

CLAIMS

1. A method for wireless communications at a wireless device, comprising:
 - receiving a configuration for a first random access message of a two-step random access channel procedure;
 - selecting a subcarrier spacing and a number of demodulation reference signal occurrences for transmitting the first random access message based at least in part on the configuration and a speed of the wireless device exceeding a threshold; and
 - transmitting the first random access message of the two-step random access channel procedure using the subcarrier spacing and the number of demodulation reference signal occurrences.
2. The method of claim 1, wherein the configuration comprises a set of combinations for the subcarrier spacing and the number of demodulation reference signal occurrences.
3. The method of claim 2, wherein the selecting comprises:
 - selecting a configuration identification corresponding to a combination of the set of combinations for the subcarrier spacing and the number of demodulation reference signal occurrences.
4. The method of claim 1, wherein the configuration comprises a first parameter for the subcarrier spacing and a second parameter for the number of demodulation reference signal occurrences.
5. The method of claim 4, wherein the selecting comprises:
 - independently selecting the subcarrier spacing based at least in part on the first parameter and the number of demodulation reference signal occurrences based at least in part on the second parameter.
6. The method of claim 1, further comprising:
 - selecting the subcarrier spacing and the number of demodulation reference signal occurrences based at least in part on the speed of the wireless device exceeding a threshold.

7. The method of claim 1, further comprising:
transmitting an indication of the selected subcarrier spacing and the number of demodulation reference signal occurrences.
8. The method of claim 7, wherein the indication is included in a physical uplink shared channel (PUSCH) of the first random access message, in uplink control information on a physical uplink control channel, or both.
9. The method of claim 7, wherein the indication comprises a first parameter for the selected subcarrier spacing and a second parameter for the number of demodulation reference signal occurrences.
10. The method of claim 7, wherein the indication comprises a configuration identification to indicate the subcarrier spacing and the number of demodulation reference signal occurrences.
11. The method of claim 7, wherein the indication comprises sequences, frequency position information, or both, for demodulation reference signals corresponding to the number of demodulation reference signal occurrences.
12. The method of claim 1, wherein the configuration is received in a system information message.
13. The method of claim 12, further comprising:
transmitting a request for the system information message, wherein the system information message is received based at least in part on the request.
14. The method of claim 1, further comprising:
determining the speed of the wireless device is below a threshold; and
registering to another cell based at least in part on the determining.
15. The method of claim 1, wherein the number of demodulation reference signal occurrences comprises occurrences for a front loaded demodulation reference signal and at least one additional demodulation reference signal.

16. The method of claim 15, wherein the at least one additional demodulation reference signal uses a same sequence, frequency location, or both, as the front loaded demodulation reference signal or a different sequence, frequency location, or both, than the front loaded demodulation reference signal.

17. The method of claim 1, wherein the wireless device is a user equipment (UE) or a relay node.

18. A method for wireless communications, comprising:
transmitting, to a first wireless device, a configuration for a first random access message of a two-step random access channel procedure; and
receiving the first random access message of the two-step random access channel procedure using a subcarrier spacing and a number of demodulation reference signal occurrences, wherein the subcarrier spacing and the number of demodulation reference signal occurrences are based at least in part on the configuration and a speed of the first wireless device exceeding a threshold.

19. The method of claim 18, wherein the configuration comprises a set of combinations for the subcarrier spacing and the number of demodulation reference signal occurrences.

20. The method of claim 18, wherein the configuration comprises a first parameter for the subcarrier spacing and a second parameter for the number of demodulation reference signal occurrences.

21. The method of claim 18, wherein the subcarrier spacing and the number of demodulation reference signal occurrences are based at least in part on the speed of the first wireless device exceeding a threshold.

22. The method of claim 18, further comprising:
receiving an indication of the selected subcarrier spacing and the number of demodulation reference signal occurrences.

23. The method of claim 22, wherein the indication is received in a physical uplink shared channel (PUSCH) of the first random access message, in uplink control information on a physical uplink control channel, or both.

24. The method of claim 22, wherein the indication comprises a first parameter for the selected subcarrier spacing and a second parameter for the number of demodulation reference signal occurrences.

25. The method of claim 22, wherein the indication comprises a configuration identification indicating the subcarrier spacing and the number of demodulation reference signal occurrences.

26. The method of claim 22, wherein the indication comprises sequences, frequency position information, or both, for demodulation reference signals corresponding to the number of demodulation reference signal occurrences.

27. The method of claim 18, wherein the configuration is transmitted in a system information message.

28. The method of claim 18, wherein the first wireless device is a user equipment (UE) or a relay node.

29. An apparatus for wireless communications at a wireless device, comprising:
 a processor,
 memory in electronic communication with the processor; and
 instructions stored in the memory and executable by the processor to cause the apparatus to:

receive a configuration for a first random access message of a two-step random access channel procedure;

select a subcarrier spacing and a number of demodulation reference signal occurrences for transmitting the first random access message based at least in part on the configuration and a speed of the wireless device exceeding a threshold;
 and

transmit the first random access message of the two-step random access channel procedure using the subcarrier spacing and the number of demodulation reference signal occurrences.

30. An apparatus for wireless communications, comprising:
a processor,
memory in electronic communication with the processor; and
instructions stored in the memory and executable by the processor to cause the
apparatus to:

transmit, to a first wireless device, a configuration for a first random
access message of a two-step random access channel procedure; and
receive the first random access message of the two-step random access
channel procedure using a subcarrier spacing and a number of demodulation reference
signal occurrences, wherein the subcarrier spacing and the number of demodulation
reference signal occurrences are based at least in part on the configuration and a speed
of the first wireless device exceeding a threshold.