

CLAIMS

WHAT IS CLAIMED IS:

1.-____A method of wireless communication performed by a wireless communication device, comprising:

identifying that a last resource block of a resource allocation for a physical downlink shared channel (PDSCH) is in a last allocable resource block group (RBG); and

determining whether one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of a reference signal type associated with the PDSCH, a quantity of the one or more additional resource blocks, or a downlink control information (DCI) format of the resource allocation-, wherein, when the reference signal type associated with the PDSCH is a cell-specific reference signal (CRS) type, the wireless communication device is configured to determine that the one or more additional resource blocks are included in the resource allocation.

2.-____The method of claim 1, wherein the wireless communication device, when determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH, is configured to determine whether the quantity of the one or more additional resource blocks is less than a size of an RBG corresponding to a bandwidth of the resource allocation.

3.-____The method of claim 1, wherein the wireless communication device, when determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH, is configured to determine whether the quantity of the one or more additional resource blocks is divisible by a precoding resource block group (PRG) size or is greater than the PRG size.

~~4. The method of claim 1, wherein, when the reference signal type associated with the PDSCH is a cell-specific reference signal (CRS) type, the wireless communication device is configured to determine that the one or more additional resource blocks are included in the resource allocation.~~

5-4. The method of claim 1, wherein, when the reference signal type associated with the PDSCH is a demodulation reference signal (DMRS) type, the wireless communication device is configured to determine at least two of the one or more additional resource blocks are included in the resource allocation when an index of the last resource block and a bandwidth, associated with a communication system of the wireless communication device, indicate that there are at least two additional resource blocks available for resource allocation.

6-5. The method of claim 1, wherein:
——an index of the last resource block of the last allocable RBG is based at least in part on a resource block group (RBG) size associated with the resource allocation and a starting point of the resource allocation; and
——the RBG size and the starting point of the resource allocation are based at least in part on a bandwidth associated with a communication system of the wireless communication device.

7-6. The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 5 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 20 to 26, and the resource allocation indicates the PDSCH is mapped to a resource block at index 23 of the bandwidth, the wireless communication device is configured to determine that a resource block at index 24 of the bandwidth is included in the resource allocation when the reference signal type is ~~a cell-specific reference signal (CRS)~~ the CRS type.

8-7. The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 5 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 20 to 26, and the resource allocation indicates the PDSCH is mapped to a resource block at index 23 of the bandwidth, the wireless communication device is configured to determine that a resource block at index 24 of the bandwidth is not included in the resource allocation when the reference signal type is ~~a cell-specific reference signal (CRS)~~ the CRS type.

~~9-8.~~ The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 5 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 20 to 26, and the resource allocation indicates the PDSCH is mapped to a resource block at index 21 of the bandwidth, the wireless communication device is configured to determine that resource blocks at index 22, index 23, and index 24 of the bandwidth are included in the resource allocation when the reference signal type is ~~a cell-specific reference signal (CRS)~~ the CRS type.

~~10-9.~~ The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 5 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 20 to 26, and the resource allocation indicates the PDSCH is mapped to a resource block at index 21 of the bandwidth, the wireless communication device is configured to determine that resource blocks at index 22 and index 23 of the bandwidth are included in the resource allocation when the reference signal type is a demodulation reference signal (DMRS) type.

~~11-10.~~ The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 10 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 27 to 63, and the resource allocation indicates the PDSCH is mapped to a resource block at index 47 of the bandwidth, the wireless communication device is configured to determine that resource blocks at index 48 and index 49 of the bandwidth are included in the resource allocation when the reference signal type is ~~a cell-specific reference signal (CRS)~~ the CRS type or a demodulation reference signal (DMRS) type.

~~12-11.~~ The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 15 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, -has an index value in a range from 64 to 75, and the resource allocation indicates the PDSCH is mapped to a resource block at index 71 of the bandwidth, the wireless communication device is configured to determine that resource blocks

at index 72, index 73, and index 74 of the bandwidth are included in the resource allocation when the reference signal type is a ~~cell-specific reference signal (CRS)~~ the CRS type.

~~13.~~ 12. The method of claim 1, wherein, when a bandwidth of a communication system associated with the wireless communication device is 15 MHz or a downlink bandwidth configuration, expressed in number of resource blocks, has an index value in a range from 64 to 75, and the resource allocation indicates the PDSCH is mapped to a resource block at index 71 of the bandwidth, the wireless communication device is configured to determine that resource blocks at index 72 and index 73 of the bandwidth are included in the resource allocation when the reference signal type is a demodulation reference signal (DMRS) type.

~~14.~~ 13. The method of claim 1, wherein the wireless communication device comprises a user equipment.

~~15.~~ 14. The method of claim 1, wherein the wireless communication device comprises a base station (BS).

~~16.~~ 15. The method of claim 1, wherein the one or more additional resource blocks are included in the last RBG of the resource allocation.

~~17.~~ 16. The method of claim 1, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation includes determining the quantity of the one or more additional resource blocks is an integer multiple of a size of a precoding resource block group expressed in number of resource blocks.

~~18.~~ 17. The method of claim ~~17~~16, wherein the wireless communication device is configured to determine the one or more additional resource blocks are included in the resource allocation for the PDSCH.

~~19-18.~~ The method of claim 1, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation includes determining the quantity of the one or more additional resource blocks is a non-integer multiple of a size of a precoding resource block group (PRG), expressed in number of resource blocks, greater than the PRG size.

~~20-19.~~ The method of claim ~~19~~18, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation further includes determining the reference signal type is ~~a cell-specific reference signal (CRS)~~the CRS type; and

———wherein the method further comprises determining the one or more additional resource blocks are included in the resource allocation for the PDSCH.

~~21-20.~~ The method of claim ~~19~~18, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation further includes determining the reference signal type is a demodulation reference signal (DMRS) type; and

———wherein the method further comprises determining all but a last number of resource blocks less than the size of the PRG, expressed in resource blocks, of the one or more additional resource blocks are included in the resource allocation for the PDSCH.

~~22-21.~~ The method of claim 1, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the

PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation includes determining the quantity of the one or more additional resource blocks is a non-integer multiple of a size of a precoding resource block group (PRG), expressed in number of resource blocks, less than the PRG size.

~~23.~~ 22. The method of claim ~~22~~21, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation further includes determining the reference signal type is a ~~cell-specific reference signal (CRS)~~the CRS type; and

———wherein the method further comprises determining the one or more additional resource blocks are included in the resource allocation for the PDSCH.

~~24.~~ 23. The method of claim ~~22~~21, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation includes determining the reference signal type is a demodulation reference signal (DMRS) type; and

———wherein the method further comprises determining the one or more additional resource blocks are not included in the resource allocation for the PDSCH.

~~25.~~ 24. The method of claim 1, wherein determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation includes determining the reference signal type associated with the PDSCH based at least in part on a downlink control information format employed to communicate the resource allocation.

~~26.~~25. The method of claim 1, wherein, for a reference signal type of a demodulation reference signal (DMRS), determining whether one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation is based at least in part on a system bandwidth of the wireless communication device and a precoding resource block group (PRG) size of the resource allocation.

~~27.~~26. A wireless communication device for wireless communication, comprising:
a memory; and
one or more processors operatively coupled to the memory, the memory and the one or more processors configured to:
identify that a last resource block of a resource allocation for a physical downlink shared channel (PDSCH) is in a last allocable resource block group (RBG); and
determine whether one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of a reference signal type associated with the PDSCH, a quantity of the one or more additional resource blocks, or a downlink control information (DCI) format of the resource allocation;
wherein, when the reference signal type associated with the PDSCH is a cell-specific reference signal (CRS) type, the wireless communication device is configured to determine that the one or more additional resource blocks are included in the resource allocation.

~~28.~~27. The wireless communication device of claim ~~27~~26, wherein the one or more processors, when determining whether the one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of the reference signal type associated with the PDSCH, the quantity of the one or more additional resource blocks, or the DCI format of the resource allocation, are configured to:
determine whether the quantity of the one or more additional resource blocks is less than a size of an RBG corresponding to a bandwidth of the resource allocation.

~~29.~~28. A non-transitory computer-readable medium storing one or more instructions for wireless communication, the one or more instructions comprising:
one or more instructions that, when executed by one or more processors of a wireless

communication device, cause the one or more processors to:

identify that a last resource block of a resource allocation for a physical downlink shared channel (PDSCH) is in a last allocable resource block group (RBG); and

determine whether one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of a reference signal type associated with the PDSCH, a quantity of the one or more additional resource blocks, or a downlink control information (DCI) format of the resource allocation; wherein, when the reference signal type associated with the PDSCH is a cell-specific reference signal (CRS) type, the wireless communication device is configured to determine that the one or more additional resource blocks are included in the resource allocation.

~~30-29.~~ An apparatus for wireless communication, comprising:

means for identifying that a last resource block of a resource allocation for a physical downlink shared channel (PDSCH) is in a last allocable resource block group (RBG); and

means for determining whether one or more additional resource blocks, subsequent to the last resource block, are included in the resource allocation for the PDSCH based at least in part on at least one of a reference signal type associated with the PDSCH, a quantity of the one or more additional resource blocks, or a downlink control information (DCI) format of the resource allocation;

, wherein, when the reference signal type associated with the PDSCH is a cell-specific reference signal (CRS) type, the wireless communication device is configured to determine that the one or more additional resource blocks are included in the resource allocation.