

CLAIMS

1. A method of wireless communication performed by an apparatus of a user equipment (UE), comprising:

- receiving a set of channel occupancy time (COT) structure indicators (COT-SIs)
- identifying a set of parameters of a COT for the UE;
- decoding, based on a state of the UE, at least one COT-SI of the set of COT-SIs to determine at least one parameter of the set of parameters of the COT,
- wherein the at least one COT-SI includes an indication of a remaining COT duration at a granularity of a sub-carrier spacing reference numerology; and
- communicating, in accordance with the at least one parameter, based on decoding the at least one COT-SI.

2. The method of claim 1, wherein decoding the at least one COT-SI comprises:

- decoding, in an idle state, the at least one COT-SI to determine a partial slot format configuration,

- wherein the partial slot format configuration includes at least one of:

- a COT end symbol,
- a COT duration,
- whether a slot or symbol is within the COT,
- a pause start symbol,
- a pause end symbol,
- a slot level assignment,
- a mini-slot level assignment, or

a time-division duplexing (TDD) switching pattern.

3. The method of claim 1, wherein the set of COT-SIs is associated with a slot format indication (SFI) of a downlink control information (DCI) for one or more slots in the COT.

4. The method of claim 1, wherein a remaining minimum system information (RMSI) configures, for receiving the at least one COT-SI, at least one of:

- a control resource set (CORESET),
- a search space set,
- a radio network temporary identifier (RNTI),
- a time domain monitoring occasion, or
- a COT table for deciphering at least part of a slot format indication in the at least one COT-SI.

5. The method of claim 1, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and

wherein the COT table includes COT structure information identifying whether a symbol or slot is within the COT or outside the COT or is subject to a COT pause.

6. The method of claim 1, wherein the at least one COT-SI includes another indication of at least one of:

- a COT duration,

a COT end location,
a pause start location,
a pause end location,
a current location,
a traffic class,
a listen-before-talk (LBT) type, or
a configured grant uplink (CG-UL) parameter.

7. The method of claim 6, wherein the LBT type is category 2 LBT or category 4 LBT.

8. The method of claim 7, wherein the LBT type is category 2 LBT based on the COT-SI indicating that a CG-UL slot is within the COT and wherein the COT is a node-acquired COT.

9. The method of claim 6, wherein the other indication is a presence of the at least one COT-SI.

10. The method of claim 6, wherein the granularity is based on at least one of:
a symbol,
a slot,
a subframe,
a multiple of symbols,

a duration in seconds, or

a symbol of the sub-carrier spacing reference numerology.

11. The method of claim 10, wherein the sub-carrier spacing reference numerology is preconfigured by a radio resource configuration or a specification, and wherein the sub-carrier spacing reference numerology is a sub-carrier spacing for the symbol which indicates the granularity.

12. The method of claim 11, wherein the sub-carrier spacing is less than or equal to a bandwidth part sub-carrier spacing which is configured for the UE.

13. The method of claim 6, wherein the remaining COT duration in seconds is preconfigured by a radio resource configuration or a specification.

14. The method of claim 1, further comprising:
receiving a downlink control information (DCI) identifying a concatenation of a plurality of table entries of a COT table from a concatenation of index values in the COT table, to indicate COT information for a plurality of slots.

15. The method of claim 1, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and
wherein the COT table includes slot format information for an entire portion of the COT.

16. The method of claim 1, wherein receiving the set of COT-SIs comprises:
receiving, sequentially, a plurality of COT-SIs identifying indices of a plurality of hierarchically provisioned COT tables; and
communicating in accordance with a slot format configuration determined based on the plurality of COT tables.

17. The method of claim 1, further comprising:
receiving information identifying a concatenation of a plurality of COT table entries of a COT table, and
determining a COT structure based on a received index for the COT table and based on the concatenation of the plurality of COT table entries.

18. The method of claim 1, wherein the at least one COT-SI identifies a COT structure relating to a plurality of consecutive slots or a plurality of consecutive symbols.

19. The method of claim 1, wherein decoding the at least one COT-SI comprises:
decoding, in a connected state, a complete slot format configuration.

20. The method of claim 1, further comprising:
receiving a remaining minimum system information (RMSI) message associated with configuring at least one of:

one or more COT tables,

a control channel monitoring configuration for the at least one COT-SI, or

a description of COT-SI downlink control information (DCI) content.

21. The method of claim 20, wherein the control channel monitoring configuration for the at least one COT-SI includes at least one of:

- a time parameter,
- a frequency parameter,
- a monitoring periodicity parameter,
- an offset parameter,
- a control resource set (CORESET) parameter,
- a search space set parameter,
- an aggregation level parameter,
- a control channel candidate quantity parameter, or
- a radio network temporary identifier (RNTI) parameter.

22. The method of claim 20, wherein the description of the COT-SI DCI content includes at least one of:

- a DCI size parameter,
- a bit location parameter,
- a row concatenation parameter,
- a bits per row index parameter,
- a consecutive slot quantity parameter,
- a slot index parameter,
- a traffic class parameter,

an acquired COT information parameter,
a configured grant parameter,
a multi-stage grant parameter,
a random access channel (RACH) parameter, or
a contention-based access parameter.

23. The method of claim 1, wherein the at least one COT-SI includes a COT pause indicator.

24. The method of claim 23, wherein the COT pause indicator identifies a duration of a COT pause or a quantity of COT pauses.

25. The method of claim 23, wherein the COT pause indicator includes an explicit COT pause indicator or an implicit COT pause indicator.

26. The method of claim 1, wherein the at least one COT-SI is received after a start of the COT, and

wherein the method further comprises:

communicating in accordance with a stored configuration indicating that a slot format is flexibly assigned before receiving the at least one COT-SI.

27. The method of claim 1, further comprising:

monitoring for the at least one COT-SI based on a stored configuration.

28. A user equipment (UE) for wireless communication, comprising:
a memory; and
one or more processors coupled to the memory, the one or more processors configured to:
receive a set of channel occupancy time (COT) structure indicators (COT-SIs)
identifying a set of parameters of a COT for the UE;
decode, based on a state of the UE, at least one COT-SI of the set of COT-SIs to
determine at least one parameter of the set of parameters of the COT,
wherein the at least one COT-SI includes an indication of a remaining
COT duration at a granularity of a sub-carrier spacing reference numerology; and
communicate, in accordance with the at least one parameter, based on decoding
the at least one COT-SI.

29. The UE of claim 28, wherein the one or more processors, when decoding the at
least one COT-SI, are configured to:
decode, in an idle state, the at least one COT-SI to determine a partial slot format
configuration,
wherein the partial slot format configuration includes at least one of:
a COT end symbol,
a COT duration,
whether a slot or symbol is within the COT,
a pause start symbol,
a pause end symbol,

a slot level assignment,
a mini-slot level assignment, or
a time-division duplexing (TDD) switching pattern.

30. The UE of claim 28, wherein the set of COT-SIs is associated with a slot format indication (SFI) of a downlink control information (DCI) for one or more slots in the COT.

31. The UE of claim 28, wherein a remaining minimum system information (RMSI) configures, for receiving the at least one COT-SI, at least one of:

a control resource set (CORESET),
a search space set,
a radio network temporary identifier (RNTI),
a time domain monitoring occasion, or
a COT table for deciphering at least part of a slot format indication in the at least one COT-SI.

32. The UE of claim 28, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and

wherein the COT table includes COT structure information identifying whether a symbol or slot is within the COT or outside the COT or is subject to a COT pause.

33. The UE of claim 28, wherein the at least one COT-SI includes another indication of at least one of:

a COT duration,
a COT end location,
a pause start location,
a pause end location,
a current location,
a traffic class,
a listen-before-talk (LBT) type, or
a configured grant uplink (CG-UL) parameter.

34. The UE of claim 33, wherein the LBT type is category 2 LBT or category 4 LBT.

35. The UE of claim 33, wherein the other indication is a presence of the at least one COT-SI.

36. The UE of claim 33, wherein the granularity is based on at least one of:
a symbol,
a slot,
a subframe,
a multiple of symbols,
a duration in seconds, or
a symbol of the sub-carrier spacing reference numerology.

37. The UE of claim 36, wherein the sub-carrier spacing reference numerology is preconfigured by a radio resource configuration or a specification, and wherein the sub-carrier spacing reference numerology is a sub-carrier spacing for the symbol which indicates the granularity.

38. The UE of claim 37, wherein the sub-carrier spacing is less than or equal to a bandwidth part sub-carrier spacing which is configured for the UE.

39. The UE of claim 33, wherein the remaining COT duration in seconds is preconfigured by a radio resource configuration or a specification.

40. The UE of claim 28, wherein the one or more processors are further configured to:

receive a downlink control information (DCI) identifying a concatenation of a plurality of table entries of a COT table from a concatenation of index values in the COT table, to indicate COT information for a plurality of slots.

41. The UE of claim 28, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and

wherein the COT table includes slot format information for an entire portion of the COT.

42. A non-transitory computer-readable medium storing one or more instructions for wireless communication, the one or more instructions comprising:

one or more instructions that, when executed by one or more processors of a user equipment (UE), cause the UE to:

- receive a set of channel occupancy time (COT) structure indicators (COT-SIs)

- identifying a set of parameters of a COT for the UE;

- decode, based on a state of the UE, at least one COT-SI of the set of COT-SIs to determine at least one parameter of the set of parameters of the COT,

- wherein the at least one COT-SI includes an indication of a remaining COT duration at a granularity of a sub-carrier spacing reference numerology; and communicate, in accordance with the at least one parameter, based on decoding the at least one COT-SI.

43. The non-transitory computer-readable medium of claim 42, wherein the one or more instructions, to decode the at least one COT-SI, cause the UE to:

- decode, in an idle state, the at least one COT-SI to determine a partial slot format configuration,

- wherein the partial slot format configuration includes at least one of:

- a COT end symbol,

- a COT duration,

- whether a slot or symbol is within the COT,

- a pause start symbol,

- a pause end symbol,

- a slot level assignment,

- a mini-slot level assignment, or

a time-division duplexing (TDD) switching pattern.

44. The non-transitory computer-readable medium of claim 42, wherein the set of COT-SIs is associated with a slot format indication (SFI) of a downlink control information (DCI) for one or more slots in the COT.

45. The non-transitory computer-readable medium of claim 42, wherein a remaining minimum system information (RMSI) configures, for receiving the at least one COT-SI, at least one of:

- a control resource set (CORESET),
- a search space set,
- a radio network temporary identifier (RNTI),
- a time domain monitoring occasion, or
- a COT table for deciphering at least part of a slot format indication in the at least one COT-SI.

46. The non-transitory computer-readable medium of claim 42, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and

wherein the COT table includes COT structure information identifying whether a symbol or slot is within the COT or outside the COT or is subject to a COT pause.

47. The non-transitory computer-readable medium of claim 42, wherein the at least one COT-SI includes another indication of at least one of:

- a COT duration,
- a COT end location,
- a pause start location,
- a pause end location,
- a current location,
- a traffic class,
- a listen-before-talk (LBT) type, or
- a configured grant uplink (CG-UL) parameter.

48. The non-transitory computer-readable medium of claim 47, wherein the LBT type is category 2 LBT or category 4 LBT.

49. The non-transitory computer-readable medium of claim 47, wherein the other indication is a presence of the at least one COT-SI.

50. The non-transitory computer-readable medium of claim 47, wherein the granularity is based on at least one of:

- a symbol,
- a slot,
- a subframe,
- a multiple of symbols,
- a duration in seconds, or
- a symbol of the sub-carrier spacing reference numerology.

51. The non-transitory computer-readable medium of claim 50, wherein the sub-carrier spacing reference numerology is preconfigured by a radio resource configuration or a specification, and wherein the sub-carrier spacing reference numerology is a sub-carrier spacing for the symbol which indicates the granularity.

52. An apparatus for wireless communication, comprising:
means for receiving, a set of channel occupancy time (COT) structure indicators (COT-SIs) identifying a set of parameters of a COT for the apparatus;
means for decoding, based on a state of the apparatus, at least one COT-SI of the set of COT-SIs to determine at least one parameter of the set of parameters of the COT,
wherein the at least one COT-SI includes an indication of a remaining COT duration at a granularity of a sub-carrier spacing reference numerology; and
means for communicating, in accordance with the at least one parameter, based on decoding the at least one COT-SI.

53. The apparatus of claim 52, wherein the means for decoding the at least one COT-SI comprises:

means for decoding, in an idle state, the at least one COT-SI to determine a partial slot format configuration,

wherein the partial slot format configuration includes at least one of:

a COT end symbol,

a COT duration,

whether a slot or symbol is within the COT,
a pause start symbol,
a pause end symbol,
a slot level assignment,
a mini-slot level assignment, or
a time-division duplexing (TDD) switching pattern.

54. The apparatus of claim 52, wherein the set of COT-SIs is associated with a slot format indication (SFI) of a downlink control information (DCI) for one or more slots in the COT.

55. The apparatus of claim 52, wherein a remaining minimum system information (RMSI) configures, for receiving the at least one COT-SI, at least one of:
a control resource set (CORESET),
a search space set,
a radio network temporary identifier (RNTI),
a time domain monitoring occasion, or
a COT table for deciphering at least part of a slot format indication in the at least one COT-SI.

56. The apparatus of claim 52, wherein the at least one COT-SI includes an indicator identifying at least one index value for a COT table, and

wherein the COT table includes COT structure information identifying whether a symbol or slot is within the COT or outside the COT or is subject to a COT pause.

57. The apparatus of claim 52, wherein the at least one COT-SI includes another indication of at least one of:

- a COT duration,
- a COT end location,
- a pause start location,
- a pause end location,
- a current location,
- a traffic class,
- a listen-before-talk (LBT) type, or
- a configured grant uplink (CG-UL) parameter.

58. The apparatus of claim 57, wherein the LBT type is category 2 LBT or category 4 LBT.

59. The apparatus of claim 57, wherein the other indication is a presence of the at least one COT-SI.

60. The apparatus of claim 57, wherein the granularity is based on at least one of:
- a symbol,
 - a slot,

a subframe,
a multiple of symbols,
a duration in seconds, or
a symbol of the sub-carrier spacing reference numerology.

61. The apparatus of claim 60, wherein the sub-carrier spacing reference numerology is preconfigured by a radio resource configuration or a specification, and wherein the sub-carrier spacing reference numerology is a sub-carrier spacing for the symbol which indicates the granularity.