CLAIMS

1. A method for wireless communication by a user equipment (UE), comprising: communicating with a base station via one or more beamformed transmissions on an active beam, the active beam being selected using beam reference signals (BRSs) in a BRS procedure; receiving from the base station a plurality of refinement reference signals (RRSs) as part of a beam refinement procedure, the plurality of RRSs including an active beam RRS corresponding to the active beam; determining that the active beam RRS of the plurality of RRSs corresponds to the active beam; performing a beam state measurement on at least the active beam RRS; and refining the active beam based at least in part on the beam state measurement on the active beam RRS.

2. The method of claim 1, wherein determining that the active beam RRS corresponds to the active beam comprises: determining a resource identifier (ID) associated with the active beam RRS.

3. The method of claim 2, further comprising: identifying the resource ID based on an indication conveyed in a radio resource control (RRC) configuration procedure performed with the base station.

4. The method of claim 2, wherein the resource ID is associated with an antenna port configuration used by the base station to transmit the active beam RRS and the active beam.

5. The method of claim 1, wherein determining that the active beam RRS corresponds to the active beam comprises: identifying one or more antenna ports associated with the active beam RRS based on an antenna port configuration of the active beam.

6. The method of claim 1, further comprising: transmitting a beam state measurement report to the base station.

7. The method of claim 6, wherein the beam state measurement report comprises a reference signal received power associated with at least the active beam RRS.

8. The method of claim 6, wherein the beam state measurement report associated with the active beam RRS does not include an index associated with a resource identifier (ID).

9. The method of claim 1, wherein refining the active beam comprises: using one or more receive beams to receive the active beam RRS; identifying a refined beam state information of the one or more receive beams; and using the refined beam state information to adjust the active beam used by a user equipment (UE).

10. The method of claim 9, further comprising: adjusting the active beam at a predetermined time.

11. The method of claim 9, further comprising: transmitting an indicator to the base station indicative of the adjustment to the active beam.

12. The method of claim 1, wherein refining the active beam comprises: receiving an active beam refinement authorization from the base station; and refining the active beam based at least in part on the active beam refinement authorization.

13. The method of claim 1, further comprising: using a plurality of user equipment (UE) antenna arrays to perform the beam state measurement on at least the active beam RRS.

14. The method of claim 1, further comprising: receiving, from the base station, an indicator associating the plurality of RRSs with a prior reference signal transmitted from the base station.

15. The method of claim 1, further comprising: receiving, from the base station, an indicator associating each of the plurality of RRSs with a corresponding prior reference signal transmitted from the base station.

16. The method of claim 1, wherein the RRSs comprise at least one of a beam refined reference signal (BRRS) or a channel state information reference signal (CSI-RS).

17. A method for wireless communication, comprising: communicating with a user equipment (UE) via one or more beamformed transmissions using an active beam, the active beam being selected using beam reference signals (BRSs) in a BRS procedure; selecting a plurality of refinement reference signals (RRSs) for transmission to the UE, the plurality of RRSs including an active beam RRS corresponding to the active beam; transmitting the plurality of RRSs, including the active beam RRS, to the UE as part of a beam refinement procedure; and indicating to the UE that the active beam RRS of the plurality of RRSs corresponds to the active beam.

18. The method of claim 17, wherein indicating to the UE that the active beam RRS corresponds to the active beam comprises: conveying an indication of a resource identifier (ID) associated with the active beam RRS, wherein the resource ID is further associated with the active beam.

19. The method of claim 18, wherein the indication is an antenna port configuration used to transmit the active beam RRS.

20. The method of claim 17, further comprising: receiving a beam state measurement report from the UE.

21. The method of claim 20, wherein the beam state measurement report comprises a reference signal received power associated with at least the active beam RRS.

22. The method of claim 20, wherein the beam state measurement report comprises an index associated with a resource identifier (ID) associated with the active beam RRS.

23. The method of claim 20, wherein the beam state measurement report associated with the active beam RRS does not include a resource identifier (ID) associated with the active beam RRS.

24. The method of claim 17, further comprising: receiving an indication from the UE that the UE has used a refined beam to adjust a UE beamform signal.

25. The method of claim 17, further comprising: transmitting, to the UE, an indicator associating the plurality of RRSs with a prior reference signal.

26. The method of claim 17, further comprising: transmitting, to the UE, an indicator associating each of the plurality of RRSs with a corresponding prior reference signal.

27. The method of claim 17, further comprising: transmitting an active beam refinement authorization to the UE, wherein the UE refines the active beam based at least in part on the active beam refinement authorization.

28. A method for wireless communication, comprising: receiving, from a base station, an indicator indicating that a first antenna port of a refinement reference signal (RRS) is quasi co-located with a first prior reference signal transmitted from the base station; and receiving, from the base station, the RRS of the first antenna port using a first antenna configuration used for receiving the first prior reference signal based at least in part on the RRS being quasi co-located with the first prior reference signal.

29. The method of claim 28, wherein the indicator associates a second antenna port of the RRS with the first prior reference signal, and wherein receiving the RRS comprises: receiving the RRS of the first antenna port and the second antenna port using the first antenna configuration used for receiving the first prior reference signal.

30. The method of claim 28, wherein the indicator associates a second antenna port of the RRS with a second prior reference signal, and wherein receiving the RRS comprises: receiving the RRS of the first antenna port using the first antenna configuration used for receiving the first prior reference signal and receiving the RRS of the second antenna port using a second antenna configuration used for receiving the second prior reference signal.

31. An apparatus for wireless communication, in a system comprising: a processor of a user equipment (UE); memory in electronic communication with the processor; and instructions

stored in the memory and operable, when executed by the processor, to cause the apparatus to: communicate with a base station via one or more beamformed transmissions on an active beam, the active beam being selected using beam reference signals (BRSs) in a BRS procedure; receive from the base station a plurality of refinement reference signals (RRSs) as part of a beam refinement procedure, the plurality of RRSs including an active beam RRS corresponding to the active beam; determine that the active beam RRS of the plurality of RRSs corresponds to the active beam; perform a beam state measurement on at least the active beam RRS; and refine the active beam based at least in part on the beam state measurement on the active beam RRS.

32. The apparatus of claim 31, wherein the instructions executable by the processor to determine that the active beam RRS corresponds to the active beam comprises: determining a resource identifier (ID) associated with the active beam RRS.

33. The apparatus of claim 32, wherein the instructions are further executable by the processor to: identify the resource ID based on an indication conveyed in a radio resource control (RRC) configuration procedure performed with the base station.

34. The apparatus of claim 32, wherein the resource ID is associated with an antenna port configuration used by the base station to transmit the active beam RRS and the active beam.

35. The apparatus of claim 31, wherein the instructions executable by the processor to determine that the active beam RRS corresponds to the active beam comprises: identifying one or more antenna ports associated with the active beam RRS based on an antenna port configuration of the active beam.

36. The apparatus of claim 31, wherein the instructions are further executable by the processor to: transmit a beam state measurement report to the base station.

37. The apparatus of claim 36, wherein the beam state measurement report comprises a reference signal received power associated with at least the active beam RRS.

38. The apparatus of claim 36, wherein the beam state measurement report associated with the active beam RRS does not include an index associated with a resource identifier (ID).

39. The apparatus of claim 31, wherein the instructions are further executable by the processor to: use one or more receive beams to receive the active beam RRS; identify a refined beam state information of the one or more receive beams; and use the refined beam state information to adjust the active beam used by a user equipment (UE).

40. The apparatus of claim 39, wherein the instructions are further executable by the processor to: adjust the active beam at a predetermined time.

41. The apparatus of claim 39, wherein the instructions are further executable by the processor to: transmit an indicator to the base station indicative of the adjustment to the active beam.

42. The apparatus of claim 31, wherein the instructions are further executable by the processor to: receive an active beam refinement authorization from the base station; and refine the active beam based at least in part on the active beam refinement authorization.

43. The apparatus of claim 31, wherein the instructions are further executable by the processor to: use a plurality of user equipment (UE) antenna arrays to perform the beam state measurement on at least the active beam RRS.

44. The apparatus of claim 31, wherein the instructions are further executable by the processor to: receive, from the base station, an indicator associating the plurality of RRSs with a prior reference signal transmitted from the base station.

45. The apparatus of claim 31, wherein the instructions are further executable by the processor to: receive, from the base station, an indicator associating each of the plurality of RRSs with a corresponding prior reference signal transmitted from the base station.

46. The apparatus of claim 31, wherein the RRS comprises at least one of a beam refined

reference signal (BRRS) or a channel state information reference signal (CSI-RS).

47. An apparatus for wireless communication, in a system comprising: a processor; memory in electronic communication with the processor; and instructions stored in the memory and operable, when executed by the processor, to cause the apparatus to: communicate with a user equipment (UE) via one or more beamformed transmissions using an active beam, the active beam being selected using beam reference signals (BRSs) in a BRS procedure; select a plurality of refinement reference signals (RRSs) for transmission to the UE, the plurality of RRSs including an active beam RRS corresponding to the active beam; transmit the plurality of RRSs, including the active beam RRS, to the UE as part of a beam refinement procedure; and indicate to the UE that the active beam RRS of the plurality of RRSs corresponds to the active beam.

48. The apparatus of claim 47, wherein the instructions executable by the processor to indicate to the UE that the active beam RRS corresponds to the active beam comprises: conveying an indication of a resource identifier (ID) associated with the active beam RRS, wherein the resource ID is further associated with the active beam.

49. The apparatus of claim 48, wherein the indication is an antenna port configuration used to transmit the active beam RRS.

50. The apparatus of claim 47, wherein the instructions are further executable by the processor to: receive a beam state measurement report from the UE.

51. The apparatus of claim 50, wherein the beam state measurement report comprises a reference signal received power associated with at least the active beam RRS.

52. The apparatus of claim 50, wherein the beam state measurement report comprises an index associated with a resource identifier (ID) associated with the active beam RRS.

53. The apparatus of claim 50, wherein the beam state measurement report associated with the active beam RRS does not include a resource identifier (ID) associated with the active beam

RRS.

54. The apparatus of claim 47, wherein the instructions are further executable by the processor to: receive an indication from the UE that the UE has used a refined beam to adjust a UE beamform signal.

55. The apparatus of claim 47, wherein the instructions are further executable by the processor to: transmit, to the UE, an indicator associating the plurality of RRSs with a prior reference signal.

56. The apparatus of claim 47, wherein the instructions are further executable by the processor to: transmit, to the UE, an indicator associating each of the plurality of RRSs with a corresponding prior reference signal.

57. The apparatus of claim 47, wherein the instructions are further executable by the processor to: transmit an active beam refinement authorization to the UE, wherein the UE refines the active beam based at least in part on the active beam refinement authorization.

58. An apparatus for wireless communication, in a system comprising: a processor; memory in electronic communication with the processor; and instructions stored in the memory and operable, when executed by the processor, to cause the apparatus to: receive, from a base station, an indicator indicating that a first antenna port of a refinement reference signal (RRS) is quasi co-located with a first prior reference signal transmitted from the base station; and receive, from the base station, the RRS of the first antenna port using a first antenna configuration used for receiving the first prior reference signal based at least in part on the RRS being quasi co-located with the first prior reference signal.

59. The apparatus of claim 58, wherein the indicator associates a second antenna port of the RRS with the first prior reference signal, and wherein the instructions are further executable by the processor to: receive the RRS of the first antenna port and the second antenna port using the first antenna configuration used for receiving the first prior reference signal.

60. The apparatus of claim 58, wherein the indicator associates a second antenna port of the RRS with a second prior reference signal, and wherein the instructions are further executable by the processor to: receive the RRS of the first antenna port using the first antenna configuration used for receiving the first prior reference signal and receive the RRS of the second antenna port using a second antenna configuration used for receiving the second prior reference signal.