~~ARTICLE 19 AMENDMENT~~

CLAIMS

Claim 1 ~~(Amended)~~

A transmitter apparatus comprising:

a signal forming section that maps a reference signal generated using information relating to a cyclic shift amount to a frequency resource corresponding to each of a plurality of antenna ports determined based on a first correspondence or a second correspondence; and

a transmitting section that transmits the reference signal mapped to the frequency resource corresponding to each of the plurality of antenna ports, wherein:

the first correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X is different from the second correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X+N/2 (where X is an integer from 0 to N/2-1 inclusive, and N is the number of candidates of the cyclic shift amount).

Claim 2 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein:

frequency resources corresponding to the plurality of antenna ports in the first correspondence are identical, and

frequency resources corresponding to the plurality of respective antenna ports in the second correspondence are not identical.

Claim 3 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein:

frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical, and

of the plurality of antenna ports in the second correspondence, frequency resources corresponding to odd-numbered antenna ports are different from frequency resources corresponding to even-numbered antenna ports.

Claim 4 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical to frequency resources corresponding to even-numbered antenna ports in the second correspondence.

Claim 5 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein:

when the number of the plurality of antenna ports is 2, frequency resources corresponding to all antenna ports in the first correspondence are identical to frequency resources corresponding to all antenna ports in the second correspondence,

and

when the number of the plurality of antenna ports is 4, frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical, and of the plurality of antenna ports in the second correspondence, frequency resources corresponding to odd-numbered antenna ports are different from frequency resources corresponding to even-numbered antenna ports.

Claim 6 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein frequency resources corresponding to all antenna ports in the first correspondence are identical, and in the second correspondence, frequency resources corresponding to two antenna ports where an interval between cyclic shift amounts of the two antenna ports is [N/2] are identical, and frequency resources corresponding to two antenna ports where an interval between cyclic shift amounts of the two antenna ports is [N/4] are different.

Claim 7 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein the information relating to the cyclic shift amount corresponds to a cyclic shift amount of antenna port number 0, the N is 8 and the X is 0 to 3.

Claim 8 ~~(Amended)~~

The transmitter apparatus according to claim 1, wherein the frequency resources are a comb-like subcarrier group.

Claim 9 ~~(Amended)~~

A receiver apparatus, comprising:

a receiving section that receives a reference signal mapped to a frequency resource corresponding to each of a plurality of antenna ports determined based on a first correspondence or a second correspondence, the reference signal being generated using information relating to a cyclic shift amount; and

a channel quality measuring section that measures channel quality using the reference signal, wherein:

the first correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X is different from the second correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X+N/2 (where X is an integer from 0 to N/2-1 inclusive, and N is the number of candidates of the cyclic shift amount).

Claim 10 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein

frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical and frequency resources corresponding to the plurality of a respective ntenna ports in the second correspondence are not identical.

Claim 11 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein:

frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical, and

of the plurality of antenna ports in the second correspondence, frequency resources corresponding to odd-numbered antenna ports are different from frequency resources corresponding to even-numbered antenna ports.

Claim 12 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical to frequency resources corresponding to even-numbered antenna ports in the second correspondence.

Claim 13 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein:

when the number of the plurality of antenna ports is 2,

frequency resources corresponding to all antenna ports in the first correspondence are identical to frequency resources corresponding to all antenna ports in the second correspondence, and

when the number of the plurality of antenna ports is 4, frequency resources corresponding to the plurality of respective antenna ports in the first correspondence are identical, and of the plurality of antenna ports in the second correspondence, frequency resources corresponding to odd-numbered antenna ports are different from frequency resources corresponding to even-numbered antenna ports.

Claim 14 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein frequency resources corresponding to all antenna ports in the first correspondence are identical, and

in the second correspondence, frequency resources corresponding to two antenna ports where an interval between cyclic shift amounts of the two antenna ports is [N/2] are identical, and frequency resources corresponding to two antenna ports where an interval between cyclic shift amounts of the two antenna ports is [N/4] are different.

Claim 15 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein the information relating to the cyclic shift amount corresponds to a

cyclic shift amount of antenna port number 0, the N is 8 and the X is 0 to 3.

Claim 16 ~~(Amended)~~

The receiver apparatus according to claim 9, wherein the frequency resources are a comb-like subcarrier group.

Claim 17 ~~(Amended)~~

A transmission method comprising:

mapping a reference signal generated using information relating to a cyclic shift amount to a frequency resource corresponding to each of a plurality of antenna ports determined based on a first correspondence or a second correspondence; and

transmitting the reference signal mapped to the frequency resource corresponding to each of the plurality of antenna ports, wherein:

the first correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X is different from the second correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X+N/2 (where, X is an integer from 0 to N/2-1 inclusive, N is the number of candidates of the cyclic shift amount).

Claim 18 ~~(Amended)~~

A reception method comprising:

receiving a reference signal mapped to a frequency resource corresponding to each of a plurality of antenna ports determined based on a first correspondence or a second correspondence, the reference signal being generated using information relating to a cyclic shift amount; and

measuring channel quality using the reference signal, wherein:

the first correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X is different from the second correspondence which is a correspondence between each of the plurality of antenna ports and the frequency resource when the information relating to the cyclic shift amount is X+N/2 (where X is an integer from 0 to N/2-1 inclusive, and N is the number of candidates of the cyclic shift amount).

~~Claim 19 (Cancelled)~~

~~Claim 20 (Cancelled)~~

~~Claim 21 (Cancelled)~~

~~Claim 22 (Cancelled)~~

~~Claim 23 (Cancelled)~~

~~Claim 24 (Cancelled)~~

~~Claim 25 (Cancelled)~~

Claim 26 (Cancelled)

Claim 27 (Cancelled)

Claim 28 (Cancelled)

Claim 29 (Cancelled)

Claim 30 (Cancelled)

Claim 31 (Cancelled)

Claim 32 (Cancelled)