

CLAIMS

1. A communication apparatus:

a receiver which, in operation, receives resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

a transmitter which, in operation, transmits a signal including the DMRS which is mapped in a part of the resource based on the received DMRS information.

2. The communication apparatus according to claim 1, wherein the DMRS is periodically allocated in multiple time periods within the resource, and the DMRS is mapped to one or more symbol(s) for each of the multiple time periods based on the received DMRS information.

3. The communication apparatus according to claim 1, wherein the DMRS is mapped to symbols other than symbol candidates to which a sounding reference signal (SRS) is to be mapped.

4. The communication apparatus according to claim 1, wherein the DMRS is mapped to one or more symbol(s) corresponding to the received DMRS information from at least a first symbol of the resource.

5. The communication apparatus according to claim 1, wherein the DMRS is mapped to one or more symbol(s) corresponding to the received DMRS information from a first symbol in a time unit, the resource being comprised of multiple time units and each of the time units being comprised of multiple symbols.

6. The communication apparatus according to claim 1, wherein the DMRS information is transmitted by a higher layer signaling.

7. The communication apparatus according to claim 1, wherein the resource allocation information indicates a number of subcarriers allocated for the transmission among a

plurality of candidates of the number of subcarriers, each of the plurality of candidates of the number of subcarriers corresponding to a number of symbols different from each other.

8. The communication apparatus according to claim 1, wherein the multiple subcarriers are 12 subcarriers or less than 12 subcarriers.

9. The communication apparatus according to claim 1, wherein data is allocated in the resource, the data being generated without assuming symbol candidates to which a sounding reference signal (SRS) is to be mapped and some of the data relating to the symbol candidates is punctured before transmission.

10. A communication method:

receiving resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

transmitting a signal including the DMRS which is mapped in a part of the resource based on the received DMRS information.

11. The communication method according to claim 10, wherein the DMRS is periodically allocated in multiple time periods within the resource, and the DMRS is mapped to one or more symbol(s) for each of the multiple time periods based on the received DMRS information.

12. The communication method according to claim 10, wherein the DMRS is mapped to symbols other than symbol candidates to which a sounding reference signal (SRS) is to be mapped.

13. The communication method according to claim 10, wherein the DMRS is mapped to one or more symbols corresponding to the received DMRS information from at least a first symbol of the resource.

14. The communication method according to claim 10, wherein the DMRS is mapped to

one or more symbols corresponding to the received DMRS information from a first symbol in a time unit, the resource being comprised of multiple time units and each of the time units being comprised of multiple symbols.

15. The communication method according to claim 10, wherein the DMRS information is transmitted by a higher layer signaling.

16. The communication method according to claim 10, wherein the resource allocation information indicates a number of subcarriers allocated for the transmission among a plurality of candidates of the number of subcarriers, each of the plurality of candidates of the number of subcarriers corresponding to a number of symbols different from each other.

17. The communication method according to claim 10, wherein the multiple subcarriers are 12 subcarriers or less than 12 subcarriers.

18. The communication method according to claim 10, wherein data is allocated in the resource, the data being generated without assuming symbol candidates to which a sounding reference signal (SRS) is to be mapped and some of the data relating to the symbol candidates is punctured before transmission.

19. A communication apparatus:

a transmitter which, in operation, transmits resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

a receiver which, in operation, receives a signal including the DMRS which is mapped in a part of the resource based on the transmitted DMRS information.

20. The communication apparatus according to claim 19, wherein the DMRS is periodically allocated in multiple time periods within the resource, and the DMRS is mapped to one or more symbol(s) for each of the multiple time periods based on the transmitted DMRS information.

21. The communication apparatus according to claim 19, wherein the DMRS is mapped

to symbols other than symbol candidates to which a sounding reference signal (SRS) is to be mapped.

22. The communication apparatus according to claim 19, wherein the DMRS is mapped to one or more symbols corresponding to the transmitted DMRS information from at least a first symbol of the resource.

23. The communication apparatus according to claim 19, wherein the DMRS is mapped to one or more symbols corresponding to the transmitted DMRS information from a first symbol in a time unit, the resource being comprised of multiple time units and each of the time units being comprised of multiple symbols.

24. The communication apparatus according to claim 19, wherein the DMRS information is transmitted by a higher layer signaling.

25. The communication apparatus according to claim 19, wherein the resource allocation information indicates a number of subcarriers allocated for the transmission among a plurality of candidates of the number of subcarriers, each of the plurality of candidates of the number of subcarriers corresponding to a number of symbols different from each other.

26. The communication apparatus according to claim 19, wherein the multiple subcarriers are 12 subcarriers or less than 12 subcarriers.

27. The communication apparatus according to claim 19, wherein data is allocated in the resource, the data being generated without assuming symbol candidates to which a sounding reference signal (SRS) is to be mapped and some of the data relating to the symbol candidates is punctured before transmission.

28. A communication method:

transmitting resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

receiving a signal including the DMRS which is mapped in a part of the resource based on the transmitted DMRS information.

29. The communication method according to claim 28, wherein the DMRS is periodically allocated in multiple time periods within the resource, and the DMRS is mapped to one or more symbol(s) for each of the multiple time periods based on the transmitted DMRS information.

30. The communication method according to claim 28, wherein the DMRS is mapped to symbols other than symbol candidates to which a sounding reference signal (SRS) is to be mapped.

31. The communication method according to claim 28, wherein the DMRS is mapped to one or more symbols corresponding to the transmitted DMRS information from at least a first symbol of the resource.

32. The communication method according to claim 28, wherein the DMRS is mapped to one or more symbols corresponding to the transmitted DMRS information from a first symbol in a time unit, the resource being comprised of multiple time units and each of the time units being comprised of multiple symbols.

33. The communication method according to claim 28, wherein the DMRS information is transmitted by a higher layer signaling.

34. The communication method according to claim 28, wherein the resource allocation information indicates a number of subcarriers allocated for the transmission among a plurality of candidates of the number of subcarriers, each of the plurality of candidates of the number of subcarriers corresponding to a number of symbols different from each other.

35. The communication method according to claim 28, wherein the multiple subcarriers are 12 subcarriers or less than 12 subcarriers.

36. The communication method according to claim 28, wherein data is allocated in the resource, the data being generated without assuming symbol candidates to which a

sounding reference signal (SRS) is to be mapped and some of the data relating to the symbol candidates is punctured before transmission.

37. An integrated circuit comprising:

circuitry, which, in operation, controls

receiving resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

transmitting a signal including the DMRS which is mapped in a part of the resource based on the received DMRS information.

38. An integrated circuit comprising:

circuitry, which, in operation, controls

transmitting resource allocation information relating to a resource allocated for transmission and Demodulation Reference Signal (DMRS) information relating to a number of consecutive symbols on which a DMRS is to be mapped, the resource being comprised of multiple symbols and multiple subcarriers; and

receiving a signal including the DMRS which is mapped in a part of the resource based on the transmitted DMRS information.