

CLAIMS

What is claimed is:

- 1 1. A method for wireless communication at a user equipment (UE),
2 comprising:
3 receiving, from a first protocol layer of the UE, a channel occupancy ratio for
4 each of one or more proximity service priority levels;
5 identifying, by a second protocol layer of the UE, a resource availability
6 metric and a message requirement metric for each of the one or more proximity service
7 priority levels, the second protocol layer being a higher layer than the first protocol layer;
8 determining, by the second protocol layer of the UE, a message generation rate
9 for each of the one or more proximity service priority levels based at least in part on the
10 channel occupancy ratio, or the resource availability metric, or the message requirement
11 metric, or a combination thereof; and
12 generating one or more messages for each of the one or more proximity
13 service priority levels based at least in part on the message generation rate.
- 1 2. The method of claim 1, further comprising:
2 determining that the message generation rate satisfies a threshold value,
3 wherein the one or more messages are generated based at least in part on the message
4 generation rate satisfying the threshold value.
- 1 3. The method of claim 1, further comprising:
2 determining that the message generation rate fails to satisfy a threshold value;
3 and
4 recalculating the message generation rate based at least in part on a random
5 number, wherein the one or more messages are generated based at least in part on the
6 recalculated message generation rate.
- 1 4. The method of claim 1, further comprising:
2 identifying, based at least in part on the message requirement metric, a
3 transmission periodicity of the one or more messages; and

4 modifying the transmission periodicity based at least in part on the message
5 generation rate.

1 5. The method of claim 4, further comprising:
2 transmitting the one or more messages based at least in part on the modified
3 transmission periodicity.

1 6. The method of claim 1, further comprising:
2 determining that a critical event trigger has occurred; and
3 generating and transmitting the one or more messages in response to the
4 occurrence of the critical event trigger.

1 7. The method of claim 1, wherein identifying the resource availability
2 metric comprises:
3 identifying a number of subcarriers available for communicating the one or
4 more messages within a control time period.

1 8. The method of claim 1, wherein identifying the message requirement
2 metric comprises:
3 identifying a number of subcarriers required for communicating the one or
4 more messages, or a modulation and coding scheme for the one or more messages, or a
5 repetition factor for each of the one or more messages, or a transmission periodicity of the
6 one or more messages, or a combination thereof.

1 9. A method for wireless communication at a user equipment (UE),
2 comprising:
3 identifying a transmission periodicity of one or more messages of a proximity
4 service priority level;
5 identifying, for a plurality of nodes, a node density metric and a node traffic
6 pattern;
7 identifying, for each node of the plurality of nodes, a node type; and
8 modifying the transmission periodicity of the one or more messages based at
9 least in part on the node density metric, or the node traffic pattern, or the node type for each
10 node of the plurality of nodes, or a combination thereof.

- 1 10. The method of claim 9, further comprising:
2 determining, based at least in part on the node type, an available transmission
3 power for each node of the plurality of nodes, wherein the modified transmission periodicity
4 is based at least in part on the available transmission power for each node.
- 1 11. The method of claim 9, further comprising:
2 determining that a critical event trigger has occurred; and
3 generating and transmitting the one or more messages in response to the
4 occurrence of the critical event trigger.
- 1 12. The method of claim 9, wherein the node density metric is based at
2 least in part on a number of nodes within a proximity range of the UE.
- 1 13. The method of claim 9, wherein the node type comprises at least one of
2 a neighboring UE, or a roadside unit, or a vulnerable road user, or a combination thereof.
- 1 14. The method of claim 9, wherein modifying the transmission periodicity
2 further comprises:
3 determining the node density metric, or the node traffic pattern, or the node
4 type for each node of the plurality of nodes, or a combination thereof satisfies a threshold
5 condition; and
6 determining the transmission periodicity is one of a maximum transmission
7 periodicity, a round function applied to a value, or 100 milliseconds based at least in part on
8 determining that the node density metric, or the node traffic pattern, or the node type for each
9 node of the plurality of nodes, or a combination thereof satisfies the threshold condition,
10 wherein the value is based at least in part on the node density metric, or the node traffic
11 pattern, or the node type for each node of the plurality of nodes, or a combination thereof.
- 1 15. An apparatus for wireless communication at a user equipment (UE),
2 comprising:
3 a processor,
4 memory coupled with the processor; and
5 instructions stored in the memory and executable by the processor to cause the
6 apparatus to:

7 receive, from a first protocol layer of the UE, a channel occupancy
8 ratio for each of one or more proximity service priority levels;
9 identify, by a second protocol layer of the UE, a resource availability
10 metric and a message requirement metric for each of the one or more proximity
11 service priority levels, the second protocol layer being a higher layer than the first
12 protocol layer;
13 determine, by the second protocol layer of the UE, a message
14 generation rate for each of the one or more proximity service priority levels based at
15 least in part on the channel occupancy ratio, or the resource availability metric, or the
16 message requirement metric, or a combination thereof; and
17 generate one or more messages for each of the one or more proximity
18 service priority levels based at least in part on the message generation rate.

1 16. The apparatus of claim 15, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 determine that the message generation rate satisfies a threshold value, wherein
4 the one or more messages are generated based at least in part on the message generation rate
5 satisfying the threshold value.

1 17. The apparatus of claim 15, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 determine that the message generation rate fails to satisfy a threshold value;
4 and
5 recalculate the message generation rate based at least in part on a random
6 number, wherein the one or more messages are generated based at least in part on the
7 recalculated message generation rate.

1 18. The apparatus of claim 15, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 identify, based at least in part on the message requirement metric, a
4 transmission periodicity of the one or more messages; and
5 modify the transmission periodicity based at least in part on the message
6 generation rate.

1 19. The apparatus of claim 18, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 transmit the one or more messages based at least in part on the modified
4 transmission periodicity.

1 20. The apparatus of claim 15, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 determine that a critical event trigger has occurred; and
4 generate and transmitting the one or more messages in response to the
5 occurrence of the critical event trigger.

1 21. The apparatus of claim 15, wherein the instructions to identify the
2 resource availability metric are executable by the processor to cause the apparatus to:
3 identify a number of subcarriers available for communicating the one or more
4 messages within a control time period.

1 22. The apparatus of claim 15, wherein the instructions to identify the
2 message requirement metric are executable by the processor to cause the apparatus to:
3 identify a number of subcarriers required for communicating the one or more
4 messages, or a modulation and coding scheme for the one or more messages, or a repetition
5 factor for each of the one or more messages, or a transmission periodicity of the one or more
6 messages, or a combination thereof.

1 23. An apparatus for wireless communication at a user equipment (UE),
2 comprising:
3 a processor,
4 memory coupled with the processor; and
5 instructions stored in the memory and executable by the processor to cause the
6 apparatus to:
7 identify a transmission periodicity of one or more messages of a
8 proximity service priority level;
9 identify, for a plurality of nodes, a node density metric and a node
10 traffic pattern;
11 identify, for each node of the plurality of nodes, a node type; and

12 modify the transmission periodicity for the one or more messages
13 based at least in part on the node density metric, or the node traffic pattern, or the
14 node type for each node of the plurality of nodes, or a combination thereof.

1 24. The apparatus of claim 23, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 determine, based at least in part on the node type, an available transmission
4 power for each node of the plurality of nodes, wherein the modified transmission periodicity
5 is based at least in part on the available transmission power for each node.

1 25. The apparatus of claim 23, wherein the instructions are further
2 executable by the processor to cause the apparatus to:
3 determine that a critical event trigger has occurred; and
4 generate and transmitting the one or more messages in response to the
5 occurrence of the critical event trigger.

1 26. The apparatus of claim 23, wherein the node density metric is based at
2 least in part on a number of nodes within a proximity range of the UE.

1 27. The apparatus of claim 23, wherein the node type comprises at least
2 one of a neighboring UE, or a roadside unit, or a vulnerable road user, or a combination
3 thereof.

1 28. An apparatus for wireless communication at a user equipment (UE),
2 comprising:
3 means for receiving, from a first protocol layer of the UE, a channel
4 occupancy ratio for each of one or more proximity service priority levels;
5 means for identifying, by a second protocol layer of the UE, a resource
6 availability metric and a message requirement metric for each of the one or more proximity
7 service priority levels, the second protocol layer being a higher layer than the first protocol
8 layer;
9 means for determining, by the second protocol layer of the UE, a message
10 generation rate for each of the one or more proximity service priority levels based at least in
11 part on the channel occupancy ratio, or the resource availability metric, or the message
12 requirement metric, or a combination thereof; and

13 means for generating one or more messages for each of the one or more
14 proximity service priority levels based at least in part on the message generation rate.

1 29. An apparatus for wireless communication at a user equipment (UE),
2 comprising:
3 means for identifying a transmission periodicity of one or more messages of a
4 proximity service priority level;
5 means for identifying, for a plurality of nodes, a node density metric and a
6 node traffic pattern;
7 means for identifying, for each node of the plurality of nodes, a node type; and
8 means for modifying the transmission periodicity for the one or more
9 messages based at least in part on the node density metric, or the node traffic pattern, or the
10 node type for each node of the plurality of nodes, or a combination thereof.

1 30. A non-transitory computer-readable medium storing code for wireless
2 communication at a user equipment (UE), the code comprising instructions executable by a
3 processor to:
4 receive, from a first protocol layer of the UE, a channel occupancy ratio for
5 each of one or more proximity service priority levels;
6 identify, by a second protocol layer of the UE, a resource availability metric
7 and a message requirement metric for each of the one or more proximity service priority
8 levels, the second protocol layer being a higher layer than the first protocol layer;
9 determine, by the second protocol layer of the UE, a message generation rate
10 for each of the one or more proximity service priority levels based at least in part on the
11 channel occupancy ratio, or the resource availability metric, or the message requirement
12 metric, or a combination thereof; and
13 generate one or more messages for each of the one or more proximity service
14 priority levels based at least in part on the message generation rate.

1 31. A non-transitory computer-readable medium storing code for wireless
2 communication at a user equipment (UE), the code comprising instructions executable by a
3 processor to:
4 identify a transmission periodicity of one or more messages of a proximity
5 service priority level;

6 identify, for a plurality of nodes, a node density metric and a node traffic
7 pattern;
8 identify, for each node of the plurality of nodes, a node type; and
9 modify the transmission periodicity for the one or more messages based at
10 least in part on the node density metric, or the node traffic pattern, or the node type for each
11 node of the plurality of nodes, or a combination thereof.