

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, a downlink (DL) communication signal during the first COT based on COT sharing information associated with the first COT;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.
2. The method of claim 1, wherein:
 - the communicating the first UL scheduling grant includes:
 - receiving, by the first wireless communication device from the second wireless communication device, the first UL scheduling grant during a COT of the second wireless communication device, wherein the first COT is associated with the first wireless communication device and located outside of the COT of the second wireless communication device,
 - the communicating the first UL communication signal includes:
 - transmitting, by the first wireless communication device to the second wireless communication device, the first UL communication signal.

3. The method of claim 1, wherein:
the communicating the first UL scheduling grant includes:
transmitting, by the first wireless communication device to the second wireless communication device, the first UL scheduling grant during a COT of the second wireless communication device, wherein the first COT is associated with the second wireless communication device and located outside of the COT of the first wireless communication device, and
the communicating the first UL communication signal includes:
receiving, by the first wireless communication device from the second wireless communication device, the first UL communication signal.
4. 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.
5. 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.
6. The method of claim 5, further comprising:
determining, by the first wireless communication device, whether to perform a listen-before-talk (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.
7. The method of claim 6, further comprising:
performing, by the first wireless communication device, the LBT before transmitting the DL communication signal based on the determining.
8. The method of claim 1, wherein the communicating the DL communication signal is further based on a detection of the first UL communication signal.
9. The method of claim 8, 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.

10. 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.
11. The method of claim 10, 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.
12. The method of claim 11, 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.
13. The method of claim 10, 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.
14. 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, a downlink (DL) communication signal during the first COT based on COT sharing information associated with the first COT;
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.

15. The apparatus of claim 14, wherein:

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

receive, from the wireless communication device, the first UL scheduling grant during a COT of the wireless communication device, wherein the first COT is associated with the apparatus and located outside of the COT of the wireless communication device; and

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

transmit, to the wireless communication device, the first UL communication signal.

16. The apparatus of claim 14, wherein:

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

transmit, to the wireless communication device, the first UL scheduling grant during a COT of the wireless communication device, wherein the first COT is associated with the wireless communication device and located outside of the COT of the apparatus, and
the means for communicating the first UL communication signal is configured to:

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

17. The apparatus of claim 14, further comprising:

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

18. The apparatus of claim 14, 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.

19. The apparatus of claim 14, 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.

20. The apparatus of claim 14, 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.

21. 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, a downlink (DL) communication signal during the first COT based on COT sharing information associated with the first COT;

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.

22. The non-transitory computer-readable medium of claim 21, wherein:

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

receive, from the second wireless communication device, the first UL scheduling grant during a COT of the second wireless communication device, wherein the first COT is associated with the first wireless communication device and located outside of the COT of the second wireless communication device; and

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

transmit, to the second wireless communication device, the first UL communication signal.

23. The non-transitory computer-readable medium of claim 21, wherein:

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

transmit, to the second wireless communication device, the first UL scheduling grant during a COT of the second wireless communication device, wherein the first COT is associated with the second wireless communication device and located outside of the COT of the first wireless communication device, and

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

receive, from the second wireless communication device, the first UL communication signal.

24. The non-transitory computer-readable medium of claim 21, 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.

25. The non-transitory computer-readable medium of claim 21, further comprising: code for causing the first wireless communication device to determine the COT sharing information based on the first UL scheduling grant.

26. The non-transitory computer-readable medium of claim 21, 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.

27. The non-transitory computer-readable medium of claim 21, 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.

28. The non-transitory computer-readable medium of claim 21, 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.