When using the word "comprise" or "comprising" it shall be interpreted as non-limiting, in the meaning of consist at least of.

When using the word action/actions it shall be interpreted broadly and not to imply that the actions have to be carried out in the order mentioned. Instead, the actions may be carried out in any suitable order other than the order mentioned. Further, some action/actions may be optional.

The embodiments herein are not limited to the above described examples. Various alternatives, modifications and equivalents may be used. Therefore, the above examples should not be taken as limiting the scope of the invention, which is defined by the appending claims.

The invention claimed is:

1. A method, in a transmitter, for transmitting discovery signals to a receiver, wherein the transmitter and the receiver are comprised in a radio communications system, the method comprising:

transmitting two or more discovery signals over two or more directions;

wherein each discovery signal is configured to span over a fraction of a carrier bandwidth, the carrier bandwidth is separated into sub-bands, and each of the two or more discovery signals is configured to span over one sub-band.

2. The method of claim **1**, wherein the transmitting the two or more discovery signals comprises transmitting the two or more discovery signals in a single symbol.

3. The method of claim **2**, wherein the transmitting the two or more discovery signals further comprises:

multiplexing, in a frequency-domain, a plurality of discovery signals for a plurality of directions; and

transmitting the multiplexed plurality of discovery signals in the single symbol.

4. The method of claim **1**, wherein the transmitting the two or more discovery signals comprises transmitting the two or more discovery signals in two or more symbols.

5. The method of claim **4**, wherein the transmitting the two or more discovery signals further comprises:

multiplexing, in a frequency-domain, a plurality of discovery signals for a plurality of directions; and

transmitting the multiplexed plurality of discovery signals in the two or more symbols.

6. The method of claim **1**, wherein the transmitting the two or more discovery signals comprises transmitting the two or more discovery signals together with information relating to at least one of:

information indicating a beam direction;

information indicating a frequency offset to a carrier center; and

information indicating the transmitter.

7. The method of claim **1**, wherein the transmitting the two or more discovery signals comprises cyclically, over time, transmitting the two or more discovery signals into different directions.

8. The method of claim **1**, wherein the two or more discovery signals are synchronization signals.

9. The method of claim **1**, wherein said transmitting comprises transmitting each of the two or more discovery signals over a frequency carrier, and wherein each discovery signal is configured to span over a fraction of a bandwidth of the respective frequency carrier.

10. A transmitter for transmitting discovery signals to a receiver, wherein the transmitter and the receiver are comprised in a radio communications system, the transmitter comprising:

one or more processing circuits operative to control the transmitter to transmit two or more discovery signals over two or more directions;

wherein each discovery signal is configured to span over a fraction of a carrier bandwidth, the carrier bandwidth is separated into sub-bands, and each of the two or more discovery signals is configured to span over one sub-band.

11. The transmitter of claim **10**, wherein the transmitter is configured to transmit the two or more discovery signals in a single symbol.

12. The transmitter of claim **11**, wherein the transmitter is configured to:

multiplex, in a frequency-domain, a plurality of discovery signals for a plurality of directions;

transmit the multiplexed plurality of discovery signals in the single symbol.

13. The transmitter of claim **10**, wherein the transmitter is configured to transmit the two or more discovery signals in two or more symbols.

14. The transmitter of claim **13**, wherein the transmitter is configured to:

multiplex, in a frequency-domain, a plurality of discovery signals for a plurality of directions;

transmit the multiplexed plurality of discovery signals in the two or more symbols.

15. The transmitter of claim **10**, wherein the transmitter is configured to transmit the two or more discovery signal together with information relating to at least one of:

information indicating a beam direction;

information indicating a frequency offset to a carrier center; and

information indicating the transmitter.

16. The transmitter of claim **10**, wherein the transmitter is configured to cyclically, over time, transmit the two or more discovery signals into different directions.

17. The transmitter of claim **10**, wherein the two or more discovery signals are synchronization signals.

18. A method, in a receiver, for receiving discovery signals from a transmitter, wherein the transmitter and the receiver are comprised in a radio communications system, the method comprising:

receiving, from the transmitter, at least a first discovery signal of two or more discovery signals that have been transmitted into two or more directions;

wherein each discovery signal is configured to span over a fraction of a carrier bandwidth, the carrier bandwidth is separated into sub-bands, and each of the two or more discovery signals is configured to span over one sub-band.

19. The method of claim **18**, wherein the receiving comprises receiving the first discovery signal in a single symbol.

20. The method of claim **18**, wherein the receiving comprises receiving two or more discovery signals in two or more symbols.

21. The method of claim **18**, wherein the receiving comprises receiving at least the first discovery signal together with information relating to at least one of:

information indicating a beam direction;

information indicating a frequency offset to a carrier center; and

information indicating the transmitter.

22. The method of claim **18**, wherein the receiving comprises cyclically, over time, receiving the first discovery signal from different directions.