

CLAIMS

What is claimed is:

- 1 1. A method for wireless communications at a wireless device,
2 comprising:
3 receiving, during a transmission time interval (TTI) of a subframe, control
4 information comprising an indication of transmission repetitions of a transport block (TB) for
5 a plurality of TTIs;
6 identifying a quantity of transmission repetitions of the TB based at least in
7 part on the control information; and
8 monitoring for the transmission repetitions of the TB based at least in part on
9 the identifying.
- 1 2. The method of claim 1, further comprising:
2 determining that a second TTI is not used for transmitting one of the
3 transmission repetitions based at least in part on a control format indicator (CFI) field having
4 a value of 2.
- 1 3. The method of claim 1, further comprising:
2 identifying a value in a field of a control format indicator (CFI) associated
3 with the control information; and
4 determining that a second TTI is not available for transmitting one of the
5 transmission repetitions of the TB based at least in part on the value in the field of the CFI.
- 1 4. The method of claim 3, wherein the value in the field of the CFI is 2.
- 1 5. The method of claim 3, wherein the second TTI is a mini-slot.
- 1 6. The method of claim 3, wherein monitoring for the transmission
2 repetitions of the TB comprises:
3 monitoring a physical downlink shared channel (PDSCH) for the transmission
4 repetitions of the TB.
- 1 7. The method of claim 1, further comprising:

2 determining whether an initial TTI associated with a TTI index is available for
3 an initial transmission associated with the transmission repetitions of the TB based at least in
4 part on the control information.

1 8. The method of claim 7, further comprising:
2 identifying a value in a field of a control format indicator (CFI) associated
3 with the control information, wherein determining whether the initial TTI is available for the
4 initial transmission is further based at least in part on the value in the field of the CFI.

1 9. The method of claim 8, further comprising:
2 determining that the initial TTI associated with the TTI index is unavailable
3 for the initial transmission based at least in part on the value in the field of the CFI; and
4 delaying the initial transmission to a second TTI after the initial TTI.

1 10. The method of claim 8, further comprising:
2 determining that the initial TTI associated with the TTI index is unavailable
3 for the initial transmission based at least in part on the value in the field of the CFI;
4 puncturing the initial TTI based at least in part on determining that the initial
5 TTI is unavailable; and
6 monitoring for a subsequent TB transmission of the quantity of transmission
7 repetitions during a second TTI after the initial TTI.

1 11. The method of claim 8, wherein the CFI is received dynamically or
2 semi-statically.

1 12. The method of claim 8, wherein the CFI is received on a physical
2 control format indicator channel (PCFICH) or via higher layer signaling.

1 13. The method of claim 1, further comprising:
2 determining that a portion of the transmission repetitions extend across a
3 subframe boundary based at least in part on a TTI index of an initial transmission and the
4 control information;
5 identifying that the wireless device is configured to support extending across a
6 subframe boundary; and
7 identifying a quantity of available TTIs in a second subframe.

- 1 14. The method of claim 13, further comprising:
2 determining that a physical downlink shared channel (PDSCH) is not mapped
3 to resources of a TTI in the second subframe based at least in part on identifying the quantity
4 of available TTIs;
5 puncturing the TTI in the second subframe based at least in part on the
6 PDSCH not being mapped to the TTI; and
7 monitoring the portion of the transmission repetitions during the second
8 subframe based at least in part on the puncturing.
- 1 15. The method of claim 1, wherein each TB transmission of the
2 transmission repetitions is monitored for in a different TTI of a repetition window.
- 1 16. The method of claim 1, further comprising:
2 identifying a TTI index for an initial transmission associated with the
3 transmission repetitions of the TB;
4 determining that a portion of the transmission repetitions extend across a
5 subframe boundary based at least in part on the TTI index of the initial transmission and the
6 control information; and
7 monitoring the portion of the transmission repetitions extending across a
8 subframe boundary.
- 1 17. The method of claim 1, further comprising:
2 identifying that the wireless device is not configured to support extending
3 across a subframe boundary; and
4 determining a quantity of available TTIs for the transmission repetitions of the
5 TB, wherein monitoring for the transmission repetitions of the TB is further based at least in
6 part on the quantity of available TTIs.
- 1 18. The method of claim 17, further comprising:
2 determining that the quantity of available TTIs is below the plurality of TTIs
3 for the quantity of transmission repetitions of the TB; and
4 suspending monitoring at least one TTI of the plurality after an ultimate TTI
5 of the quantity of available TTIs.

- 1 19. The method of claim 17, further comprising:
2 determining to monitor for the transmission repetitions of the TB until an
3 ultimate TTI of the quantity of available TTIs based at least in part on an indication received
4 in a downlink control information (DCI).
- 1 20. The method of claim 1, further comprising:
2 identifying a configuration of the wireless device; and
3 determining whether the wireless device is configured to support extending
4 across a subframe boundary based at least in part on the configuration.
- 1 21. The method of claim 20, wherein identifying the configuration is based
2 at least in part on a capability of the wireless device, the capability comprising a
3 demodulation reference signal (DMRS) sharing capability, a DMRS combining capability, a
4 configuration signaling, or an indication of the DMRS sharing capability or the DMRS
5 combining capability relative to TTIs on each side of a subframe boundary, or a combination
6 thereof.
- 1 22. The method of claim 1, further comprising:
2 identifying a configuration of the wireless device; and
3 determining whether the wireless device is configured to support extending
4 across an enhanced interference mitigation and traffic adaptation (eIMTA) boundary based at
5 least in part on the configuration.
- 1 23. The method of claim 22, wherein identifying the configuration is based
2 at least in part on a capability of the wireless device, the capability comprising a
3 demodulation reference signal (DMRS) sharing capability, a DMRS combining capability, a
4 configuration signaling, or an indication of the DMRS sharing capability or the DMRS
5 combining capability relative to TTIs on each side of a subframe boundary, or a combination
6 thereof.
- 1 24. The method of claim 22, further comprising:
2 determining a subframe configuration of the subframe based at least in part on
3 the control information; and

4 determining that a portion of the transmission repetitions extend across the
5 eIMTA boundary based at least in part on the subframe configuration.

1 25. The method of claim 24, further comprising:

2 identifying that the wireless device is not configured to support extending
3 across the eIMTA boundary based at least in part on the subframe configuration, wherein
4 monitoring for the transmission repetitions of the TB further comprises suspending
5 monitoring the portion of the transmission repetitions occurring after the eIMTA boundary
6 based at least in part on the wireless device not being configured to support extending across
7 the eIMTA boundary.

1 26. The method of claim 25, further comprising:

2 determining a quantity of available TTIs for the transmission repetitions of the
3 TB based at least in part on the wireless device not being configured to support extending
4 across the eIMTA boundary, wherein monitoring for the transmission repetitions of the TB is
5 further based at least in part on the quantity of available TTIs.

1 27. The method of claim 26, further comprising:

2 determining that the quantity of available TTIs is below the plurality of TTIs
3 for the quantity of transmission repetitions of the TB; and
4 suspending monitoring at least one TTI of the plurality after an ultimate TTI
5 of the quantity of available TTIs.

1 28. The method of claim 24, further comprising:

2 identifying that the wireless device is configured to support extending across
3 the eIMTA boundary based at least in part on the subframe configuration, wherein
4 monitoring for the transmission repetitions of the TB further comprises monitoring for the
5 portion of the transmission repetitions occurring after the eIMTA boundary based at least in
6 part on the wireless device being configured to support extending across the eIMTA
7 boundary.

1 29. The method of claim 28, further comprising:

2 identifying a TTI index for an initial transmission associated with the
3 transmission repetitions of the TB;

4 determining that the portion of the transmission repetitions extend across the
5 eIMTA boundary based at least in part on the TTI index of the initial transmission and the
6 control information; and
7 monitoring the portion of the transmission repetitions extending across the
8 eIMTA boundary based at least in part on the subframe configuration.

1 30. The method of claim 29, further comprising:
2 identifying a quantity of available TTIs in a second subframe based at least in
3 part on the wireless device being configured to support extending across the eIMTA
4 boundary;
5 determining that a physical downlink shared channel (PDSCH) is not mapped
6 to resources of a TTI in the second subframe based at least in part on identifying the quantity
7 of available TTIs;
8 puncturing the TTI in the second subframe based at least in part on the
9 PDSCH not being mapped to the TTI; and
10 monitoring the portion of the transmission repetitions during the second
11 subframe based at least in part on the puncturing.

1 31. The method of claim 24, further comprising:
2 determining that the portion of the transmission repetitions extend across an
3 uplink portion of a special switching subframe (SSF) associated with the subframe
4 configuration, wherein monitoring for the transmission repetitions of the TB further
5 comprises suspending monitoring the portion of the transmission repetitions occurring after
6 the uplink portion of the SSF based at least in part on the wireless device not being
7 configured to support extending across the SSF.

1 32. The method of claim 24, further comprising:
2 determining that the portion of the transmission repetitions extend across an
3 uplink subframe associated with the subframe configuration, wherein the transmission
4 repetitions are in a downlink transmission and monitoring for the transmission repetitions of
5 the TB further comprises suspending monitoring the portion of the transmission repetitions
6 occurring after the uplink subframe based at least in part on the wireless device not being
7 configured to support extending across the uplink subframe.

1 33. The method of claim 24, further comprising:
2 determining that the portion of the transmission repetitions extend across an
3 uplink portion of a special switching subframe (SSF) associated with the subframe
4 configuration, wherein monitoring for the transmission repetitions of the TB further
5 comprises delaying or puncturing a subframe following the SSF for monitoring the portion of
6 the transmission repetitions occurring after the uplink portion of the SSF based at least in part
7 on the wireless device being configured to support extending across the SSF.

1 34. The method of claim 24, further comprising:
2 determining that the portion of the transmission repetitions extend across an
3 uplink subframe associated with the subframe configuration, wherein the transmission
4 repetitions are in a downlink transmission and monitoring for the transmission repetitions of
5 the TB further comprises delaying or puncturing a subframe following the uplink subframe
6 for monitoring the portion of the transmission repetitions occurring after the uplink subframe
7 based at least in part on the wireless device being configured to support extending across the
8 uplink subframe.

1 35. An apparatus for wireless communications at a wireless device,
2 comprising:
3 means for receiving, during a transmission time interval (TTI) of a subframe,
4 control information comprising an indication of transmission repetitions of a transport block
5 (TB) for a plurality of TTIs;
6 means for identifying a quantity of transmission repetitions of the TB based at
7 least in part on the control information; and
8 means for monitoring for the transmission repetitions of the TB based at least
9 in part on the identifying.

1 36. The apparatus of claim 35, further comprising:
2 means for determining that a second TTI is not used for transmitting one of the
3 transmission repetitions based at least in part on a control format indicator (CFI) field having
4 a value of 2.

1 37. The apparatus of claim 35, further comprising:

2 means for identifying a value in a field of a control format indicator (CFI)
3 associated with the control information; and
4 means for determining that a second TTI is not available for transmitting one
5 of the transmission repetitions of the TB based at least in part on the value in the field of the
6 CFI.

1 38. The apparatus of claim 37, wherein the value in the field of the CFI is
2 2.

1 39. The apparatus of claim 37, wherein the second TTI is a mini-slot.

1 40. The apparatus of claim 37, wherein the means for monitoring for the
2 transmission repetitions of the TB comprises:
3 means for monitoring a physical downlink shared channel (PDSCH) for the
4 transmission repetitions of the TB.

1 41. The apparatus of claim 35, further comprising:
2 means for determining whether an initial TTI associated with a TTI index is
3 available for an initial transmission associated with the transmission repetitions of the TB
4 based at least in part on the control information.

1 42. The apparatus of claim 41, further comprising:
2 means for identifying a value in a field of a control format indicator (CFI)
3 associated with the control information, wherein the means for determining whether the
4 initial TTI is available for the initial transmission is further based at least in part on the value
5 in the field of the CFI.

1 43. The apparatus of claim 42, further comprising:
2 means for determining that the initial TTI associated with the TTI index is
3 unavailable for the initial transmission based at least in part on the value in the field of the
4 CFI; and
5 means for delaying the initial transmission to a second TTI after the initial
6 TTI.

1 44. The apparatus of claim 42, further comprising:

2 means for determining that the initial TTI associated with the TTI index is
3 unavailable for the initial transmission based at least in part on the value in the field of the
4 CFI;

5 means for puncturing the initial TTI based at least in part on determining that
6 the initial TTI is unavailable; and

7 means for monitoring for a subsequent TB transmission of the quantity of
8 transmission repetitions during a second TTI after the initial TTI.

1 45. The apparatus of claim 42, wherein the CFI is received dynamically or
2 semi-statically.

1 46. An apparatus for wireless communications at a wireless device,
2 comprising:
3 a processor,
4 memory in electronic communication with the processor; and
5 instructions stored in the memory and executable by the processor to cause the
6 apparatus to:
7 receive, during a transmission time interval (TTI) of a subframe,
8 control information comprising an indication of transmission repetitions of a transport
9 block (TB) for a plurality of TTIs;
10 identify a quantity of transmission repetitions of the TB based at least
11 in part on the control information; and
12 monitor for the transmission repetitions of the TB based at least in part
13 on the identifying.

1 47. The apparatus of claim 46, further comprising:
2 a receiver; and
3 instructions stored in the memory and executable by the processor to cause the
4 apparatus to:
5 configure the receiver to receive, during the TTI of the subframe, the control
6 information.

1 48. A non-transitory computer-readable medium storing code for wireless
2 communications at a wireless device, the code comprising instructions executable by a
3 processor to:
4 receive, during a transmission time interval (TTI) of a subframe, control
5 information comprising an indication of transmission repetitions of a transport block (TB) for
6 a plurality of TTIs;
7 identify a quantity of transmission repetitions of the TB based at least in part
8 on the control information; and
9 monitor for the transmission repetitions of the TB based at least in part on the
10 identifying.