CLAIMS

WHAT IS CLAIMED IS:

1. A method of wireless communication in a wireless communications network comprising a plurality of nodes, the method comprising:

determining, via a clear channel assessment at a node of the plurality of nodes for data transmission at the node, whether a first spectrum is busy;

in response to the first spectrum is determined to be busy, determining, at the node, whether a cross technology interference is detected in the first spectrum; and

switching, at the node, data transmission from the first spectrum to a second spectrum when the cross technology interference is detected in the first spectrum.

2. The method of claim 1, further comprising:

in response to the first spectrum is determined to be not busy at the node, performing, at the node, the data transmission over the first spectrum.

3. The method of claim 1, wherein the first spectrum is determined to be busy when average energy received over a time interval is above an energy detection threshold.

4. The method of claim 3, wherein the first spectrum is determined to be not busy when the average energy received over the time interval is below or equal to the energy detection threshold.

5. The method of claim 1, further comprising performing, at the node, an exponential backoff when the cross technology interference is not detected in the first spectrum.

6. The method of claim 1, wherein the determining, at the node, whether the cross technology interference is detected in the first spectrum comprises:

measuring, at the node, received signal strength in the first spectrum at a sampling rate that is greater than a threshold sampling rate to obtain a plurality of signal strength values; and

detecting, at the node, the cross technology interference in the first spectrum based on the plurality of signal strength values.

7. The method of claim 6, wherein the detecting, at the node, the cross technology interference in the first spectrum based on the plurality of signal strength values comprises:

providing, at the node, the plurality of signal strength values to a classifier, wherein an output of the classifier indicates whether the cross technology interference exists in the first spectrum.

8. The method of claim 7, wherein the classifier is trained with signal strength patterns of cross technology interferences.

9. The method of claim 7, wherein the classifier comprises a neural network.

10. The method of claim 1, further comprising selecting, at the node, the second spectrum from a plurality of spectrums based on application requirements before the switching the data transmission.

11. An apparatus for wireless communication in a wireless communications network comprising a plurality of nodes, the apparatus forming a node of the plurality of nodes and comprising:

a memory; and

at least one processor coupled to the memory and configured to:

determine, via a clear channel assessment for data transmission at the node, whether a first spectrum is busy;

in response to the first spectrum is determined to be busy, determine whether a cross technology interference is detected in the first spectrum; and

switch data transmission from the first spectrum to a second spectrum when the cross technology interference is detected in the first spectrum.

12. The apparatus of claim 11, wherein the at least one processor is further configured to:

in response to the first spectrum is determined to be not busy, perform the data transmission over the first spectrum.

13. The apparatus of claim 11, wherein the first spectrum is determined to be busy when average energy received over a time interval is above an energy detection threshold.

14. The apparatus of claim 13, wherein the first spectrum is determined to be not busy when the average energy received over the time interval is below or equal to the energy detection threshold.

15. The apparatus of claim 11, wherein the at least one processor is further configured to perform an exponential backoff when the cross technology interference is not detected in the first spectrum.

16. The apparatus of claim 11, wherein, to determine whether the cross technology interference is detected in the first spectrum, the at least one processor is configured to:

measure received signal strength in the first spectrum at a sampling rate that is greater than a threshold sampling rate to obtain a plurality of signal strength values; and

detect the cross technology interference in the first spectrum based on the plurality of signal strength values.

17. The apparatus of claim 16, wherein, to detect the cross technology interference in the first spectrum based on the plurality of signal strength values, the at least one processor is configured to:

provide the plurality of signal strength values to a classifier, wherein an output of the classifier indicates whether the cross technology interference exists in the first spectrum.

18. The apparatus of claim 17, wherein the classifier is trained with signal strength patterns of cross technology interferences.

19. The apparatus of claim 11, wherein the at least one processor is further configured to select the second spectrum from a plurality of spectrums based on application requirements before switching the data transmission.

20. A computer-readable medium storing computer executable code, comprising instructions executable by one or more computer processors to perform a method of wireless communication in a wireless communications network comprising a plurality of nodes, the method comprising:

determining, via a clear channel assessment at a node of the plurality of nodes for data transmission at the node, whether a first spectrum is busy;

in response to the first spectrum is determined to be busy, determining, at the node, whether a cross technology interference is detected in the first spectrum; and

switching, at the node, data transmission from the first spectrum to a second spectrum when the cross technology interference is detected in the first spectrum.