

~~WHAT IS CLAIMED IS:~~

CLAIMS

1. ~~—— A method of wireless communication, comprising:
—— communicating, by a first wireless communication device with a second wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the plurality of bandwidth parts based on an expected channel access pattern associated with a listen-before-talk (LBT) in the frequency band; and
communicating, by the first wireless communication device with the second wireless communication device, a first communication signal in a first bandwidth part of the plurality of bandwidth parts based on an LBT result.~~
2. ~~—— The method of claim 1, wherein the frequency band includes a plurality of channels, and wherein each bandwidth part of the plurality of bandwidth parts includes one or more channels of the plurality of channels.~~
3. ~~—— The method of claim 2, wherein the first bandwidth part includes at least two non-contiguous channels of the plurality of channels.~~
4. ~~—— The method of claim 2, wherein the plurality of channels includes a common primary channel, and wherein each bandwidth part of the plurality of bandwidth parts includes the common primary channel.~~
5. ~~—— The method of claim 4, wherein each bandwidth part includes one or more contiguous channels of the plurality of channels.~~
6. ~~—— The method of claim 4, further comprising:
communicating, by the first wireless communication device with the second wireless communication device, a second configuration indicating a frequency hopping pattern for the common primary channel;
frequency hopping, by the first wireless communication device, the first bandwidth part based on the frequency hopping pattern; and~~

~~communicating, by the first wireless communication device with the second wireless communication device, a second communication signal in the frequency hopped first bandwidth part.~~

7. — The method of claim 2, further comprising:

~~— determining, by the first wireless communication device, a reference starting subcarrier in the frequency band for a plurality of resource blocks, each including a plurality of subcarriers in the frequency band;~~

~~— wherein each channel of the plurality of channels includes one or more resource blocks of the plurality of resource blocks.~~

8. — The method of claim 7, further comprising:

~~determining, by the first wireless communication device, a plurality of guard bands for the plurality of bandwidth parts;~~

~~wherein the determining the reference starting subcarrier is based on a metric associated with a number of resource blocks in each bandwidth part that are non-overlapping with a resource block including a portion of the plurality of guard bands.~~

9. — The method of claim 8, wherein the determining the plurality of guard bands further includes:

~~determining the plurality of guard bands such that center frequencies of the plurality of channels are spaced apart from each other in the frequency band by an integer multiple of a subcarrier spacing of the plurality of subcarriers.~~

10. — The method of claim 7, wherein the determining is based on a guard band of a bandwidth part including a largest bandwidth among the plurality of bandwidth parts.

11. — The method of claim 7, wherein the determining is based on a guard band of a bandwidth part including a smallest bandwidth among the plurality of bandwidth parts.

12. — The method of claim 2, further comprising:

~~performing, by the first wireless communication device, a first LBT in a first channel of the plurality of channels within the first bandwidth part; and~~

~~performing, by the first wireless communication device, a second LBT in a second channel of the plurality of channels within the first bandwidth part;~~

~~wherein the communicating the first communication signal includes:~~

~~communicating, by the first wireless communication device with the second wireless communication device, the first communication signal in the first channel based on the LBT result associated with the first LBT and the second LBT.~~

~~131.~~ A method of wireless communication, comprising:

communicating, by a first wireless communication device with a second wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the frequency band including at least a first set of interlaced frequency resource blocks interlaced with a second set of interlaced frequency resource blocks across the plurality of bandwidth parts, wherein the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks across the plurality of bandwidth parts are defined with respect to a common frequency resource block; and

communicating, by the first wireless communication device with the second wireless communication device, a first communication signal using at least a portion of the first set of interlaced frequency resource blocks within a first bandwidth part of the plurality of bandwidth parts based on a first listen-before-talk (LBT) result.

~~142.~~ The method of claim ~~131~~, wherein the first set of interlaced frequency resource blocks are uniformly spaced apart from each other in the frequency band.

~~153.~~ The method of claim ~~131~~, further comprising:

determining, by the first wireless communication device, a reference starting subcarrier in the frequency band for a plurality of resource blocks, ~~each including a plurality of subcarriers,~~

wherein the plurality of resource blocks includes the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks.

~~164.~~ The method of claim ~~153~~, wherein the frequency band includes a plurality of channels including the plurality of resource blocks, and wherein each bandwidth part of the plurality of bandwidth parts includes one or more channels of the plurality of channels.

~~175.~~ The method of claim ~~164~~, further comprising:

determining, by the first wireless communication device, a plurality of guard bands for the plurality of bandwidth parts,

wherein the determining the reference starting subcarrier is based on a metric associated with a number of resource blocks in each bandwidth part that are non-overlapping with a resource block including a portion of the plurality of guard bands.

~~186.~~ The method of claim ~~175~~, wherein the determining the plurality of guard bands further includes:

determining the plurality of guard bands such that center frequencies of the plurality of channels are spaced apart from each other in the frequency band by an integer multiple of a subcarrier spacing ~~of the plurality of subcarriers~~.

~~197.~~ The method of claim ~~153~~, wherein the determining is based on a guard band of a bandwidth part including a largest bandwidth among the plurality of bandwidth parts.

~~208.~~ The method of claim ~~153~~, wherein the determining is based on a guard band of a bandwidth part including a smallest bandwidth among the plurality of bandwidth parts.

~~219.~~ The method of claim ~~131~~, further comprising:

communicating, by the first wireless communication device with a third wireless communication device, a second communication signal using at least a portion of the second set of interlaced frequency resource blocks within a second bandwidth part of the plurality of bandwidth parts based on a second LBT result,

wherein the second bandwidth part is at least partially overlapping with the first bandwidth part,

wherein the third wireless communication device is different from the second wireless communication device.

22. ~~An apparatus comprising:~~

~~— means for~~10. The method of claim 1, wherein:

~~the communicating, with a~~the first configuration comprises:

~~receiving, by the first~~ wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the plurality of bandwidth parts based on an expected channel access pattern associated with a listen before talk (LBT) in the frequency band; and

~~— means for communicating, with the~~ from the second wireless communication device, a first communication signal in a first bandwidth part of the plurality of bandwidth parts based on an LBT result.

23. ~~The apparatus of claim 22, wherein the frequency band includes a plurality of channels, and wherein each bandwidth part of~~first configuration indicating the plurality of bandwidth parts includes one or more channels of in the plurality of channels.

24. ~~The apparatus of claim 23, wherein the first bandwidth part includes at least two non-contiguous channels of the plurality of channels.~~

25. ~~The apparatus of claim 23, wherein the plurality of channels includes a common primary channel, and wherein each bandwidth part of the plurality of bandwidth parts includes the common primary channel.~~

26. ~~The apparatus of claim 25, wherein each bandwidth part includes one or more contiguous channels of the plurality of channels.~~

27. ~~The apparatus of claim 25, further comprising:~~

~~means for communicating, with the~~frequency band, wherein the first wireless communication device, a second configuration indicating a frequency hopping pattern for the ~~common primary channel;~~

~~means for applying frequency hopping to the first bandwidth part based on a frequency hopping pattern; and~~

~~means for communicating, with the~~ includes a user equipment and the second
wireless communication device, includes a second ~~base station; and~~
the communicating the first communication signal comprises:
transmitting, by the user equipment to the base station, the first communication signal ~~in~~
the frequency-hopped first bandwidth part.

28. — The apparatus of claim 23, further comprising:

—— ~~means for determining a reference starting subcarrier in the frequency band for a plurality of resource blocks, each including a plurality of subcarriers in the frequency band,~~
—— ~~wherein each channel of the plurality of channels includes one or more resource blocks of the plurality of resource blocks.~~

29. — The apparatus of claim 28, further comprising:

—— ~~means for determining a plurality of guard bands for the plurality of bandwidth parts,~~
~~wherein the reference starting subcarrier is determined further based on a metric~~
~~associated with a number of resource blocks in each bandwidth part that are non-overlapping~~
~~with a resource block including a~~ using at least the portion of the plurality of guard bands.

30. — The apparatus of claim 29, wherein the plurality of guard bands is determined such that
~~center frequencies of the plurality of channels are spaced apart from each other in the frequency~~
~~band by an integer multiple of a subcarrier spacing of the plurality of subcarriers.~~

31. — The apparatus of claim 28, wherein the reference starting subcarrier is determined further
~~based on a guard band of a bandwidth part including a largest bandwidth among the plurality of~~
~~bandwidth parts.~~

32. — The apparatus of claim 28, wherein means for determining the reference starting
subcarrier is further configured to:

~~determine the reference starting subcarrier based on a guard band of a bandwidth part~~
~~including a smallest bandwidth among the plurality of bandwidth parts.~~

33. — The apparatus of claim 23, further comprising:

~~means for performing a first LBT in a first channel of the plurality of channels~~
set of interlaced frequency resource blocks within the first bandwidth part; and
of the plurality of bandwidth parts based on the first LBT result.

~~means for performing a second LBT in a second channel of the plurality of channels~~
within the first bandwidth part;

~~wherein the means for~~

11. The method of claim 10, wherein the first LBT result is based on an LBT performed by the user equipment.

12. The method of claim 1, wherein:

the communicating the first configuration comprises:

transmitting, by the first wireless communication device to the second wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a base station and the second wireless communication device includes a user equipment; and
the communicating the first communication signal is further configured to
communicatecomprises:

receiving, by the base station from the user equipment, the first communication signal with the wireless communication device in the first channel based on the LBT result associated with the first LBT and the second LBT.

3413. An apparatus comprising:

~~means for communicating~~a transceiver; and
a processor in communication with the transceiver, wherein the apparatus is configured
to:

communicate, with a first wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the frequency band including at least a first set of interlaced frequency resource blocks interlaced with a second set of interlaced frequency resource blocks across the plurality of bandwidth parts, wherein the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks for the plurality of bandwidth parts are defined with respect to a common resource block; and

~~means for communicating~~communicate, with the first wireless communication device, a first communication signal using at least a portion of the first set of interlaced frequency resource blocks within a first bandwidth part of the plurality of bandwidth parts based on a first listen-before-talk (LBT) result.

~~3514.~~ The apparatus of claim ~~3413~~, wherein the first set of interlaced frequency resource blocks are uniformly spaced apart from each other in the frequency band.

~~3615.~~ The apparatus of claim ~~34,13~~, wherein the apparatus is further ~~comprising~~configured to:
~~means for determining~~determine a reference starting subcarrier in the frequency band for a plurality of resource blocks, ~~each including a plurality of subcarriers~~,
wherein the plurality of resource blocks includes the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks.

~~3716.~~ The apparatus of claim ~~3615~~, wherein the frequency band includes a plurality of channels including the plurality of resource blocks, and wherein each bandwidth part of the plurality of bandwidth parts includes one or more channels of the plurality of channels.

~~3817.~~ The apparatus of claim ~~37,16~~, wherein the apparatus is further ~~comprising~~configured to:
~~means for determining~~determine a plurality of guard bands for the plurality of bandwidth parts,
wherein the reference starting subcarrier is determined based on a metric associated with a number of resource blocks in each bandwidth part that are non-overlapping with a resource block including a portion of the plurality of guard bands.

~~3918.~~ The apparatus of claim ~~3817~~, wherein the plurality of guard bands is determined such that center frequencies of the plurality of channels are spaced apart from each other in the frequency band by an integer multiple of a subcarrier spacing ~~of the plurality of subcarriers~~.

~~4019.~~ The apparatus of claim ~~3615~~, wherein the ~~means for determining the~~reference starting subcarrier is determined further ~~configured to determine the reference starting subcarrier based~~

on a guard band of a bandwidth part including a largest bandwidth among the plurality of bandwidth parts.

~~44~~20. The apparatus of claim ~~36~~15, wherein the reference starting subcarrier is determined further based on a guard band of a bandwidth part including a smallest bandwidth among the plurality of bandwidth parts.

~~42~~21. The apparatus of claim ~~34~~13, wherein the apparatus is further ~~comprising~~configured to:
~~means for communicating~~communicate, with a second wireless communication device, a second communication signal using at least a portion of the second set of interlaced frequency resource blocks within a second bandwidth part of the plurality of bandwidth parts based on a second LBT result,
wherein the second bandwidth part is at least partially overlapping with the first bandwidth part,
wherein the first wireless communication device is different from the second wireless communication device.

22. The apparatus of claim 13, wherein the apparatus is further configured to:
communicate the first configuration by:
receiving, from the first wireless communication device, the first configuration
indicating the plurality of bandwidth parts in the frequency band, wherein the first
wireless communication device includes a base station; and
communicate the first communication signal by:
transmitting, to the base station, the first communication signal using at least the
portion of the first set of interlaced frequency resource blocks within the first bandwidth
part of the plurality of bandwidth parts based on the first LBT result.

23. The apparatus of claim 22, wherein the apparatus is further configured to:
perform an LBT, wherein the first LBT result is based on the LBT performed by the
apparatus.

24. The apparatus of claim 13, wherein the apparatus is further configured to:

communicate the first configuration by:

transmitting, to the first wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a user equipment; and
communicate the first communication signal by:

receiving, from the user equipment, the first communication signal.

25. A non-transitory computer-readable medium having program code recorded thereon for operation on a first wireless communication device, the program code comprising:

code for causing the first wireless communication device to communicate, with a second wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the frequency band including at least a first set of interlaced frequency resource blocks interlaced with a second set of interlaced frequency resource blocks across the plurality of bandwidth parts, wherein the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks across the plurality of bandwidth parts are defined with respect to a common frequency resource block; and

code for causing the first wireless communication device to communicate, with the second wireless communication device, a first communication signal using at least a portion of the first set of interlaced frequency resource blocks within a first bandwidth part of the plurality of bandwidth parts based on a first listen-before-talk (LBT) result.

26. The non-transitory computer-readable medium of claim 25, wherein the first set of interlaced frequency resource blocks are uniformly spaced apart from each other in the frequency band.

27. The non-transitory computer-readable medium of claim 25, further comprising:

code for causing the first wireless communication device to determine a reference starting subcarrier in the frequency band for a plurality of resource blocks, wherein the plurality of resource blocks includes the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks.

28. The non-transitory computer-readable medium of claim 27, further comprising:

code for causing the first wireless communication device to determine a plurality of guard bands for the plurality of bandwidth parts,

wherein the code for causing the first wireless communication device to determine the reference starting subcarrier includes code for causing the first wireless communication device to determine the reference starting subcarrier based on a metric associated with a number of resource blocks in each bandwidth part that are non-overlapping with a resource block including a portion of the plurality of guard bands.

29. The non-transitory computer-readable medium of claim 28, wherein the code for causing the first wireless communication device to determine the plurality of guard bands further includes:

code for causing the first wireless communication device to determine the plurality of guard bands such that center frequencies of the plurality of channels are spaced apart from each other in the frequency band by an integer multiple of a subcarrier spacing.

30. The non-transitory computer-readable medium of claim 27, wherein the code for causing the first wireless communication device to determine the reference starting subcarrier includes code for causing the first wireless communication device to determine the reference starting subcarrier based on a guard band of a bandwidth part including a largest bandwidth among the plurality of bandwidth parts.

31. The non-transitory computer-readable medium of claim 27, wherein the code for causing the first wireless communication device to determine the reference starting subcarrier includes code for causing the first wireless communication device to determine the reference starting subcarrier based on a guard band of a bandwidth part including a smallest bandwidth among the plurality of bandwidth parts.

32. The non-transitory computer-readable medium of claim 25, further comprising:

code for causing the first wireless communication device to communicate, with a third wireless communication device, a second communication signal using at least a portion of the second set of interlaced frequency resource blocks within a second bandwidth part of the plurality of bandwidth parts based on a second LBT result,

wherein the second bandwidth part is at least partially overlapping with the first bandwidth part,

wherein the third wireless communication device is different from the second wireless communication device.

33. The non-transitory computer-readable medium of claim 25, wherein:

the code for causing the first wireless communication device to communicate the first configuration comprises:

code for causing the first wireless communication device to receive, from the second wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a user equipment and the second wireless communication device includes a base station; and

the code for causing the first wireless communication device to communicate the first communication signal comprises:

code for causing the user equipment to transmit, to the base station, the first communication signal using at least the portion of the first set of interlaced frequency resource blocks within the first bandwidth part of the plurality of bandwidth parts based on the first LBT result.

34. The non-transitory computer-readable medium of claim 33, further comprising:

code for causing the user equipment to perform an LBT, wherein the first LBT result is based on the LBT performed by the user equipment.

35. The non-transitory computer-readable medium of claim 25, wherein:

the code for causing the first wireless communication device to communicate the first configuration comprises:

code for causing the first wireless communication device to transmit, to the second wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a base station and the second wireless communication device includes a user equipment; and

the code for causing the first wireless communication device to communicate the first communication signal comprises:

code for causing the base station to receive, from the user equipment, the first communication signal.

36. A first wireless communication device, comprising:

means for communicating, with a second wireless communication device, a first configuration indicating a plurality of bandwidth parts in a frequency band, the frequency band including at least a first set of interlaced frequency resource blocks interlaced with a second set of interlaced frequency resource blocks across the plurality of bandwidth parts, wherein the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks across the plurality of bandwidth parts are defined with respect to a common frequency resource block; and

means for communicating, by the first wireless communication device with the second wireless communication device, a first communication signal using at least a portion of the first set of interlaced frequency resource blocks within a first bandwidth part of the plurality of bandwidth parts based on a first listen-before-talk (LBT) result.

37. The first wireless communication device of claim 36, further comprising:

means for determining, by the first wireless communication device, a reference starting subcarrier in the frequency band for a plurality of resource blocks, wherein the plurality of resource blocks includes the first set of interlaced frequency resource blocks and the second set of interlaced frequency resource blocks.

38. The first wireless communication device of claim 37, further comprising:

means for determining, by the first wireless communication device, a plurality of guard bands for the plurality of bandwidth parts,

wherein the means for determining the reference starting subcarrier includes means for determining the reference starting subcarrier based on a metric associated with a number of resource blocks in each bandwidth part that are non-overlapping with a resource block including a portion of the plurality of guard bands.

39. The first wireless communication device of claim 37, wherein the means for determining the reference starting subcarrier includes:

means for determining the reference starting subcarrier based on a guard band of a bandwidth part, wherein the bandwidth part includes at least one of a largest bandwidth among the plurality of bandwidth parts or a smallest bandwidth among the plurality of bandwidth parts.

40. The first wireless communication device of claim 36, further comprising:

means for communicating, by the first wireless communication device with a third wireless communication device, a second communication signal using at least a portion of the second set of interlaced frequency resource blocks within a second bandwidth part of the plurality of bandwidth parts based on a second LBT result,

wherein the second bandwidth part is at least partially overlapping with the first bandwidth part,

wherein the third wireless communication device is different from the second wireless communication device.

41. The first wireless communication device of claim 36, wherein:

the means for communicating the first configuration comprises:

means for receiving, by the first wireless communication device from the second wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a user equipment and the second wireless communication device includes a base station; and

the means for communicating the first communication signal comprises:

means for transmitting, by the user equipment to the base station, the first communication signal using at least the portion of the first set of interlaced frequency resource blocks within the first bandwidth part of the plurality of bandwidth parts based on the first LBT result.

42. The first wireless communication device of claim 36, wherein:

the means for communicating the first configuration comprises:

means for transmitting, by the first wireless communication device to the second wireless communication device, the first configuration indicating the plurality of bandwidth parts in the frequency band, wherein the first wireless communication device includes a base station and the second wireless communication device includes a user equipment; and
the means for communicating the first communication signal comprises:
means for receiving, by the base station from the user equipment, the first communication signal.