

CLAIMS

1. A method of allocating a portion of frequency spectrum in a wireless local area network, comprising:

identifying a plurality of equal-size sub-bands making up the portion of
5 frequency spectrum;

identifying which of the plurality of sub-bands are available;

generating a bit representation of an allocation of resource units within
the portion of frequency spectrum for use by a target station, the bit
representation consisting of a plurality of binary values, each binary value
10 indicating the availability or unavailability of one or more sub-bands;

generating a physical layer protocol data unit, the physical layer
protocol data unit comprising a header, the header comprising the bit
representation; and

transmitting the physical layer protocol data unit to a target station.

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2. The method of Claim 1, wherein:

the portion of frequency spectrum being allocated is an operating
channel;

each sub-band has a bandwidth of 20 MHz; and

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each binary value indicates an unavailable sub-band or an available one
or more sub-bands capable of supporting a single-user large-size resource
unit.

3. The method of Claim 1 or 2, wherein:

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the operating channel consists of one to four sub-blocks of the
operating channel, each sub-block of the operating channel consisting of four
20 MHz sub-bands; and

the bit representation consists of, for each sub-block of the operating channel, a corresponding sub-block representation, each sub-block representation consisting of one or more binary values.

5 4. The method of any of Claims 1 to 3, wherein:

each binary value is two bits; and

each binary value corresponds to an unavailable 20 MHz sub-band or the size of an available one or more contiguous 20 MHz sub-bands.

10 5. The method of Claim 4, wherein:

the four possible binary values correspond to:

an unavailable sub-band;

an available sub-band;

two contiguous available sub-bands; and

15 four contiguous available sub-bands.

6. The method of Claims 1 to 3, wherein:

each binary value is one bit; and

20 each binary value corresponds to an unavailable 20 MHz sub-band or an available 20 MHz sub-band.

7. The method of Claim 6, wherein:

a binary value of "0" indicates an unavailable 20 MHz sub-band; and

a binary value of "1" indicates an available 20 MHz sub-band.

8. The method of any of claims 1 to 7, wherein:

the header includes a universal signal field; and

the bit representation is included in the universal signal field.

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9. The method of any of Claims 1 to 7, wherein:

the header includes an extreme high throughput signal field; and

the bit representation is included in the extreme high throughput signal field.

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10. A method, comprising:

receiving, over a wireless local area network, a physical layer protocol data unit, the physical layer protocol data unit comprising a header, the header comprising a bit representation;

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identifying the availability of the sub-bands to which resource units can be allocated within a portion of frequency spectrum based on the bit representation, the bit representation consisting of a plurality of binary values, each binary value indicating the availability or unavailability of one or more sub-bands of a plurality of equal-size sub-bands making up the portion of frequency spectrum; and

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communicating over the wireless local area network using one or more of the resource units.

11. The method of Claim 10, wherein:

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the portion of frequency spectrum being allocated is an operating channel;

each sub-band has a bandwidth of 20 MHz; and

each binary value indicates an unavailable sub-band or an available one or more sub-bands capable of supporting a single-user resource unit.

5 12. The method of Claim 10 or 11, wherein:

the operating channel consists of one to four sub-blocks of the operating channels, each sub-block of the operating channel consisting of four sub-bands; and

10 the bit representation consists of, for each sub-block of the operating channel, a corresponding sub-block representation, each sub-block representation consisting of one or more binary values.

13. The method of any of Claims 10 to 12, wherein:

each binary value is two bits; and

15 each binary value corresponds to an unavailable 20 MHz sub-band or the size of an available one or more contiguous 20 MHz sub-bands

14. The method of Claim 13, wherein:

the four possible binary values correspond to:

20 an unavailable sub-band;
an available sub-band;
two contiguous available sub-bands; and
four contiguous available sub-bands.

25 15. The method of any of Claims 10 to 12, wherein:

each bit of the bit representation corresponds to an unavailable sub-band or an available sub-band.

16. The method of Claim 15, wherein:

5 a binary value of "0" indicates an unavailable 20 MHz sub-band; and
a binary value of "1" indicates an available 20 MHz sub-band.

17. The method of any of Claims 10 to 12, wherein:

 the header includes a universal signal field; and
10 the bit representation is included in the universal signal field.

18. The method of any of Claims 10 to 12, wherein:

 the header includes an extreme high throughput signal field; and
 the bit representation is included in the extreme high throughput signal
15 field.

19. A station enabled for use in a wireless area local area network (WLAN),
the station being configured to perform the method of Claim 1.

20 20. A processing system, comprising:

 a processing device;
 a wireless network interface for wireless communication with a
network; and
 a memory,

the memory having stored thereon executable instructions that, when executed by the processing device, implement a communication module configured to perform the method of Claim 10 using the wireless network interface.