

Claims

1. A base station device for communicating with a terminal device, the base station device comprising:
 - radio resource control (RRC) processing circuitry configured to transmit RRC configuration information to the terminal device,
 - transmission processing circuitry configured to transmit downlink control information (DCI) on a physical downlink control channel (PDCCH) and transmit downlink data on a physical downlink shared channel (PDSCH), and
 - transmission signal generation circuitry configured to take encoded bits in the downlink data as input and produce modulation symbols, wherein
 - in a case that the RRC configuration information includes first information for superposition coded modulation and one of a first plurality of DCI formats is used, the DCI includes second information indicating that an interference with the modulation symbols is included and indicating transmission power ratio,
 - in a case that the RRC configuration information includes the first information and one of a second plurality of DCI formats is used, the DCI does not include the second information,
 - in a case that the second information indicates a first value, the modulation symbols are produced without including an interference signal, and
 - in a case that the second information indicates a value other than the first value and the value other than the first value indicates that the transmission power ratio is less than 0.5, the modulation symbols are produced with including the interference signal.
2. The base station device according to claim 1, wherein
 - number of bits of the second information is determined depending on one of the first plurality of DCI formats.
3. The base station device according to claim 1, wherein
 - the transmission processing circuitry transmits the DCI in a user-specific search space.

4. The base station device according to claim 1, wherein the transmission power ratio is less than 0.5.

5. A terminal device for communicating with a base station device, the terminal device comprising:

radio resource control (RRC) processing circuitry configured to receive RRC configuration information from the base station device,

reception processing circuitry configured to receive downlink control information (DCI) on a physical downlink control channel (PDCCH), and receive downlink data on a physical downlink shared channel (PDSCH), the downlink data including encoded bits which are taken as input for producing modulation symbols, wherein

in a case that the RRC configuration information includes first information for superposition coded modulation and one of a first plurality of DCI formats is used, the DCI includes second information indicating that an interference with the modulation symbols is included and indicating transmission power ratio,

in a case that the RRC configuration information includes the first information and one of a second plurality of DCI formats is used, the DCI does not include the second information,

in a case that the second information indicates a first value, the modulation symbols are produced without including an interference signal, and

in a case that the second information indicates a value other than the first value and the value other than the first value indicates that the transmission power ratio is less than 0.5, the modulation symbols are produced with including the interference signal.

6. The terminal device according to claim 5, wherein

number of bits of the second information is determined depending on one of the first plurality of DCI formats.

7. The terminal device according to claim 5, wherein the DCI is included in a user-specific search space.
8. The terminal device according to claim 5, wherein the transmission power ratio is less than 0.5.