CLAIMS

What is claimed is:

1. A method of determining available frequency ranges for at least one communication device, comprising

providing a downlink transmission time interval;

determining available frequency ranges within a plurality of frequency ranges after the downlink transmission time interval;

providing an uplink transmission time interval after the determining of the available frequency ranges.

2. The method of claim 1, further comprising

providing a further downlink transmission time interval after the determination of the available frequency ranges.

3. The method of claim 1, further comprising

providing a plurality of further uplink transmission time intervals after the determination of the available frequency ranges.

4. The method of claim 1, further comprising

providing a plurality of further downlink transmission time intervals after the determination of the available frequency ranges.

5. The method of claim 1, further comprising

waiting a predetermined time period after the downlink transmission time interval;

determining available frequency ranges within a plurality of frequency ranges after expiration of the predetermined time period.

6. The method of claim 5,

the predetermined time period being dimensioned such that the downlink transmission signals have been completely transmitted via the frequency ranges.

7. The method of claim 1,

the method being carried out within at least one data transmission frame structure, wherein the data transmission frame structure comprises

a downlink subframe provided for the downlink transmission time interval

a sensing subframe provided for the determining of the available frequency; and

an uplink subframe provided for the uplink transmission time interval;

the sensing subframe being arranged between the downlink subframe and the uplink subframe.

8. The method of claim 1,

the method being carried out within at least one data transmission frame structure, wherein the data transmission frame structure comprises a frame group comprising a header portion and a plurality of frames

the header portion comprising a downlink subportion for the downlink transmission time interval; and

a sensing subportion provided for the determining of the available frequency.

9. The method of claim 1, further comprising

determining available frequency ranges within a plurality of frequency ranges;

combining the available frequency ranges to at least one combined logical frequency range; and

allocating the at least one combined logical frequency range to the first communication device.

10. The method of claim 1, further comprising

scanning a plurality of frequency ranges

determining, whether a signal transmission in a respective frequency range is below a predetermined threshold,

in case the signal transmission in the respective frequency range is below the predetermined threshold, then classifying frequency range as available frequency range;

in case the signal transmission in the respective frequency range is not below the predetermined threshold, then skipping frequency range or classifying frequency range as being non-available.

11. The method of claim 7 or claim 8, further comprising

the sensing period being dependent on the geographical distance between the communication device and another communication device.

12. The method of claim 11,

the other communication device being a base station.

13. The method of claim 1, further comprising

using a multiple access transmission technology.

14. The method of claim 13,

the multiple access transmission technology being selected from a group of multiple access transmission technologies consisting of:

time division multiple access,

frequency division multiple access,

code division multiple access,

orthogonal frequency division multiple access.

15. A frequency ranges determination device for determining available frequency ranges for at least one communication device, comprising

a first unit providing a downlink transmission time interval;

a determination unit determining available frequency ranges within a plurality of frequency ranges after the downlink transmission time interval;

a second unit providing an uplink transmission time interval after the determining of the available frequency ranges.

16. A communication device, comprising a frequency ranges determination device for determining available frequency ranges for at least one communication device, the frequency ranges determination device comprising

a first unit providing a downlink transmission time interval;

a determination unit determining available frequency ranges within a plurality of frequency ranges after the downlink transmission time interval;

a second unit providing an uplink transmission time interval after the determining of the available frequency ranges.

17. The communication device of claim 16,
being a wireline communication device.

18. The communication device of claim 16,
being a powerline communication device.

19. The communication device of claim 16,
being a radio communication device.

20. The communication device of claim 19,
being a mobile radio communication device.

21. The communication device of claim 19,
being a satellite radio communication device.

22. The communication device of claim 19,
being a mobile radio base station.

23. The communication device of claim 16, being a terminal communication device.

24. The communication device of claim 16, being a Consumer Premise Equipment device.

What is claimed is:

1. A method, comprising:

providing a downlink transmission time interval;

determining a plurality of available frequency ranges within a plurality of candidate frequency ranges for at least one communication device of a communication system, wherein an other communication system has a priority of usage of the plurality of candidate frequency ranges, wherein determining the plurality of available frequency ranges comprises:

determining, after providing the downlink transmission time interval, for each candidate frequency range of the plurality of candidate frequency ranges, either that the candidate frequency range is an available frequency range within the plurality of candidate frequency ranges for the at least one communication device to operate in when the other communication system is at least temporarily not in operation in the candidate frequency range, or that the candidate frequency range is an unavailable frequency range when the other communication system is in operation in the candidate frequency range;

providing an uplink transmission time interval for the plurality of available frequency ranges;

determining that the other communication system is resuming operation in a particular candidate frequency range of the plurality of candidate frequency ranges; and

vacating the particular candidate frequency range.

2. The method of claim 1, further comprising:

providing a further downlink transmission time interval after determining the plurality of available frequency ranges.

3. The method of claim 1, further comprising providing a plurality of further uplink transmission time intervals after determining the plurality of available frequency ranges.

4. The method of claim 1, further comprising:

providing a plurality of further downlink transmission time intervals after determining the plurality of available frequency ranges.

5. The method of claim 1, further comprising

waiting a predetermined time period after the downlink transmission time interval;

determining the plurality of available frequency ranges within the plurality of candidate frequency ranges after an expiration of the predetermined time period.

6. The method of claim 5,

the predetermined time period being dimensioned such that downlink transmission signals have been completely transmitted via the candidate frequency ranges.

7. The method of claim 1, the method being carried out within at least one data transmission frame structure, wherein the at least one data transmission frame structure comprises:

a downlink subframe provided for the downlink transmission time interval;

a sensing subframe provided for the determining of the available frequency; and

an uplink subframe provided for the uplink transmission time interval;

the sensing subframe being arranged between the downlink subframe and the uplink subframe.

8. The method of claim 7, further comprising the sensing subframe being dependent on a geographical distance between the at least one communication device and the other communication device.

9. The method of claim 8, the other communication device being a base station.

10. The method of claim 1, the method being carried out within at least one data transmission frame structure, wherein the at least one data transmission frame structure comprises a frame group comprising a header portion and a plurality of frames;

wherein the header portion of the frame group comprises:

a downlink subportion for the downlink transmission time interval; and

a sensing subportion provided for the determining of the available frequency.

11. The method of claim 10, further comprising the sensing subportion being dependent on a geographical distance between the at least one communication device and the other communication device.

12. The method of claim 11, the other communication device being a base station.

13. The method of claim 1, further comprising

after determining the plurality of available frequency ranges,

combining the plurality of available frequency ranges to at least one combined logical frequency range; and

allocating the at least one combined logical frequency range to the at least one communication device.

14. The method of claim 1, wherein determining the plurality of available frequency ranges comprises:

scanning the plurality of candidate frequency ranges;

determining, whether a signal transmission in a respective candidate frequency range of the plurality of candidate frequency ranges is below a predetermined threshold, and

in case the signal transmission in the respective candidate frequency range is below the predetermined threshold, then classifying the respective candidate frequency range as a respective available frequency range of the plurality of available frequency ranges.

15. The method of claim 1, further comprising using a multiple access transmission technology.

16. The method of claim 15, the multiple access transmission technology being selected from a group of multiple access transmission technologies consisting of:

time division multiple access,

frequency division multiple access,

code division multiple access, and

orthogonal frequency division multiple access.

17. The method of claim 1, wherein determining the plurality of available frequency ranges comprises:

scanning the plurality of candidate frequency ranges;

determining, whether a signal transmission in a respective candidate frequency range of the plurality of candidate frequency ranges is below a predetermined threshold, and

in case the signal transmission in the respective candidate frequency range is not below the predetermined threshold, then performing at least one of skipping the respective candidate frequency range or classifying the respective candidate frequency range as being a respective non-available frequency range.

18. A frequency ranges determination device, comprising:

a first unit configured to provide a downlink transmission time interval;

a determination unit configured to:

determine a plurality of available frequency ranges within a plurality of candidate frequency ranges for at least one communication device of a communication system, wherein an other communication system has a priority of usage of the plurality of candidate frequency ranges, wherein determining the plurality of available frequency ranges comprises:

determining, after providing the downlink transmission time interval, for each candidate frequency range of the plurality of candidate frequency ranges, either that the candidate frequency range is an available frequency range within the plurality of candidate frequency ranges for the at least one communication device to operate in when the other communication system is at least temporarily not in operation in the candidate frequency range, or that the candidate frequency range is an unavailable

frequency range when the other communication system is in operation in the candidate frequency range;

and

determine that the other communication system is resuming operation in a particular candidate frequency range of the plurality of candidate frequency ranges; and

vacate the particular candidate frequency range;

and

a second unit configured to provide an uplink transmission time interval for the plurality of available frequency ranges.

19. A communication device, comprising:

a frequency ranges determination device, comprising:

a first unit configured to provide a downlink transmission time interval;

a determination unit configured to:

determine a plurality of available frequency ranges within a plurality of candidate frequency ranges for at least one communication device of a communication system, wherein an other communication system has a priority of usage of the plurality of candidate frequency ranges, wherein determining the plurality of available frequency ranges comprises:

determining, after providing the downlink transmission time interval, for each candidate frequency range of the plurality of candidate frequency ranges, either that the candidate frequency range is an available frequency range within the plurality of candidate frequency ranges for the at least one communication device to operate in when the other communication system is at least temporarily not in operation in the candidate frequency range, or that the candidate frequency range is an unavailable frequency range when the other communication system is in operation in the candidate frequency range;

and

determine that the other communication system is resuming operation in a particular candidate frequency range of the plurality of candidate frequency ranges; and

vacate the particular candidate frequency range;

and

a second unit configured to provide an uplink transmission time interval for the plurality of available frequency ranges.

20. The communication device of claim 19, being a wireline communication device.

21. The communication device of claim 19, being a powerline communication device.

22. The communication device of claim 19, being a radio communication device.

23. The communication device of claim 22, being a mobile radio communication device.

24. The communication device of claim 22, being a satellite radio communication device.

25. The communication device of claim 22, being a mobile radio base station.

26. The communication device of claim 19, being a terminal communication device.

27. The communication device of claim 19, being a Consumer Premise Equipment device.