

CLAIMS

1. A terminal device, comprising:
 - transmission circuitry configured and/or programmed to transmit a Rank Indicator (RI) for Physical Downlink Shared CHannel (PDSCH) transmission;
 - reception circuitry configured and/or programmed to
 - receive first information used for determining a first maximum number of layers being the first maximum number assumed for determining a bit width for the RI, and
 - receive a transport block on the PDSCH; and
 - decoding circuitry configured and/or programmed to decode a code block of the transport block;
 - wherein the transmission circuitry transmits capability information including second information and third information,
 - the second information indicates a second maximum number of the layers supported by the terminal device in a downlink, and a first UE category corresponding to first total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,
 - the third information indicates a third maximum number of the layers supported by the terminal device in the downlink, and a second UE category corresponding to a second total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,
 - in a case that a first transmission mode is configured, a rate matching for the code block is processed based on the first total number,
 - in a case that a second transmission mode different from the first transmission mode is configured and the first information is configured, a rate matching for the code block is processed based on the first total number, and
 - in a case that the second transmission mode is configured and the first information is not configured, a rate matching for the code block is processed based on the second total number.
2. The terminal device according to claim 1, wherein the transmission circuitry transmits the RI on a Physical Uplink Shared CHannel (PUSCH).

3. A base station device, comprising:
 - reception circuitry configured and/or programmed to receive, from a terminal device, a Rank Indicator (RI) for Physical Downlink Shared CHannel (PDSCH) transmission;
 - transmission circuitry configured and/or programmed to
 - transmit, to the terminal device, first information used by the terminal device for determining a first maximum number of layers being the first maximum number assumed by the terminal device for determining a bit width for the RI, and
 - transmit, to the terminal device, a transport block on the PDSCH; and
 - coding circuitry configured and/or programmed to code a code block of the transport block,
 - wherein the reception circuitry receives capability information including second information and third information,
 - the second information indicates a second maximum number of the layers supported by the terminal device in a downlink, and a first UE category corresponding to a first total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,
 - the third information indicates a third maximum number of the layers supported by the terminal device in the downlink, and a second UE category corresponding to a second total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,
 - in a case that a first transmission mode is configured for the terminal device, a rate matching for the code block is processed based on the first total number,
 - in a case that a second transmission mode different from the first transmission mode is configured for the terminal device and the first information is configured, a rate matching for the code block is processed based on the first total number, and
 - in a case that the second transmission mode is configured for the terminal device and the first information is not configured, a rate matching for the code block is processed based on the second total number.
4. The base station device according to claim 3, wherein the reception circuitry receives the RI on a Physical Uplink Shared CHannel (PUSCH).

5. A communication method used by a terminal device, the method comprising the steps of:

transmitting a Rank Indicator (RI) for Physical Downlink Shared CHannel (PDSCH) transmission;

receiving first information used for determining a first maximum number of layers being the first maximum number assumed for determining a bit width for the RI;

receiving a transport block on the PDSCH;

decoding a code block of the transport block; and

transmitting capability information including second information and third information,

wherein the second information indicates a second maximum number of the layers supported by the terminal device in a downlink, and a first UE category corresponding to a first total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,

the third information indicates a third maximum number of the layers supported by the terminal device in the downlink, and a second UE category corresponding to a second total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,

in a case that a first transmission mode is configured, a rate matching for the code block is processed based on the first total number,

in a case that a second transmission mode different from the first transmission mode is configured and the first information is configured, a rate matching for the code block is processed based on the first total number, and

in a case that the second transmission mode is configured and the first information is not configured, a rate matching for the code block is processed based on the second total number.

6. A communication method used by a base station device, the method comprising the steps of:

receiving, from a terminal device, a Rank Indicator (RI) for Physical Downlink Shared CHannel (PDSCH) transmission;

transmitting, to the terminal device, first information used by the terminal device

for determining a first maximum number of layers being the first maximum number assumed by the terminal device for determining a bit width for the RI;

transmitting, to the terminal device, a transport block on the PDSCH;
coding a code block of the transport block; and

receiving capability information including second information and third information,

wherein the second information indicates a second maximum number of the layers supported by the terminal device in a downlink, and a first UE category corresponding to a first total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,

the third information indicates a third maximum number of the layers supported by the terminal device in the downlink, and a second UE category corresponding to a second total number of soft channel bits capable of being utilized for Hybrid Automatic Repeat reQuest (HARQ) processing in the downlink,

in a case that a first transmission mode is configured for the terminal device, a rate matching for the code block is processed based on the first total number,

in a case that a second transmission mode different from the first transmission mode is configured for the terminal device and the first information is configured, a rate matching for the code block is processed based on the first total number, and

in a case that the second transmission mode is configured for the terminal device and the first information is not configured, a rate matching for the code block is processed based on the second total number.