CLAIMS

1. A method for wireless communications by a network entity comprising:

determining a plurality of frequency bandwidth parts (BWPs) for radio link monitoring (RLM), each of the plurality of frequency BWPs comprising a subset of frequency resources within a maximum frequency channel bandwidth, wherein a corresponding one or more reference signals (RSs) are transmitted over each of the plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

transmitting, to a user equipment (UE), an RS configuration of the plurality of RS configurations, the RS configuration indicating a frequency BWP of the plurality of frequency BWPs to monitor for the corresponding one or more RSs.

2. The method of claim 1, wherein transmitting the RS configuration comprises:

configuring the UE to perform interference measurements (IMR) for RLM of at least one of the one or more RSs.

3. The method of claim 2, wherein the RLM takes IMR as an input in addition to RS measurements.

4. The method of claim 2, wherein the RLM uses the IMR within one or more frequency BWPs.

5. The method of claim 2, wherein the RLM uses long term averaging of the IMR.

6. The method of claim 1, wherein the RS configuration is specific to one or more frequency BWPs.

7. The method of claim 1, wherein the one or more RSs include one or more of an NR synchronization signal (NR-SS), a time reference signal (TRS), a channel state information - reference signal (CSI-RS), or a demodulation reference signal (DMRS).

8. The method of claim 1, wherein transmitting the RS configuration comprises:

specifying at least one of one or more antenna ports, an RS signal time configuration, an RS signal frequency configuration, or a sub-frame configuration.

9. The method of claim 1, wherein transmitting the RS configuration comprises: configuring priority for frequency BWPs for RLM purposes.

10. The method of claim 1, wherein transmitting the RS configuration comprises: configuring one or more frequency BWPs as primary and others as secondary.

11. The method of claim 1, wherein transmitting the RS configuration comprises:

configuring RLM to be performed on each frequency BWP, wherein RLM is based on individual frequency BWP RS measurements.

12. The method of claim 1, wherein transmitting the RS configuration comprises:

configuring RLM to be performed taking a best of RS measurements of one or more frequency BWPs.

13. A method for wireless communications by a user equipment (UE) comprising:

receiving a reference signal (RS) configuration from a radio access network (RAN), the RS configuration indicating a frequency bandwidth part (BWP) comprising a subset of frequency resources within a maximum frequency channel bandwidth to monitor for a corresponding one or more RSs transmitted over the indicated frequency BWP, the indicated frequency BWP being one of a plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

monitoring the corresponding one or more RSs on the indicated frequency BWP based on the RS configuration.

14. The method of claim 13, further comprising:

generating one or more in-sync and out-of-sync (IS/OOS) indications based on frequency

BWP measurements of the indicated frequency BWP obtained during monitoring the corresponding one or more RSs.

15. The method of claim 14, wherein the one or more IS/OOS indications are based on frequency BWP measurements of one or more indicated frequency BWPs.

16. The method of claim 14, wherein an IS indication of the one or more IS/OOS indications is a best of frequency BWP measurements.

17. The method of claim 14, wherein the one or more IS/OOS indications consider short or long term interference measurements.

18. A network entity, comprising:

a memory; and

a processor coupled to the memory, wherein the processor is configured to:

determine a plurality of frequency bandwidth parts (BWPs) for radio link monitoring (RLM), each of the plurality of frequency BWPs comprising a subset of frequency resources within a maximum frequency channel bandwidth, wherein a corresponding one or more reference signals (RSs) are transmitted over each of the plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

transmit, to a user equipment (UE), an RS configuration of the plurality of RS configurations, the RS configuration indicating a frequency BWP of the plurality of frequency BWPs to monitor for the corresponding one or more RSs.

19. The network entity of claim 18, wherein the RS configuration is specific to one or more frequency BWPs.

20. The network entity of claim 18, wherein the one or more RSs include one or more of an NR synchronization signal (NR-SS), a time reference signal (TRS), a channel state information - reference signal (CSI-RS), or a demodulation reference signal (DMRS).

21. The network entity of claim 18, wherein the RS configuration specifies at least one of one or more antenna ports, an RS signal time configuration, an RS signal frequency configuration, or a sub-frame configuration.

22. The network entity of claim 18, wherein the one or more RSs include an NR synchronization signal (NR-SS).

23. The network entity of claim 18, wherein the one or more RSs include a time reference signal (TRS).

24. The network entity of claim 18, wherein the one or more RSs include a channel state information - reference signal (CSI-RS).

25. The network entity of claim 18, wherein the one or more RSs include a demodulation reference signal (DMRS).

26. The network entity of claim 18, wherein the RS configuration specifies one or more antenna ports.

27. The network entity of claim 18, wherein the RS configuration specifies an RS signal time configuration.

28. The network entity of claim 18, wherein the RS configuration specifies an RS signal frequency configuration.

29. The network entity of claim 18, wherein the RS configuration specifies a sub-frame configuration.

30. A user equipment (UE), comprising:

a memory; and

a processor coupled to the memory, wherein the processor is configured to:

receive a reference signal (RS) configuration from a radio access network (RAN), the RS configuration indicating a frequency bandwidth part (BWP) comprising a subset of frequency resources within a maximum frequency channel bandwidth to monitor for a corresponding one or more RSs transmitted over the indicated frequency BWP, the indicated frequency BWP being one of a plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

monitor the corresponding one or more RSs on the indicated frequency BWP based on the RS configuration.

31. The UE of claim 30, wherein the processor is further configured to:

generate one or more in-sync and out-of-sync (IS/OOS) indications based on frequency BWP measurements of the indicated frequency BWP obtained during monitoring the corresponding one or more RSs.

32. The UE of claim 31, wherein the one or more IS/OOS indications are based on frequency BWP measurements of one or more indicated frequency BWPs.

33. The UE of claim 30, wherein the one or more RSs include an NR synchronization signal (NR-SS).

34. The UE of claim 30, wherein the one or more RSs include a time reference signal (TRS).

35. The UE of claim 30, wherein the one or more RSs include a channel state information - reference signal (CSI-RS).

36. The UE of claim 30, wherein the one or more RSs include a demodulation reference signal (DMRS).

37. A non-transitory computer-readable storage medium configured to store instructions that,

when executed by a network entity, cause the network entity to perform operations for wireless communication, the operations comprising:

determining a plurality of frequency bandwidth parts (BWPs) for radio link monitoring (RLM), each of the plurality of frequency BWPs comprising a subset of frequency resources within a maximum frequency channel bandwidth, wherein a corresponding one or more reference signals (RSs) are transmitted over each of the plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

transmitting, to a user equipment (UE), an RS configuration of the plurality of RS configurations, the RS configuration indicating a frequency BWP of the plurality of frequency BWPs to monitor for the corresponding one or more RSs.

38. The non-transitory computer-readable storage medium of claim 37, wherein the RS configuration is specific to one or more frequency BWPs.

39. The non-transitory computer-readable storage medium of claim 37, wherein the one or more RSs include one or more of an NR synchronization signal (NR-SS), a time reference signal (TRS), a channel state information - reference signal (CSI-RS), or a demodulation reference signal (DMRS).

40. The non-transitory computer-readable storage medium of claim 37, wherein transmitting the RS configuration comprises:

specifying at least one of one or more antenna ports, an RS signal time configuration, an RS signal frequency configuration, or a sub-frame configuration.

41. A non-transitory computer-readable storage medium configured to store instructions that, when executed by a user equipment (UE), cause the UE to perform operations for wireless communication, the operations comprising:

receiving a reference signal (RS) configuration from a radio access network (RAN), the RS configuration indicating a frequency bandwidth part (BWP) comprising a subset of frequency resources within a maximum frequency channel bandwidth to monitor for a corresponding one or

more RSs transmitted over the indicated frequency BWP, the indicated frequency BWP being one of a plurality of frequency BWPs, and wherein each of the plurality of frequency BWPs corresponds to at least one of a plurality of RS configurations; and

monitoring the corresponding one or more RSs on the indicated frequency BWP based on the RS configuration.

42. The non-transitory computer-readable storage medium of claim 41, wherein the operations further comprise:

generating one or more in-sync and out-of-sync (IS/OOS) indications based on frequency BWP measurements of the indicated frequency BWP obtained during monitoring the corresponding one or more RSs.

43. The non-transitory computer-readable storage medium of claim 42, wherein the one or more IS/OOS indications are based on frequency BWP measurements of one or more indicated frequency BWPs.