

## CLAIMS

1. A transmission method executed by a transmission system, the transmission method comprising:

generating a plurality of first transmission symbols  $z_1$  and a plurality of second transmission symbols  $z_2$  for each slot by using any one of  $N$  signal processes with respect to a plurality of first modulated symbols  $s_1$  and a plurality of second modulated symbols  $s_2$ , the plurality of first modulated symbols  $s_1$  being generated for each slot as one or more first data symbols and one or more first pilot symbols, the plurality of second modulated symbols  $s_2$  being generated for each slot as one or more second data symbols and one or more second pilot symbols, the one or more first data symbols being generated with the same transmission data bits as the one or more second data symbols,  $N$  being an integer that is at least three, the  $N$  signal processes being regularly switched with a plurality of slots as one cycle, a part of the  $N$  signal processes being applied to the one or more first data symbols and the one or more second data symbols;

transmitting a plurality of first OFDM symbols from a first antenna, the plurality of first transmission symbols  $z_1$  being arranged in the plurality of first OFDM symbols; and

transmitting a plurality of second OFDM symbols from a second antenna, the plurality of second transmission symbols  $z_2$  being arranged in the plurality of second OFDM symbols, the plurality of first OFDM symbols and the plurality of second OFDM symbols that are transmitted at a same frequency and time, wherein

the plurality of first OFDM symbols and the plurality of second OFDM symbols each include one or more control symbols transmitting control information used in demodulation.

2. A transmission system comprising:

signal processing circuitry which, in operation, generates a plurality of first transmission symbols  $z_1$  and a plurality of second transmission symbols  $z_2$  for each slot by using any one of  $N$  signal processes with respect to a plurality of first modulated symbols  $s_1$  and a plurality of second modulated symbols  $s_2$ , the plurality of first transmission symbols  $z_1$  being generated for each slot as one or more first data symbols and one or more first pilot symbols, the plurality of second transmission symbols  $z_2$  being generated for each slot as one or more second data symbols and one or more second pilot symbols, the one or more first data symbols being generated with the same transmission data bits as the one or more second data symbols,  $N$  being an integer that is at least three, the  $N$  signal processes being regularly switched with a plurality of slots as one cycle, a part of the  $N$  signal processes being applied to the one or more first data symbols and the one or more second data symbols;

transmitting circuitry which, in operation, transmits a plurality of first OFDM symbols from a first antenna, the plurality of first transmission symbols  $z_1$  being arranged in the plurality of first OFDM symbols, and transmits a plurality of second OFDM symbols from a second antenna, the plurality of second transmission symbols  $z_2$  being arranged in the plurality of second OFDM symbols, the plurality of first OFDM symbols and the plurality of second OFDM symbols that are transmitted at a same frequency and time, wherein

the plurality of first OFDM symbols and the plurality of second OFDM symbols each include one or more control symbols transmitting control information used in demodulation.

3. A reception method executed by a reception device, the reception method comprising:

receiving first OFDM symbols transmitted from a first antenna and second OFDM symbols transmitted from a second antenna, wherein

the first OFDM symbols includes a plurality of first transmission symbols  $z_1$ , the second OFDM symbols includes a plurality of second transmission symbols  $z_2$ ,

the plurality of first transmission symbols  $z_1$  and the plurality of second transmission symbols  $z_2$  are generated by, with respect to a plurality of first modulated symbols  $s_1$  and a plurality of second modulated symbols  $s_2$ , using any one of  $N$  signal processes for each slot,

the plurality of first modulated symbols  $s_1$  being generated for each slot as one or more first data symbols and one or more first pilot symbols, the plurality of second modulated symbols  $s_2$  being generated for each slot as one or more second data symbols and one or more second pilot symbols, the one or more first data symbols being generated with the same transmission data bits as the one or more second data symbols,  $N$  being an integer that is at least three,

the  $N$  signal processes being regularly switched with a plurality of slots as one cycle, a part of the  $N$  signal processes being applied to the one or more first data symbols and the one or more second data symbols, and

the first OFDM symbols and the second OFDM symbols each include one or more control symbols transmitting control information used in demodulation, and

generating the transmission data bits by demodulating the one or more first data symbols and the one or more second data symbols based on the control information generated by demodulating the one or more control symbols.

4. A reception device comprising:

receiving circuitry which, in operation, receives first OFDM symbols transmitted from a first antenna and second OFDM symbols transmitted from a second antenna, wherein

the first OFDM symbols includes a plurality of first transmission symbols  $z_1$ , the second OFDM symbols includes a plurality of second transmission symbols  $z_2$ ,

the plurality of first transmission symbols  $z_1$  and the plurality of second transmission symbols  $z_2$  are generated by, with respect to a plurality of first modulated symbols  $s_1$  and a plurality of second modulated symbols  $s_2$ , using any one of  $N$  signal processes for each slot,

the plurality of first modulated symbols  $s_1$  being generated for each slot as one or more first data symbols and one or more first pilot symbols, the plurality of second modulated symbols  $s_2$  being generated for each slot as one or more second data symbols and one or more second pilot symbols, the one or more first data symbols being generated with the same transmission data bits as the one or more second data symbols,  $N$  being an integer that is at least three,

the  $N$  signal processes being regularly switched with a plurality of slots as one cycle, a part of the  $N$  signal processes being applied to the one or more first data symbols and the one or more second data symbols, and

the first OFDM symbols and the second OFDM symbols each include one or more control symbols transmitting control information used in demodulation, and

demodulating circuitry which, in operation, generates the transmission data sequence by demodulating the one or more first data symbols and the one or more second data symbols based on the control information generated by demodulating the one or more control symbols.