RS reception by the UE, wherein the configuration information is based on the supported configuration of the UE;

transmitting the configuration information to the UE; and

communicating, through the one or more TRPs with the UE, including CSI-RS transmission to the UE on resource elements assigned based on the configuration information.

34. The method of claim 33, wherein the supported configuration is for the CSI-RS reception with a plurality of TRPs.

~~27~~35. An apparatus for wireless communication at a user equipment (UE), comprising:

a memory; ~~an~~and

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

transmit a supported configuration of the UE for ~~at least one of~~ sounding reference signal (SRS) transmission ~~or channel state information reference signal (CSI-RS) reception for communication~~ with ~~a plurality of~~one or more transmission reception points (TRPs);

receive~~, in response to transmitting the supported configuration,~~ configuration information for ~~at least one of~~ the SRS transmission ~~or the CSI-RS reception~~, wherein the configuration information is ~~generated~~ based on the supported configuration; and

communicate~~,~~ with ~~at least a subset of~~ the ~~plurality of~~one or more TRPs, using ~~at least one of~~ the SRS transmission ~~or the CSI-RS reception~~ on resource elements assigned based on the configuration information~~.~~,

wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports one or more of transmitting the SRS transmission over a first span of an integer number of resource blocks during a slot, transmitting the SRS transmission using every resource element over a second span of one or more resource blocks during the slot, or transmitting the SRS transmission using one of every N resource elements over a third span of one or more resource blocks during the slot, wherein N is greater than 4.

~~28~~36. The apparatus of claim ~~27~~35, wherein the supported configuration comprises an SRS comb density supported by the UE,

wherein communicating with ~~at least the subset of the plurality of~~the one or more TRPs includes transmitting the SRS transmission on the resource elements assigned based on the SRS comb density supported by the UE,

wherein the SRS transmission is based on a cyclic shift that is based on a number of the resource elements assigned for the SRS transmission, and wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of the SRS comb density for the SRS transmission or a number of resource elements assigned for the SRS transmission.

37. The apparatus of claim 35, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communication with the one or more TRPs includes the SRS transmission on the resource elements, which are assigned based on the SRS comb density supported by the UE.

38. The apparatus of claim 35, wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports transmitting the SRS transmission using one of every N resource elements over the third span of one or more resource blocks during the slot, wherein N is greater than 4.

39. The apparatus of claim 35, wherein the supported configuration of the UE is for an SRS transmission with a plurality of TRPs.

40. The apparatus of claim 35, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission having N being greater than 4.

~~29~~41. An apparatus for wireless communication at a base station, comprising:

a memory; and

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

receive, from a user equipment (UE), a supported configuration of the UE for ~~at least one of~~ sounding reference signals (SRS) transmission ~~or channel state information reference signals (CSI-RS) reception for communication~~ with ~~a plurality of~~one or more transmission reception points (TRPs);

generate, by the base station, configuration information for ~~at least one of~~ the SRS transmission ~~or the CSI-RS reception~~ by the UE, wherein the configuration information is ~~generated~~ based on the supported configuration ~~received from~~of the UE;

transmit the configuration information ~~generated by the base station~~ to the UE; and

communicate, through at least a subset of the ~~plurality of~~one or more TRPs with the UE, including ~~at least one of~~ SRS reception from the UE ~~or CSI-RS transmission to the UE~~ on resource elements assigned based on the configuration information~~.~~,

wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports one or more of transmitting the SRS transmission over a first span of an integer number of resource blocks during a slot, transmitting the SRS transmission using every resource element over a second span of one or more resource blocks during the slot, or transmitting the SRS transmission using one of every N resource elements over a third span of one or more resource blocks during the slot, wherein N is greater than 4.

~~30~~42. The apparatus of claim ~~29~~41, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communicating with at least the subset of the ~~plurality of~~one or more TRPs includes receiving the SRS transmission on the resource elements assigned by the base station based on the SRS comb density supported by the UE,

wherein the SRS transmission is based on a cyclic shift that is based on a number of the resource elements assigned for the SRS transmission, and

wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of the SRS comb density or a number of the resource elements assigned for the SRS transmission.

43. The apparatus of claim 41, wherein the supported configuration is for an SRS transmission with a plurality of TRPs.

44. The apparatus of claim 41, wherein a number of cyclic shifts in a set of cyclic shifts for a sequence for the SRS transmission is based on a value of a comb density for the SRS transmission having N being greater than 4.

45. The apparatus of claim 41, wherein the supported configuration comprises an SRS comb density supported by the UE, and wherein communication with the UE includes the SRS reception on the resource elements, which are assigned based on the SRS comb density supported by the UE.

46. The apparatus of claim 41, wherein the supported configuration by the UE of the SRS transmission comprises information indicating the UE supports transmitting the

SRS transmission using one of every N resource elements over the third span of one or more resource blocks during the slot, wherein N is greater than 4.

47. An apparatus for wireless communication at a user equipment (UE), comprising:

a memory; and

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

transmit a supported configuration of the UE for channel state information reference signal (CSI-RS) reception with one or more transmission reception points (TRPs), wherein the supported configuration of the UE comprises a CSI-RS density supported by the UE and indicates that the UE supports one or more of receiving the CSI-RS on one of every N resource elements over a first span of one or more resource blocks during a slot, wherein N is greater than 24, or receiving the CSI-RS over a second span of K resource blocks during the slot, wherein K is less than 2;

receive, in response to transmitting the supported configuration, configuration information for the CSI-RS reception, wherein the configuration information is based on the supported configuration; and

communicate~~,~~ with the one or more TRPs, using the CSI-RS reception on resource elements assigned based on the configuration information.

48. The apparatus of claim 47, wherein the supported configuration of the UE is for the CSI-RS reception with a plurality of TRPs.

49. An apparatus for wireless communication at a user equipment (UE), comprising:

a memory; and

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

transmit a supported configuration of the UE for channel state information reference signal (CSI-RS) reception with one or more transmission reception points (TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports receiving more than a threshold number of CSI-RS resources during a slot, wherein the threshold number of CSI-RS resources during the slot comprises a threshold number of non-zero power (NZP) CSI-RS resources received in a component

carrier during the slot, wherein the threshold number of NZP CSI-RS resources is greater than 32;

receive, in response to transmitting the supported configuration, configuration information for the CSI-RS reception, wherein the configuration information is based on the supported configuration; and

communicate~~,~~ with the one or more TRPs, using the CSI-RS reception on resource elements assigned based on the configuration information.

50. The apparatus of claim 49, wherein the supported configuration of the UE is for the CSI-RS reception with a plurality of TRPs.

51. An apparatus for wireless communication at a base station, comprising:

a memory; and

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

receive, from a user equipment (UE), a supported configuration of the UE for channel state information reference signals (CSI-RS) reception with ~~a~~ one or more transmission reception points (TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports one or more of receiving the CSI-RS on one of every N resource elements over a first span of one or more resource blocks during a slot, wherein N is greater than 24, or receiving the CSI-RS over a second span of K resource blocks during the slot, wherein K is less than 2;

generate, by the base station, configuration information for the CSI-RS reception by the UE, wherein the configuration information is based on the supported configuration of the UE;

transmit the configuration information to the UE; and

communicate, through the one or more TRPs with the UE, including CSI-RS transmission to the UE on resource elements assigned based on the configuration information.

52. The apparatus of claim 51, wherein the supported configuration is for the CSI-RS reception with a plurality of TRPs.

53. An apparatus for wireless communication at a base station, comprising:

a memory; and

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

receive, from a user equipment (UE), a supported configuration of the UE for channel state information reference signals (CSI-RS) reception with ~~a~~ one or more transmission reception points (TRPs), wherein the supported configuration by the UE of the CSI-RS reception comprises information indicating the UE supports receiving more than a threshold number of CSI-RS resources during a slot, and wherein the threshold number of CSI-RS resources during the slot comprises a threshold number of non-zero power (NZP) CSI-RS resources received in a component carrier during the slot, wherein the threshold number of NZP CSI-RS resources is greater than 32;

generate, by the base station, configuration information for the CSI-RS reception by the UE, wherein the configuration information is based on the supported configuration of the UE;

transmit the configuration information to the UE; and

communicate, through the one or more TRPs with the UE, including CSI-RS transmission to the UE on resource elements assigned based on the configuration information.

54. The apparatus of claim 53, wherein the supported configuration is for the CSI-RS reception with a plurality of TRPs.