CLAIMS

1. A method of wireless communication, comprising:

communicating, by a first wireless communication device with a second wireless communication device, a first uplink (UL) scheduling grant;

communicating, by the first wireless communication device with the second wireless communication device, a first UL communication signal based on the first UL scheduling grant during a first channel occupancy time (COT), the first COT based on an extended clear channel assessment (eCCA) associated with the first UL communication signal; and

communicating, by the first wireless communication device with the second wireless communication device during the first COT after a listen-before-talk (LBT) gap from an end of the first UL communication signal, a downlink (DL) communication signal based on COT sharing information associated with the first COT.

2. The method of claim 1, wherein:

the first wireless communication device is a user equipment (UE),

the second wireless communication device is a base station (BS),

the communicating the first UL scheduling grant includes:

receiving, by the UE from the BS, the first UL scheduling grant during a COT of the BS, wherein the first COT is associated with the UE and located outside of the COT of the BS,

the communicating the first UL communication signal includes:

transmitting, by the UE to the BS, the first UL communication signal, and the communicating the DL communication signal includes:

receiving, by the UE from the BS during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

3. The method of claim 1, wherein:

the first wireless communication device is a base station (BS),

the second wireless communication device is a user equipment (UE),

the communicating the first UL scheduling grant includes:

transmitting, by the BS to the UE, the first UL scheduling grant during a COT of the BS, wherein the first COT is associated with the UE and located outside of the COT of the BS,

the communicating the first UL communication signal includes:

receiving, by the BS from the UE, the first UL communication signal, and

the communicating the DL communication signal includes:

transmitting, by the BS to the UE during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

4. The method of claim 1, wherein:

the communicating the first UL communication signal includes:

communicating, by the first wireless communication device with the second wireless communication device, the first UL communication signal during a first portion of the first COT, and

the communicating the DL communication signal includes:

communicating, by the first wireless communication device with the second wireless communication device, the DL communication signal during a shared portion of the first COT, the first portion being different from the shared portion, and

the COT sharing information includes at least one of a starting time or a duration of the shared portion.

5. The method of claim 1, further comprising:

determining, by the first wireless communication device, the COT sharing information based on the first UL scheduling grant.

6. The method of claim 1, wherein the communicating the DL communication signal includes:

transmitting, by the first wireless communication device to the second wireless communication device after the first UL communication signal, the DL communication signal further based on first UL scheduling grant.

7. The method of claim 6, further comprising:

determining, by the first wireless communication device, whether to perform an LBT before transmitting the DL communication signal based on whether a transmission gap between the first UL communication signal and the DL communication signal is 16 microseconds or longer.

8. The method of claim 7, further comprising:

performing, by the first wireless communication device, the LBT before transmitting the DL communication signal based on the determining.

9. The method of claim 1, wherein the communicating the DL communication signal is further based on a detection of the first UL communication signal.

10. The method of claim 9, wherein the detection is based on a detection of at least one of a reference signal or UL control information associated with the first UL communication signal.

11. The method of claim 1, further comprising:

transmitting, by the first wireless communication device to the second wireless communication device, a plurality of scheduling grants for communicating a plurality of UL communication signals in consecutive periods outside of a COT of the first wireless communication device, the plurality of scheduling grants including the first UL scheduling grant.

12. The method of claim 11, further comprising:

determining, by the first wireless communication device, a COT sharing duration within the first COT for communicating the DL communication signal based on a detection of one or more UL communication signals of the plurality of UL communication signals.

13. The method of claim 12, wherein the determining the COT sharing duration is further based on whether uplink control information (UCI) or a demodulation reference signal (DMRS) is detected from one or more UL communication signals of the plurality of UL communication signals.

14. The method of claim 11, further comprising:

determining, by the first wireless communication device, a COT sharing duration within the first COT for communicating the DL communication signal based on an earliest transmission time scheduled by the plurality of scheduling grants.

15. An apparatus comprising:

means for communicating, with a wireless communication device, a first uplink (UL) scheduling grant;

means for communicating, with the wireless communication device, a first UL communication signal based on the first UL scheduling grant during a first channel occupancy time (COT), the first COT based on an extended clear channel assessment (eCCA) associated with the first UL communication signal; and

means for communicating, with the wireless communication device, during the first COT after a listen-before-talk (LBT) gap from an end of the first UL communication signal, a downlink (DL) communication signal based on COT sharing information associated with the first COT.

16. The apparatus of claim 15, wherein:

the apparatus is a user equipment (UE),

the wireless communication device is a base station (BS),

the means for communicating the first UL scheduling grant is configured to:

receive, from the BS, the first UL scheduling grant during a COT of the BS, wherein the first COT is associated with the UE and located outside of the COT of the BS; and

the means for communicating the first UL communication signal is configured to:

transmit, to the BS, the first UL communication signal, and

the transceiver configured to communicate the DL communication signal is configured to:

receive, from the BS during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

17. The apparatus of claim 15, wherein:

the apparatus is a base station (BS),

the wireless communication device is a user equipment (UE),

the means for communicating the first UL scheduling grant is configured to:

transmit, to the UE, the first UL scheduling grant during a COT of the BS, wherein the first COT is associated with the UE and located outside of the COT of the BS, and

the means for communicating the first UL communication signal is configured to:

receive, from the wireless communication device, the first UL communication signal, and

the transceiver configured to communicate the DL communication signal is configured to:

transmit, to the UE during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

18. The apparatus of claim 15, wherein:

the means for communicating the first UL communication signal is configured to:

communicate, with the wireless communication device, the first UL communication signal during a first portion of the first COT, and

the means for communicating the DL communication signal is configured to:

communicate, with the wireless communication device, the DL communication signal during a shared portion of the first COT, the first portion being different from the shared portion, and

the COT sharing information includes at least one of a starting time or a duration of the shared portion.

19. The apparatus of claim 15, further comprising:

means for determining the COT sharing information based on the first UL scheduling grant.

20. The apparatus of claim 15, wherein the means for communicating the DL communication signal is configured to:

transmit, to the wireless communication device after the first UL communication signal, the DL communication signal further based on first UL scheduling grant.

21. The apparatus of claim 15, wherein the means for communicating the DL communication signal is further configured to:

communicate, with the wireless communication device, the DL communication signal based on a detection of the first UL communication signal.

22. The apparatus of claim 15, further comprising:

means for transmitting, to the wireless communication device, a plurality of scheduling grants for communicating a plurality of UL communication signals in consecutive periods outside of a COT of the apparatus, the plurality of scheduling grants including the first UL scheduling grant; and

means for determining a COT sharing duration within the first COT for communicating the DL communication signal based on at least one of:

a detection of one or more UL communication signals of the plurality of UL communication signals;

whether uplink control information (UCI) or a demodulation reference signal (DMRS) is detected from one or more UL communication signals of the plurality of UL communication signals; or

an earliest transmission time scheduled by the plurality of scheduling grants.

23. A non-transitory computer-readable medium having program code recorded thereon, the program code comprising:

code for causing a first wireless communication device to communicate, with a second wireless communication device, a first uplink (UL) scheduling grant;

code for causing the first wireless communication device to communicate, with the second wireless communication device, a first UL communication signal based on the first UL scheduling grant during a first channel occupancy time (COT), the first COT based on an extended clear channel assessment (eCCA) associated with the first UL communication signal; and

code for causing the first wireless communication device to communicate, with the second wireless communication device, during the first COT after a listen-before-talk (LBT) gap from an end of the first UL communication signal, a downlink (DL) communication signal based on COT sharing information associated with the first COT.

24. The non-transitory computer-readable medium of claim 23, wherein:

the first wireless communication device is a user equipment (UE),

the second wireless communication device is a base station (BS),

the code for causing the first wireless communication device to communicate the first UL scheduling grant is configured to:

receive, from the BS, the first UL scheduling grant during a COT of the BS, wherein the first COT is associated with the UE and located outside of the COT of the BS; and

the code for causing the UE to communicate the first UL communication signal is configured to:

transmit, to the BS, the first UL communication signal, and

the code for causing the UE to communicate the DL communication signal is configured to:

receive, from the BS during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

25. The non-transitory computer-readable medium of claim 23, wherein:

the first wireless communication device is a base station (BS),

the second wireless communication device is a user equipment (UE),

the code for causing the first wireless communication device to communicate the first UL scheduling grant is configured to:

transmit, to the UE, the first UL scheduling grant during a COT of the UE, wherein the first COT is associated with the UE and located outside of the COT of the BS, and

the code for causing the BS to communicate the first UL communication signal is configured to:

receive, from the UE, the first UL communication signal,

the code for causing the BS to communicate the DL communication signal is configured to:

transmit, to the UE during the first COT of the UE after the LBT gap from the end of the first UL communication signal, the DL communication signal.

26. The non-transitory computer-readable medium of claim 23, wherein:

the code for causing the first wireless communication device to communicate the first UL communication signal is configured to:

communicate, with the second wireless communication device, the first UL communication signal during a first portion of the first COT, and

the code for causing the first wireless communication device to communicate the DL communication signal is configured to:

communicate, with the second wireless communication device, the DL communication signal during a shared portion of the first COT, the first portion being different from the shared portion, and

the COT sharing information includes at least one of a starting time or a duration of the shared portion.

27. The non-transitory computer-readable medium of claim 23, further comprising:

code for causing the first wireless communication device to determine the COT sharing information based on the first UL scheduling grant.

28. The non-transitory computer-readable medium of claim 23, wherein the code for causing the first wireless communication device to communicate the DL communication signal is configured to:

transmit, to the second wireless communication device after the first UL communication signal, the DL communication signal further based on first UL scheduling grant.

29. The non-transitory computer-readable medium of claim 23, wherein the code for causing the first wireless communication device to communicate the DL communication signal is further configured to:

communicate, with the second wireless communication device, the DL communication signal based on a detection of the first UL communication signal.

30. The non-transitory computer-readable medium of claim 23, further comprising:

code for causing the first wireless communication device to transmit, to the second wireless communication device, a plurality of scheduling grants for communicating a plurality of UL communication signals in consecutive periods outside of a COT of the first wireless communication device, the plurality of scheduling grants including the first UL scheduling grant; and

code for causing the first wireless communication device to determine a COT sharing duration within the first COT for communicating the DL communication signal based on at least one of:

a detection of one or more UL communication signals of the plurality of UL communication signals;

whether uplink control information (UCI) or a demodulation reference signal (DMRS) is detected from one or more UL communication signals of the plurality of UL communication signals; or

an earliest transmission time scheduled by the plurality of scheduling grants.