

BLIND DECODING

Radio communication systems typically involve the transmission of downlink control information via radio resources whose precise identity is not known to the intended recipient(s) of the downlink control information. A receiving device finds downlink control information intended for it by repeatedly selecting different candidate sets of radio resources and attempting to successfully decode the signals carried on said sets of radio resources. This is known as blind decoding.

It has been proposed to make such unscheduled transmissions of downlink control information according to an enhanced transmission technique by which gains, such as frequency-domain packet scheduling (FDPS) gain, can be targeted; whilst continuing to also make unscheduled transmissions according to the conventional transmission technique.

There has been identified the challenge of reducing the processing power required by a communication device to perform blind decoding under the above-mentioned proposal.

Summary

According to a first aspect of the invention, there is hereby provided a method, comprising: in a system in which a communication device searches for unscheduled transmissions of downlink control information for said communication device: selecting a combination of search spaces for unscheduled transmissions of downlink control information for a communication device by a plurality of transmission tech-

niques: wherein the communication device applies blind decoding
 in finding the downlink control information for the communication
 device, wherein the selecting comprises selecting a respective
set of one or more aggregation levels for each of said plurality
 5 of transmission techniques, wherein a plurality of aggregation
levels are available for the transmission of downlink control
information and a respective search space is predefined for each
aggregation level for each transmission technique and transmitting
 an indication of ~~the~~ a result of the selected combination
 10 identifying the selected sets of one or more aggregation levels
 to said communication device.

According to a second aspect, there is a method comprising in a
 system in which a radio access network transmits indications of
 15 the results of selections of combinations of search spaces for
unscheduled transmissions by a plurality of transmission
 techniques of downlink control information for one or more
 communication devices, wherein the communication device applies
 blind decoding in finding the downlink control information for
 20 the one or more communication devices: searching at a first
 communication device for unscheduled transmissions of downlink
 control information for said communication device; wherein said
 searching is performed either: (a) on the basis of a transmitted
 indication of the result of a selection for said first communication
 25 device of a combination of search spaces for unscheduled
 transmissions by said plurality of transmission techniques of
 downlink control information, the indication identifying selected
respective set of one or more aggregation levels for each of said
plurality of transmission techniques, wherein a plurality of
 30 aggregation levels are available for the transmission of downlink
control information and a respective search space is predefined
for each aggregation level for each transmission technique; or
 (b) in the absence of a transmitted indication of the result of

a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by said plurality of transmission techniques of downlink control information for said first communication device.

According to a third aspect, there is a method comprising searching at a first communication device for unscheduled transmissions of downlink control information for said communication device

by a plurality of transmission techniques, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication
5 of the result of a selection of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique.

15 According to a fourth aspect, there is an apparatus comprising a processor and memory including computer program code, wherein the memory and computer program code are configured to, with the processor, cause the apparatus to: in a system in which a communication device searches for unscheduled transmissions of
20 downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device: select a combination of search spaces for unscheduled transmissions of downlink control information for a communication device by a plurality of transmission techniques, wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: select a respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique: and transmitting an indication of the result of the selected combination identifying

| the selected set of one or more aggregation levels to said
communication device.

According to a fifth aspect, there is an apparatus comprising:
5 a processor and memory including computer program code, wherein
the memory and computer program code are configured to, with the
processor, cause the apparatus to: in a system in which a radio
access network transmits indications of the results of selections
| of combinations of search spaces for unscheduled transmissions
10 by a plurality of transmission techniques of downlink control
information for one or more communication devices: search at a
first communication device for unscheduled trans-

missions of downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed either: (a) on the basis of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of down link control information, the indication identifying selected respected set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique; or (b) in the absence of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by said plurality of transmission techniques of downlink control information for said first communication device.

According to a sixth aspect, there is an apparatus comprising: a processor and memory including computer program code, wherein the memory and computer program code are configured to, with the processor, cause the apparatus to: search at a first communication device for unscheduled transmissions of downlink control information for said communication device by a plurality of transmission techniques; wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication of the result of a selection

of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respective set of one or more aggregation levels for each of said plurality of transmission techniques,
5 wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique.

According to a seventh aspect, there is a computer program product comprising program code means which when loaded into a computer controls the computer to: in a system in which a communication
5 | device searches for unscheduled transmissions of downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device: select a combination of search spaces for unscheduled transmissions of
10 | downlink control information for a communication device by a plurality of transmission techniques, wherein the computer program code is further configured to control the computer to: select a respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of
15 | aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique: and transmitting an indication of the result of the selected combination identifying the selected sets of one or more ag-
20 | gregation levels to said communication device.

According to a eighth aspect, there is a computer program product comprising program code means which when loaded into a computer controls the computer to: in a system in which a radio access network
25 | transmits indications of the results of selections of combinations of search spaces for unscheduled transmissions by a plurality of transmission techniques of downlink control information for one or more communication devices, wherein the communication device applies blind decoding in finding the downlink control information
30 | for the communication device: search at a first communication device for unscheduled transmissions of downlink control information for said communication device; wherein said searching is performed either: (a) on the basis of a transmitted indication

of the result of a selection for said first communication device
of a combination of search spaces for unscheduled transmissions
by said plurality of transmission techniques of downlink control
information, the indication identifying selected respected set
5 of one or more aggregation levels for each of said plurality of
transmission techniques, wherein a plurality of aggregation levels
are available for the transmission of downlink control information
and a respective search space is predefined for each aggregation
level for each transmission technique; or (b) in the absence of
10 a transmitted indication of the result of a selection for said
first communication device of a combination of search spaces for
unscheduled transmissions by said plurality

of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by said plurality of transmission techniques of downlink control information for said first communication device.

According to a ninth aspect, there is a computer program product comprising program code means which when loaded into a computer controls the computer to: search at a first communication device for ~~trans~~ unscheduled transmissions of downlink control information for said communication device by a plurality of transmission techniques, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication of the result of a selection of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respected set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique.

According to one embodiment, the method further comprises deciding how much search space to assign to unscheduled transmissions of downlink control information for said communication device by one or more of said plurality of transmission techniques relative to unscheduled transmissions of downlink control information for said communication device by one or more others of said plurality of transmission techniques.

According to one embodiment, said selecting comprises selecting a predefined combination from a plurality of predefined combinations

CLAIMS

1. A method, comprising: in a system in which a communication device searches for unscheduled transmissions of downlink control information for said communication device: selecting a combination of search spaces for the unscheduled transmissions of downlink control information for the communication device by a plurality of transmission techniques, wherein the communication device applies blind decoding in finding the downlink control information for the communication device, wherein the step of selecting the combination of search spaces comprises selecting a respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique: and transmitting an indication of ~~the~~ a result of the selected combination identifying the selected sets of one or more aggregation levels to said communication device.

2. A method according to claim 1, comprising deciding how much search space to assign to unscheduled transmissions of downlink control information for said communication device by one or more of said plurality of transmission techniques relative to unscheduled transmissions of downlink control information for said communication device by one or more others of said plurality of transmission techniques.

3. A method according to any preceding claim, wherein said selecting comprises selecting a predefined combination from a plurality of predefined combinations.

4. A method according to claim 3, wherein said plurality of predefined combinations includes a predefined combination according to which no search space is assigned to unscheduled transmissions of downlink control information by one of said plurality of transmission techniques.

~~5. A method according to any preceding claim, wherein a plurality of aggregation levels are used for the transmission of downlink control information, and a respective search space is predefined for each aggregation level for each transmission technique, and wherein the method comprises: selecting a respective set of one or more aggregation levels for each of said plurality of transmission techniques, and transmitting an indication of the selected respective sets of aggregation levels to said communication device.~~

65. A method according to any preceding claim, wherein said selecting is performed at least partly on the basis of one or more of: (a) the size of the load on the cell in which the transmissions are made, and (b) channel state information for the wireless interface with the communication device.

76. A method according to any preceding claim, wherein said plurality of transmission techniques include: a first transmission technique involving the transmission of one or more reference signals specific to said communication device; and a second transmission technique that does not involve transmission of one or more reference signals specific to said communication device.

87. A method according to any preceding claim, wherein said plurality of transmission techniques include: a first transmission technique involving the transmission of both one or more reference signals specific to said communication device and one or more channel-state-information reference signals;

and a second transmission technique involving transmission of one or more cell-specific reference signals.

98. A method according to any preceding claim, wherein said
5 plurality of transmission techniques include: a first transmission
technique involving the precoding and transmission of demod-
ulation reference signals together with the precoding and
transmission of data symbols defining downlink control in-
formation, and the transmission of one or more channel state
10 information reference signals together with the transmission of
precoded data symbols defining downlink control information; and
a second transmission technique that involves transmission
of cell-specific reference signals together with transmission of
precoded data symbols defining downlink control information.

109. A method, comprising: in a system in which a radio access network transmits indications of the results of selections of combinations of search spaces for unscheduled transmissions by a plurality of transmission techniques of downlink control information for one or more communication devices, wherein the communication device applies blind decoding in finding the downlink control information for the one or more communication devices:

searching at a first communication device for unscheduled transmissions of downlink control information for said communication device; wherein said searching is performed either:

(a) on the basis of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, the indication identifying selected respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique; or (b) in the absence of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by

said plurality of transmission techniques of downlink control information for said first communication device.

~~11~~10. A method, comprising: searching at a first communication device for unscheduled transmissions of downlink control information for said communication device by a plurality of transmission techniques, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication of the result of a selection of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and respective search space is predefined for each aggregation level for each transmission technique.

~~12~~11. A method according to claim ~~10~~ 9 or claim ~~11~~ 10, wherein said transmitted indication indicates how much search space has been assigned to unscheduled transmissions of downlink control information for said first communication device by one or more of said plurality of transmission techniques relative to unscheduled transmissions of downlink control information for said first communication device by one or more others of said plurality of transmission techniques.

1312. A method according to any of claims 109 to 1211, wherein said transmitted indication identifies one of a plurality of predefined combinations.

5 | 1413. A method according to claim 1312, wherein said plurality of predefined combinations includes a predefined combination according to which no search space is assigned to

unscheduled transmissions of downlink control information by one of said plurality of transmission techniques.

5 | ~~15~~14. A method according to any of claims ~~10-9~~ to ~~14~~13, wherein
a plurality of aggregation levels are used for the transmission
of downlink control information, and a respective search space
is predefined for each aggregation level for each transmission
technique; and said transmitted indication identifies a respective
10 | set of one or more aggregation levels for each of said plurality
of transmission techniques.

15 | ~~16~~15. A method according to any of claims ~~10-9~~ to ~~15~~14, wherein
said plurality of transmission techniques include: a first
transmission technique involving the transmission of one or more
reference signals specific to said first communication device;
and a second transmission technique that does not involve
transmission of one or more reference signals specific to said
first communication device.

20 | ~~17~~16. A method according to any of claims ~~10-9~~ to ~~16~~15, wherein
said plurality of transmission techniques include: a first
transmission technique involving the transmission of both one or
more reference signals specific to said first communication device
and one or more channel-state-information reference signals; and
25 | a second transmission technique involving transmission of one or
more cell-specific reference signals.

1817. A method according to any of claims ~~10-9~~ to ~~17~~16, wherein said plurality of transmission techniques include: a first transmission technique involving the precoding and transmission of demodulation reference signals together with the precoding and transmission of data symbols defining downlink control information, and the transmission of one or more channel state information reference signals together with the transmission of precoded data symbols defining downlink control information; and a second transmission technique that involves transmission of cell-specific reference signals together with transmission of precoded data symbols defining downlink control information.

1918. The method according to any of claims ~~1-18~~1 to 17, wherein the communication device applies blind decoding in finding the downlink control information intended to said communication device.

2019. An apparatus comprising: a processor and memory including computer program code, wherein the memory and computer program code are configured to, with the processor, cause the apparatus to: in a system in which a communication device searches
5 | for unscheduled transmissions of downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device

: select a combination of search spaces for unscheduled
10 | transmissions of downlink control information for a communication device by a plurality of transmission techniques, wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: select a respective set of one or more aggregation levels for each of said plurality of
15 | transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique: and transmitting an indication of ~~the~~ a result of the selected combination identifying
20 | the selected set of one or more aggregation levels to said communication device.

2120. An apparatus according to claim 2019, wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: decide how much search space to assign to unscheduled transmissions of downlink control information for said communication device by one or more of said plurality of transmission techniques relative to unscheduled transmissions of downlink control information for said communication device by one or more others of said plurality of transmission techniques.

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2221. An apparatus according to claim 2019 or claim 2120, wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: select a predefined combination from a plurality of predefined combinations.

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2322. An apparatus according to claim 2221, wherein said plurality of predefined combinations includes a predefined combination according to which no search space is assigned to unscheduled transmissions of downlink control information by one of said plurality of transmission techniques.

20

~~24. An apparatus according to any of claims 20 to 23, wherein a plurality of aggregation levels are used for the transmission of downlink control information, and a respective search space is predefined for each aggregation level for each transmission technique, and wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: select a respective set of~~

25

~~one or more aggregation levels for each of said plurality of transmission techniques; and transmitting an indication of the selected respective sets of aggregation levels to said communication device.~~

5

2523. An apparatus according to any of claims 20-19 to 2422, wherein the memory and computer program code are further configured to, with the processor, cause the apparatus to: perform said selection at least partly on the basis of one or more of: (a) the size of the load on the cell in which the transmissions are made, and (b) channel state information for the wireless interface with the communication device.

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2624. An apparatus according to any of claims 20-19 to 2523, wherein said plurality of transmission techniques include: a first transmission technique involving the transmission of one or more reference signals specific to said communication device; and a second transmission technique that does not involve transmission of one or more reference signals specific to said communication device.

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2725. An apparatus according to any of claims 20-19 to 2624, wherein said plurality of transmission techniques include: a first transmission technique involving the transmission of both one or more reference signals specific to said communication device and one or more channel-state-information reference signals; and a second transmission technique involving transmission of one or more cell-specific reference signals.

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2826. An apparatus according to any of claims ~~20~~19 to ~~27~~25,
wherein said plurality of transmission techniques include: a first
transmission technique involving the precoding and transmission
of demodulation reference signals together with the precoding and
5 transmission of data symbols defining downlink control in-
formation, and the transmission of one or more channel state
information reference signals together with the transmission of
precoded data symbols defining downlink control information; and
a second transmission technique that involves transmission
10 of cell-specific reference signals together with transmission of
precoded data symbols defining downlink control information.

2927. An apparatus comprising: a processor and memory including computer program code, wherein the memory and computer program code are configured to, with the processor, cause the apparatus to: in a system in which a radio access network transmits indications of the results of selections of combinations of search spaces for unscheduled transmissions by a plurality of transmission techniques of downlink control information for one or more communication devices: search at a first communication device for unscheduled transmissions of downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed either: (a) on the basis of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, the indication identifying selected respected set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique; or (b) in the absence of a transmitted indication of the result

of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by said plurality of transmission techniques of downlink control information for said first communication device.

~~30~~28. An apparatus comprising: a processor and memory including computer program code, wherein the memory and computer program code are configured to, with the processor, cause the apparatus to: search at a first communication device for unscheduled transmissions of downlink control information for said communication device by a plurality of transmission techniques; wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication of the result of a selection of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique.

~~31~~29. An apparatus according to claim ~~29~~27 or claim ~~30~~28, wherein said transmitted indication indicates how much search space has been assigned to unscheduled transmissions of downlink control information for said first communication device by one or more of said plurality of transmission techniques relative to un-

| scheduled transmissions of downlink control information for said first communication device by one or more others of said plurality of transmission techniques.

3230. An apparatus according to any of claims ~~29-27~~ to ~~31~~29, wherein said transmitted indication identifies one of a plurality of predefined combinations.

5 | 3331. An apparatus according to claim ~~32~~30, wherein said plurality of predefined combinations includes a predefined combination according to which no search space is assigned to unscheduled transmissions of downlink control information by one of said plurality of transmission techniques.

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| 3432. An apparatus according to any of claims ~~29-27~~ to ~~33~~31, wherein a plurality of aggregation levels are used for the transmission of downlink control information, and a respective search space is predefined for each aggregation level for each
15 | transmission technique; and said transmitted indication identifies a respective set of one or more aggregation levels for each of said plurality of transmission techniques.

| 3533. An apparatus according to any of claims ~~29-27~~ to ~~34~~32,
20 | wherein said plurality of transmission techniques include: a first transmission technique involving the transmission of one or more reference signals specific to said first communication device; and a second transmission technique that does not involve transmission of one or more reference signals specific to said
25 | first communication device.

| 3634. An apparatus according to any of claims ~~29-27~~ ~~to 35~~ to 33, wherein said plurality of transmission techniques include:

a first transmission technique involving the transmission of both one or more reference signals specific to said first communication device and one or more channel-state-information reference signals; and a second transmission technique involving
5 transmission of one or more cell-specific reference signals.

3735. An apparatus according to any of claims ~~29-27~~ to ~~36~~34, wherein said plurality of transmission techniques include: a first transmission technique involving the precoding and transmission
10 of demodulation reference signals together with the precoding and transmission of data symbols defining downlink control information, and the transmission of one or more channel state information reference signals together with the transmission of precoded data symbols defining downlink control information; and
15 a second transmission technique that involves transmission of cell-specific reference signals together with transmission of precoded data symbols defining downlink control information.

3836. The apparatus according to any of claims ~~20-19~~ to ~~37~~35, wherein the communication device applies blind decoding in finding
20 the downlink control information intended to said communication device.

3937. A computer program product comprising program code means which when loaded into a computer controls the computer to: in a system in which a communication device searches for unscheduled transmissions of downlink control information for said communication device, wherein the communication device applies blind decoding in finding the downlink control information for the communication device

: select a combination of search spaces for unscheduled transmissions of downlink control information for a communication device by a plurality of transmission techniques, wherein the computer program code is further configured to control the computer to: select a respective set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique: and transmitting an indication of the result of the selected combination identifying the selected sets of one or more aggregation levels to said communication device.

4038. A computer program product comprising program code means which when loaded into a computer controls the computer to: in a system in which a radio access network transmits indications of the results of selections of combinations of search spaces for unscheduled transmissions by a plurality of transmission techniques of downlink control information for one or more communication devices, wherein the communication device applies blind decoding in finding the downlink control information for the communication device: search at a first communication device for unscheduled transmissions of downlink

control information for said communication device; wherein said searching is performed either: (a) on the basis of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, the indication identifying selected respected set of one or more aggregation levels for each of said plurality of transmission techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique; or (b) in the absence of a transmitted indication of the result of a selection for said first communication device of a combination of search spaces for unscheduled transmissions by said plurality of transmission techniques of downlink control information, on the basis of a default combination of search spaces and aggregation levels for unscheduled transmissions by said plurality of transmission techniques of downlink control information for said first communication device.

~~4139.~~ A computer program product comprising program code means which when loaded into a computer controls the computer to: search at a first communication device for unscheduled transmissions of downlink control information for said communication device by a plurality of transmission techniques, wherein the communication device applies blind decoding in finding the downlink control information for the communication device; wherein said searching is performed on the basis of a transmitted indication of the result of a selection of a combination of search spaces for unscheduled transmissions of downlink control information for said first communication device by said plurality of transmission techniques, the indication identifying selected respected set of one or more aggregation levels for each of said plurality of transmission

techniques, wherein a plurality of aggregation levels are available for the transmission of downlink control information and a respective search space is predefined for each aggregation level for each transmission technique.

4240. The computer program product according to any of claims
39-37 to 4139, wherein the communication device applies blind
decoding in finding the downlink control information intended to
said communication device.