

~~WHAT IS CLAIMED IS:~~

~~What is claimed is:~~

CLAIMS

1. A method of wireless communication, comprising:
receiving, by a wireless communication device, ~~one or more known bits;~~
~~receiving, by the wireless communication device, a first signal carrying a first encoded~~
information block; ~~and including a first bit pattern associated with an information field;~~
~~decoding~~receiving, by the wireless communication device, a second signal carrying a
second encoded information block including a second bit pattern associated with the information
field;
~~determining, by the wireless communication device, the first encoded information block~~
~~to generate a first information block a probability of occurrence for each bit-change pattern in a~~
subset of a plurality of bit-change patterns associated with the information field;
~~selecting, by the wireless communication device, one or more bit-change patterns from~~
the subset of the plurality of bit-change patterns based on the one or more ~~known bits.~~bit-change
patterns having a higher probability of occurrence among the subset of the plurality of bit-change
patterns than remaining bit-change patterns in the plurality of bit-change patterns;
2. The method of claim 1, wherein the receiving the one or more known bits includes:
receiving, by the wireless communication device, a second encoded information block;
~~decoding~~determining, by the wireless communication device, from the secondfirst signal,
a first estimate for the first encoded information block ~~to generate a second information block;~~
and
~~extracting~~determining, by the wireless communication device, the one or more known
bits from the second signal, a second estimate for the second encoded information block; and
3. The method of claim 2, wherein the receiving the first encoded information block
includes ~~receiving the first encoded information block from a physical broadcast channel during~~
a first time period, and wherein the receiving the second encoded information block includes
receiving the second encoded information block from the physical broadcast channel during a
second time period prior to the first time period.

4. ~~The method of claim 1, wherein the receiving the one or more known bits includes:~~
~~receiving, by the wireless communication device from a first base station of a first cell,~~
~~the one or more known bits, and wherein the one or more known bits are associated with a~~
~~second cell.~~
5. ~~The method of claim 4, further comprising:~~
~~receiving, by the wireless communication device from a second base station of the second~~
~~cell, a second encoded information block; and~~
~~decoding, by the wireless communication device, the second encoded information block~~
~~based on the one or more known bits associated with the second cell.~~
6. ~~The method of claim 4, wherein the receiving the one or more known bits includes:~~
~~receiving, by the wireless communication device, a handover message, and wherein the~~
~~handover message corresponds to a handover between the first cell and the second cell.~~
7. ~~The method of claim 1, wherein the receiving the one or more known bits includes:~~
~~receiving one or more bits regarding at least one of a system frame number (SFN) or a~~
~~hyper SFN.~~
8. ~~The method of claim 1, wherein the first encoded information block is associated with at~~
~~least one of a physical broadcast channel (PBCH), a system information block (SIB), a physical~~
~~downlink control channel (PDCCH), a physical downlink shared channel (PDSCH), a physical~~
~~uplink control channel (PUCCH), or a physical uplink shared channel (PUSCH).~~
9. ~~A method of wireless communication, comprising:~~
~~receiving, by a wireless communication device, a first encoded information block~~
~~including a first bit pattern;~~
~~receiving, by the wireless communication device, a second encoded information block~~
~~including a second bit pattern; and~~
~~jointly decoding, by the wireless communication device, the first encoded information~~
~~block and the second encoded information block based on the first estimate, the second estimate,~~

and an assumption that a difference between the first bit pattern and the second bit pattern is ~~within a subset of a plurality of~~ corresponds to the one or more bit-change patterns.

~~10.~~—2.— The method of claim 91, further comprising:

selecting, by the wireless communication device, the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a capability of the wireless communication device.

~~11.~~—3.— The method of claim 9, ~~further comprising:~~

~~selecting, by the wireless communication device, the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a probability of occurrence associated with each of the plurality of bit-change patterns.~~

~~12.~~— The method of claim 91, wherein the plurality of bit-change patterns is associated with a system frame number (SFN), wherein the jointly decoding is based on the first encoded information block including an even SFN and the second encoded information block including an odd SFN, and wherein the subset of the plurality of bit-change patterns corresponds to one of the plurality of bit-change patterns indicating a single bit-change at a least significant bit.

~~13.~~—4.— The method of claim 91, further comprising:

—receiving, by the wireless communication device, a third encoded information block; and

—jointly decoding, by the wireless communication device, the second encoded information block and the third encoded information block based on the second encoded information block including an even SFN and the third encoded information block including an odd SFN.

~~14.~~—5.— The method of claim 91, wherein the receiving the first encoded information block includes receiving the first encoded information block from a physical broadcast channel during a first time period, wherein the receiving the second encoded information block includes receiving the second encoded information block from the physical broadcast channel during a second time period after the first time period, and wherein the first

encoded information block is generated by encoding a first information block and the second encoded information block is generated by encoding a second information block.

~~15.—6.—~~ The method of claim ~~91~~, wherein the ~~receiving~~determining the first ~~encoded information block includes receiving a first signal carrying the first encoded information block, wherein the receiving estimate and the second encoded information block includes receiving a second signal carrying the second encoded information block, and wherein the method further comprises:~~

~~———determining, by the wireless communication device from the first signal, a first estimate for the first encoded information block; and~~

~~———determining, by the wireless communication device from the second signal, a second estimate for the second encoded information block.~~includes:

~~16.—~~ The method of claim ~~15~~, wherein the ~~determining the first estimate and the second estimate includes:~~

~~———demodulating the first signal to produce a first plurality of log-likelihood ratios (LLRs);~~

~~———demodulating the second signal to produce a second plurality of LLRs; and~~

~~———jointly decoding the first plurality of -LLRs and the second plurality of -LLRs to generate the first estimate and the second estimate based on each bit-change pattern in the subset of the plurality of bit-change patterns.~~

~~17.—7.—~~ The method of claim ~~16~~, wherein the jointly decoding the first plurality of LLRs and the second plurality of LLRs includes:

~~———encoding a first bit-change pattern in the subset of the plurality of bit-change patterns based on a linear block code associated with the first encoded information block and the second encoded information block;~~

~~———modifying the first plurality of LLRs based on the encoded first bit-change pattern; and~~

~~———combining the first plurality of LLRs with the second plurality of LLRs.~~

~~18.—~~ A method of wireless communication, comprising:

~~generating, by a first wireless communication device, a first information block based on one or more known bits;~~

~~—— encoding, by the first wireless communication device, the first information block to form a first encoded information block;~~

~~—— transmitting, by the first wireless communication device to a second wireless communication device, the first encoded information block; and~~

~~—— transmitting, by the first wireless communication device to the second wireless communication device, the one or more known bits to enable decoding of the first encoded information block at the second wireless communication device.~~

19. ~~8.~~ The method of claim ~~18~~1, wherein the ~~transmitting the one or more known bits~~ includes:

~~transmitting, by the first wireless communication device, a second encoded information block to the second wireless communication device.~~

20. ~~The method of claim 19, wherein the transmitting the first encoded information block includes transmitting the first encoded information block through a physical broadcast channel during a first time period, and wherein the transmitting the second encoded information block includes transmitting the second encoded information block through the physical broadcast channel during a second time period prior to the first time period.~~

21. ~~The method of claim 20, wherein the transmitting the first encoded information block includes transmitting a first signal carrying the first encoded information block, and wherein the transmitting the second encoded information block includes transmitting a second signal carrying the second encoded information block.~~

22. ~~The method of claim 18, jointly decoding is further comprising:~~

~~—— transmitting, by the first wireless communication device to the second wireless communication device, a handover message including the one or more known bits,~~

~~wherein the first wireless communication device is associated with a first cell,~~

~~wherein the handover message is associated with a handover from the first cell to a second cell, and~~

wherein the one or more known bits are associated with an information block of the second cell.

23. — A method of wireless communication, comprising:

— receiving, by a user equipment (UE) from a first base station of a first cell, a handover message including configuration information for a second cell, wherein the handover message corresponds to a handover between the first cell and the second cell;

— receiving, by the UE from a second base station of the second cell, one or more reference signals in one or more subframes based on the received configuration information; and

— performing, by the UE, channel estimation based on the one or more received reference signals and the received configuration information.

24. — The method of claim 23, wherein the configuration information indicates a correlation between a configuration of the first cell and a configuration of the second cell during the handover.

25. — The method of claim 24, wherein the correlation indicates that one or more bits of an information block of the first cell and an information block of the second cell are the same, and wherein the one or more known bits are used for decoding based on the first and second encoded information blocks of the second cell having a common information type and the difference between the first bit pattern and the second bit pattern being within the subset of the plurality of bit-change patterns.

26. — The method of claim 23, wherein the configuration information is associated with at least one of a non-multicast broadcast single frequency network (non-MBSFN) subframe configuration or a narrowband Internet of things (NB-IoT) subframe configuration.

27. — 9. — An apparatus comprising:

a transceiver configured to:

receive one or more known bits; and

receive a first encoded information block; and

a processor in communication with the transceiver and configured to:

~~decode the first encoded information block to generate a first information block based on the one or more known bits.~~

28. — The apparatus of claim 27, wherein the transceiver is further configured to receive the one or more known bits by receiving a second encoded information block, wherein the processor is further configured to:

~~decode the second encoded information block to generate a second information block;~~
and
~~extract the one or more known bits from the second information block.~~

29. — The apparatus of claim 28, wherein the transceiver is further configured to:

~~receive the first encoded information block by receiving the first encoded information block from a physical broadcast channel during a first time period; and~~
~~receive the second encoded information block by receiving the second encoded information block from the physical broadcast channel.~~

30. — The apparatus of claim 27, wherein the transceiver is further configured to receive the one or more known bits by:

— receiving, from a first base station of a first cell, the one or more known bits, and wherein the one or more known bits are associated with a second cell.

31. — The apparatus of claim 30, wherein the transceiver is further configured to:

— receive, from a second base station of the second cell, a second encoded information block, and
— wherein the processor is further configured to decode the second encoded information block based on the one or more known bits associated with the second cell.

32. — The apparatus of claim 30, wherein the transceiver is further configured to receive the one or more known bits by:

receiving a handover message, and wherein the handover message corresponds to a handover between the first cell and the second cell.

33.—~~The apparatus of claim 27, wherein the transceiver is further configured to receive the one or more known bits by:~~

~~receiving one or more bits regarding at least one of a system frame number (SFN) or a hyper SFN.~~

34.—~~The apparatus of claim 27, wherein the first encoded information block is associated with at least one of a physical broadcast channel (PBCH), a system information block (SIB), a physical downlink control channel (PDCCH), a physical downlink shared channel (PDSCCH), a physical uplink control channel (PDCCH), or a physical uplink shared channel (PDSCCH).~~

35.—~~An apparatus comprising:~~

~~a transceiver configured to:~~

~~receivesignal carrying a first encoded information block including a first bit pattern associated with an information field; and~~

~~receive a second signal carrying a second encoded information block including a second bit pattern associated with the information field; and~~

~~a processor configured to:~~

~~determine a probability of occurrence for each bit-change pattern in a subset of a plurality of bit-change patterns associated with the information field;~~

~~select one or more bit-change patterns from the subset of the plurality of bit-change patterns based on the one or more bit-change patterns having a higher probability of occurrence among the subset of the plurality of bit-change patterns than remaining bit-change patterns in the plurality of bit-change patterns;~~

~~determine, by the apparatus from the first signal, a first estimate for the first encoded information block;~~

~~determine, by the apparatus from the second signal, a second estimate for the second encoded information block; and~~

~~jointly decode the first encoded information block and the second encoded information block based on the first estimate, the second estimate, and an assumption that a difference between the first bit pattern and the second bit pattern is within a subset of a plurality ofcorresponds to the one or more bit-change patterns.~~

~~36.~~—10. The apparatus of claim ~~35~~9, wherein the processor is further configured to:

select the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a capability of the apparatus.

~~37.~~—11. The apparatus of claim ~~35~~, further comprising:

~~select the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a probability of occurrence associated with each of the plurality of bit-change patterns.~~

~~38.~~—The apparatus of claim ~~35~~9, wherein the plurality of bit-change patterns is associated with a system frame number (SFN), wherein the jointly decoding is based on the first encoded information block including an even SFN and the second encoded information block including an odd SFN, and wherein the subset of the plurality of bit-change patterns corresponds to one of the plurality of bit-change patterns indicating a single bit-change at a least significant bit.

~~39.~~—12. The apparatus of claim ~~38~~11, wherein the transceiver is further configured to receive a third encoded information block, and wherein the processor is further configured to jointly decode the second encoded information block and the third encoded information block based on the second encoded information block including an even SFN and the third encoded information block including an odd SFN.

~~40.~~—13. The apparatus of claim ~~35~~9, wherein the transceiver is further configured to receive the first encoded information block by receiving the first encoded information block from a physical broadcast channel during a first time period, wherein the transceiver is further configured to receive the second encoded information block by receiving the second encoded information block from the physical broadcast channel during a second time period after the first time period, and wherein the first encoded information block is generated by encoding a first information block and the second encoded information block is generated by encoding a second information block.

~~41.~~—14. The apparatus of claim ~~35~~9, wherein the ~~transceiver is further configured to:~~
receive the first encoded information block by receiving a first signal carrying the first encoded information block; and
receive the second encoded information block by receiving a second signal carrying the second encoded information block, and
wherein the processor is further configured to:
determine, from the first signal, a first estimate for the first encoded information block; and
determine, from the second signal, a second estimate for the second encoded information block by:

~~42.~~—The apparatus of claim ~~41~~, wherein the processor is further configured to determine the first estimate and the second estimate by:
——demodulating the first signal to produce a first plurality of log-likelihood ratios (LLRs);
——demodulating the second signal to produce a second plurality of LLRs; and
——jointly decoding the first plurality of LLRs and the second plurality of LLRs to generate the first estimate and the second estimate based on each bit-change pattern in the subset of the plurality of bit-change patterns.

~~43.~~—15. The apparatus of claim ~~42~~14, wherein the processor is further configured to jointly decode the first plurality of LLRs and the second plurality of LLRs by:
——encoding a first bit-change pattern in the subset of the plurality of bit-change patterns based on a linear block code associated with the first encoded information block and the second encoded information block;
——modifying the first plurality of LLRs based on the encoded first bit-change pattern; and
——combining the first plurality of LLRs with the second plurality of LLRs.

~~44.~~—An16. The apparatus comprising:
a of claim 9, wherein the processor configured to:

~~generate a jointly decode the first and second encoded information block based on one or more known bits; and~~
~~encode blocks is further configured to jointly decode the first and second encoded information block to form blocks based on the first and second encoded information blocks.~~

17. A non-transitory computer-readable medium having computer-executable code recorded thereon, the computer-executable code, when executed by one or more processors at a wireless communication device, causing the wireless communication device to:

receive a first signal carrying a first encoded information block; and
~~including a transceiver configured to;~~first bit pattern associated with an information field;

~~transmit, to receive a second wireless communication device, the first signal carrying a second encoded information block; and~~ including a second bit pattern associated with the information field;

~~transmit, to the second wireless communication device, the~~ determine a probability of occurrence for each bit-change pattern in a subset of a plurality of bit-change patterns associated with the information field;

select one or more known bits to enable decoding of bit-change patterns from the subset of the plurality of bit-change patterns based on the one or more bit-change patterns having a higher probability of occurrence among the subset of the plurality of bit-change patterns than remaining bit-change patterns in the plurality of bit-change patterns;

determine, by the wireless communication device from the first signal, a first estimate for the first encoded information block;

determine, by the wireless communication device from the second signal, a second estimate for the second encoded information block; and

jointly decode the first encoded information block at the second wireless communication device and the second encoded information block based on the first estimate, the second estimate, and an assumption that a difference between the first bit pattern and the second bit pattern corresponds to the one or more bit-change patterns.

45. ~~The apparatus of claim 44, wherein the transceiver is further configured to transmit the one or more known bits by:~~

~~transmitting a second encoded information block to the second wireless communication device.~~

46.—18. The ~~apparatus~~non-transitory computer-readable medium of claim ~~45~~17, wherein the ~~transceiver is~~computer executable code, when executed by the one or more processors, further configured causes the wireless communication device to:

~~transmit~~select the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a capability of the wireless communication device.

19. The non-transitory computer-readable medium of claim 17, wherein:
the plurality of bit-change patterns is associated with a system frame number (SFN), the computer-executable code that causes the wireless communication device to jointly decode the first encoded information block by transmitting the first encoded information block through and the second encoded information block includes computer-executable code that causes the wireless communication device to jointly decode the first encoded information block and the second encoded information block based on the first encoded information block including an even SFN and the second encoded information block including an odd SFN, and

the subset of the plurality of bit-change patterns corresponds to one of the plurality of bit-change patterns indicating a single bit-change at a least significant bit.

20. The non-transitory computer-readable medium of claim 17, wherein the computer executable code, when executed by the one or more processors, further causes the wireless communication device to:

receive a third encoded information block; and
jointly decode the second encoded information block and the third encoded information block based on the second encoded information block including an even SFN and the third encoded information block including an odd SFN.

21. The non-transitory computer-readable medium of claim 17, wherein:
the computer executable code, when executed by the one or more processors, further causes the wireless communication device to:

receive the first encoded information block comprises code for causing the wireless communication device to receive the first encoded information block from a physical broadcast channel during a first time period; and

~~transmit~~receive the second encoded information block by transmitting~~comprises code for causing the wireless communication device to receive the second encoded information block through~~from the physical broadcast channel during a second time period prior to~~after the first time period;~~and

47. ~~The apparatus of claim 46, wherein the transceiver is further configured to:~~

~~transmit~~the first encoded information block is generated by transmitting~~encoding a first signal carrying the first encoded information block; and~~

~~transmit~~the second encoded information block is generated by transmitting~~encoding a second information block.~~

22. The non-transitory computer-readable medium of claim 17, wherein the computer-executable code that causes the wireless communication device to determine the first estimate and the second estimate comprises:

computer-executable code that causes the wireless communication device to demodulate the first signal carrying to produce a first plurality of log-likelihood ratios (LLRs);

computer-executable code that causes the wireless communication device to demodulate the second signal to produce a second plurality of LLRs; and

computer-executable code that causes the wireless communication device to jointly decode the first plurality of LLRs and the second plurality of LLRs to generate the first estimate and the second estimate based on each bit-change pattern in the subset of the plurality of bit-change patterns.

23. The non-transitory computer-readable medium of claim 22, wherein the computer-executable code that causes the wireless communication device to jointly decode the first plurality of LLRs and the second plurality of LLRs comprises computer-executable code that causes the wireless communication device to:

encode a first bit-change pattern in the subset of the plurality of bit-change patterns based on a linear block code associated with the first encoded information block and the second encoded information block;

modify the first plurality of LLRs based on the encoded first bit-change pattern; and
combine the first plurality of LLRs with the second plurality of LLRs.

48.—24. The ~~apparatus~~non-transitory computer-readable medium of claim 4417, wherein the ~~transceiver is further configured to:~~

~~—transmit, to the second computer-executable code that causes the wireless communication device, a handover message including the one or more known bits, to jointly~~
decode the first and second encoded information blocks comprises computer-executable code that causes the wireless communication device to:

~~wherein the apparatus~~jointly decode the first and second encoded information blocks based on the first and second encoded information blocks having a common information type and the difference between the first bit pattern and the second bit pattern being within the subset of the plurality of bit-change patterns.

25. A wireless communication device, comprising:

means for receiving a first signal carrying a first encoded information block including a first bit pattern associated with an information field;

means for receiving a second signal carrying a second encoded information block including a second bit pattern associated with the information field;

means for determining a probability of occurrence for each bit-change pattern in a subset of a plurality of bit-change patterns associated with the information field;

means for selecting one or more bit-change patterns from the subset of the plurality of bit-change patterns based on the one or more bit-change patterns having a higher probability of occurrence among the subset of the plurality of bit-change patterns than remaining bit-change patterns in the plurality of bit-change patterns;

means for determining, by the wireless communication device from the first signal, a first estimate for the first encoded information block;

means for determining, by the wireless communication device from the second signal, a second estimate for the second encoded information block; and

means for jointly decoding the first encoded information block and the second encoded information block based on the first estimate, the second estimate, and an assumption that a difference between the first bit pattern and the second bit pattern corresponds to the one or more bit-change patterns.

26. The wireless communication device of claim 25, further comprising:
means for selecting the subset of the plurality of bit-change patterns from the plurality of bit-change patterns based on a capability of the wireless communication device.

27. The wireless communication device of claim 25, wherein:
the plurality of bit-change patterns is associated with a first cell, system frame number (SFN).

~~wherein the handover message is associated with a handover from~~ means for jointly decoding the first cell to a and second cell, and

~~wherein the one or more known bits are associated with an information block of the second cell.~~

49. ~~An apparatus comprising:~~

~~— a transceiver configured to:~~

~~receive, from a first base station of a first cell, a handover message including configuration information for a second cell, wherein the handover message corresponds to a handover between the first cell and the second cell; and~~

~~receive, from a second base station of the second cell, one or more reference signals in one or more subframes based on the received configuration information; and~~

~~— a processor configured to perform channel estimation based on the one or more received reference signals and the received configuration information.~~

50. ~~The apparatus of claim 49, wherein the configuration information indicates a correlation between a configuration of the first cell and a configuration of the second cell during the handover.~~

51. ~~The apparatus of claim 50, wherein the correlation indicates that one or more bits of an information block of the first cell and an information block of the second cell are the same, and wherein the one or more known bits are used for decoding encoded information blocks of the second cell.~~ includes means for decoding the first and second encoded information blocks based on the first encoded information block including an even SFN and the second encoded information block including an odd SFN, and

the subset of the plurality of bit-change patterns corresponds to one of the plurality of bit-change patterns indicating a single bit-change at a least significant bit.

52. ~~28. The apparatus~~ wireless communication device of claim 49, wherein the configuration ~~25, further comprising:~~

means for receiving a third encoded information block; and

means for jointly decoding the second encoded information block and the third encoded information block based on the second encoded information block including an even SFN and the third encoded information block including an odd SFN.

29. The wireless communication device of claim 25, wherein:

the means for receiving the first encoded information block includes means for receiving the first encoded information block from a physical broadcast channel during a first time period,

the means for receiving the second encoded information block includes means for receiving the second encoded information block from the physical broadcast channel during a second time period after the first time period, and

the first encoded information block is generated by encoding a first information block and the second encoded information block is generated by encoding a second information block.

30. The wireless communication device of claim 25, wherein the means for determining the first estimate and the second estimate includes:

means for demodulating the first signal to produce a first plurality of log-likelihood ratios (LLRs);

means for demodulating the second signal to produce a second plurality of LLRs; and

means jointly decoding the first plurality of LLRs and the second plurality of LLRs to generate the first estimate and the second estimate based on each bit-change pattern in the subset of the plurality of bit-change patterns.

31. The wireless communication device of claim 30, wherein the means for jointly decoding the first plurality of LLRs and the second plurality of LLRs includes:

means for encoding a first bit-change pattern in the subset of the plurality of bit-change patterns based on a linear block code associated with at least one of a non-multicast broadcast single frequency network (non-MBSFN) subframe configuration or a narrowband Internet of things (NB-IOT) subframe configuration; the first encoded information block and the second encoded information block;

means for modifying the first plurality of LLRs based on the encoded first bit-change pattern; and

means for combining the first plurality of LLRs with the second plurality of LLRs.

32. The wireless communication device of claim 25, wherein the means for jointly decoding the first and second encoded information blocks includes means for jointly decoding the first and second encoded information blocks based on the first and second encoded information blocks having a common information type and the difference between the first bit pattern and the second bit pattern being within the subset of the plurality of bit-change patterns.