CLAIMS

1. A method for wireless communications by a user equipment (UE), comprising:

receiving information indicative of a modulation coding scheme (MCS) for use by the UE to transmit uplink control information (UCI) on an uplink data channel;

determining a spectral efficiency for transmitting the UCI based at least in part on the MCS~~;~~

and on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel; performing uplink power control based at least in part on the determined spectral efficiency; and

transmitting the UCI without uplink data on the uplink data channel using an uplink power based at least in part on the performed uplink power control.

2. The method of claim 1, wherein the uplink data channel comprises a physical uplink shared channel (PUSCH), and wherein transmitting the UCI without uplink data on the uplink data channel comprises transmitting the UCI without uplink shared channel (UL-SCH) data on the PUSCH.

~~3. The method of claim 1, wherein determining the spectral efficiency is further based at least in part on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel.~~

~~4. The method of claim 3~~3. The method of claim 1, wherein the UCI comprises channel state information (CSI)-part 1, and wherein the rate offset is between a rate for transmitting CSI-part 1 and the rate for transmitting uplink data on the uplink data channel.

~~5.~~ 4. The method of claim ~~3~~1, further comprising receiving the rate offset.

~~6.~~ 5. The method of claim ~~5~~4, wherein the rate offset is received using radio resource control (RRC) signaling or via downlink control information (DCI).

~~7.~~ 6. The method of claim 1, wherein the spectral efficiency is a bit per resource element (BPRE).

~~8.~~ 7. The method of claim ~~7~~6, wherein $BPRE = \frac{R*Q_m}{\beta_{offset}}$, , where:

R = a target code rate indicated by the MCS,

Q_m= a modulation order indicated by the MCS, and

β_{offset} = ~~a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel~~the rate offset.

~~9.~~ 8. The method of claim 1, wherein determining the spectral efficiency based at least in part on the MCS comprises determining the spectral efficiency based at least in part on a target code rate and modulation order indicated by the MCS.

~~10.~~ 9. The method of claim 1, wherein the information indicative of the MCS is received using radio resource control (RRC) signaling or via downlink control information (DCI).

~~11.~~ 10. An user equipment (UE) configured for wireless communication, comprising:

a memory; and

a processor communicatively coupled to the memory, wherein the processor is configured to:

receive information indicative of a modulation coding scheme (MCS) for use by the UE to transmit uplink control information (UCI) on an uplink data channel;

determine a spectral efficiency for transmitting the UCI based at least in part on the MCS~~;~~

and on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel; perform uplink power control based at least in part on the determined spectral efficiency; and

transmit the UCI without uplink data on the uplink data channel using an uplink power based at least in part on the performed uplink power control.

~~12.~~ 11. The UE of claim ~~11~~10, wherein the uplink data channel comprises a physical uplink shared channel (PUSCH), and wherein the processor, being configured to transmit the UCI without uplink data on the uplink data channel, is further configured to transmit the UCI without uplink shared channel (UL-SCH) data on the PUSCH.

~~13. The UE of claim 11, wherein the processor is further configured to determine the spectral efficiency based at least in part on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel.~~

~~14. The UE of claim 13~~12. The UE of claim 10, wherein the UCI comprises channel state information (CSI)-part 1, and wherein the rate offset is between a rate for transmitting CSI-part 1 and the rate for transmitting uplink data on the uplink data channel.

~~15.~~ 13. The UE of claim ~~13~~10, wherein the processor is further configured to receive the rate offset.

~~16.~~ 14. The UE of claim ~~15~~13, wherein the rate offset is received using radio resource control (RRC) signaling or via downlink control information (DCI).

~~17.~~ 15. The UE of claim ~~11~~10, wherein the spectral efficiency is a bit per resource element (BPRE).

~~18.~~ 16. The UE of claim ~~17~~15, wherein $BPRE = \frac{R*Q_m}{\beta_{offset}}$, , where:

R = a target code rate indicated by the MCS,

Q_m= a modulation order indicated by the MCS, and

β_{offset} = ~~a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel~~the rate offset.

~~19.~~ 17. The UE of claim ~~11~~10, wherein the processor, being configured to determine the spectral efficiency based at least in part on the MCS, is further configured to determine the spectral efficiency based at least in part on a target code rate and modulation order indicated by the MCS.

~~20.~~ 18. The UE of claim ~~11~~10, wherein the processor is further configured to receive information indicative of the MCS via radio resource control (RRC) signaling or via downlink control information (DCI).

~~21.~~ 19. An apparatus, comprising:

~~———~~ means for receiving information indicative of a modulation coding scheme (MCS) for use by the apparatus to transmit uplink control information (UCI) on an uplink data channel;

~~———~~ means for determining a spectral efficiency for transmitting the UCI based at least in part on the MCS~~;~~

~~———~~ and on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel; means for performing uplink power control based at least in part on the determined spectral efficiency; and

~~———~~ means for transmitting the UCI without uplink data on the uplink data channel using an uplink power based at least in part on the performed uplink power control.

~~22.~~ 20. The apparatus of claim ~~21~~19, further comprising means transmitting the UCI without uplink shared channel (UL-SCH) data on a physical uplink shared channel (PUSCH), wherein the uplink data channel comprises the PUSCH.

~~23.~~ 21. The apparatus of claim ~~21, wherein the means for determining the spectral efficiency for transmitting the UCI is further based on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel.~~

~~24. The apparatus of claim 23~~19, wherein the UCI comprises channel state information (CSI)-part 1, and wherein the rate offset is between a rate for transmitting CSI-part 1 and the rate for transmitting uplink data on the uplink data channel.

~~25.~~ 22. The apparatus of claim ~~23~~19, further comprising means for receiving the rate offset.

~~26.~~ 23. The apparatus of claim ~~25~~22, wherein the means for receiving the rate offset comprises one or more of a radio resource control (RRC) signaling or a downlink control information (DCI).

~~27.~~ 24. The apparatus of claim ~~21~~19, wherein the spectral efficiency is a bit per resource element (BPRE).

~~28.~~ 25. The apparatus of claim ~~27~~24, wherein $BPRE = \frac{R*Q_m}{\beta_{offset}}$~~,~~, where:

R = a target code rate indicated by the MCS,

Q_m= a modulation order indicated by the MCS, and

β_{offset} = ~~a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel~~the rate offset.

~~29.~~ 26. The apparatus of claim ~~21~~19, wherein the means for determining the spectral efficiency is based at least in part on the MCS, a target code rate, and a modulation order indicated by the MCS.

~~30.~~ 27. The apparatus of claim ~~21~~19, wherein the information indicative of the MCS is received via radio resource control (RRC) signaling or via downlink control information (DCI).

~~31.~~ 28. A non-transitory computer-readable storage medium that stores instructions that when executed by a processor of a user equipment (UE) cause the UE to perform a method of wireless communication, comprising:

receiving information indicative of a modulation coding scheme (MCS) for use by the UE to transmit uplink control information (UCI) on an uplink data channel;

determining a spectral efficiency for transmitting the UCI based at least in part on the MCS~~;~~

and on a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel; performing uplink power control based at least in part on the determined spectral efficiency; and

transmitting the UCI without uplink data on the uplink data channel using an uplink power based at least in part on the performed uplink power control.

~~32.~~ 29. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~31~~28, wherein the uplink data channel comprises a physical uplink shared channel (PUSCH), and wherein transmitting the UCI without uplink data on the uplink data channel comprises transmitting the UCI without uplink shared channel (UL-SCH) data on the PUSCH.

~~33.~~ 30. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~31, wherein determining the spectral efficiency is further based at least in part on a rate offset~~
~~between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel.~~

~~34. The method of wireless communication of claim 33~~28, wherein the UCI comprises channel state information (CSI)-part 1, and wherein the rate offset is between a rate for transmitting CSI-part 1 and the rate for transmitting uplink data on the uplink data channel.

~~35.~~ 31. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~33,~~ 28, wherein the method further ~~comprising~~comprises receiving the rate offset.

~~36.~~ 32. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~35~~31, wherein the rate offset is received using radio resource control (RRC) signaling or via downlink control information (DCI).

~~37.~~ 33. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~31~~28, wherein the spectral efficiency is a bit per resource element (BPRE).

~~38.~~ 34. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~37~~33, wherein $BPRE = \frac{R*Q_m}{\beta_{offset}}$, , where:

R = a target code rate indicated by the MCS,

Q_m= a modulation order indicated by the MCS, and

β_{offset} = ~~a rate offset between a rate for transmitting UCI and a rate for transmitting uplink data on the uplink data channel~~the rate offset.

~~39.~~ 35. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~31~~28, wherein determining the spectral efficiency based at least in part on the MCS further comprises determining the spectral efficiency based at least in part on a target code rate and modulation order indicated by the MCS.

~~40.~~ 36. The ~~method of wireless communication~~non-transitory computer-readable storage medium of claim ~~31~~28, wherein the information indicative of the MCS is received using radio resource control (RRC) signaling or via downlink control information (DCI).