CLAIMS

1. An OFDM signal generation method of a transmission system, the transmission system having a first transmitter and a second transmitter, the OFDM signal generating method comprising:

modulating, by the first transmitter, each of a plurality of coded blocks to a first modulated signal s1, the coded blocks each made up of a plurality of bits by using a predetermined error correction block coding scheme;

modulating, by the second transmitter, each of the coded blocks to a second modulated signal s2, data included in the first modulated signal s1 being same as data included in the second modulated signal s2;

inserting, by the first transmitter, one or more pilots to the first modulated signal s1 to obtain a first pilot-inserted signal s1';

inserting, by the second transmitter, the one or more pilots to the second modulated signal s2 to obtain a second pilot-inserted signal s2';

phase-changing, by the first transmitter, while regularly varying a first scheme of phase change for each of a plurality of slots, the first pilot-inserted signal s1' to obtain a first transmission signal z1; and

phase-changing, by the second transmitter, while regularly varying a second scheme of phase change for each of the plurality of slots, the second pilot-inserted signal s2' to obtain a second transmission signal z2; and

converting, by the first transmitter, the first transmission signal z1 to a first OFDM signal to be transmitted from a first antenna at a first period at a first frequency; and

converting, by the second transmitter, the second transmission signal z2 to a second OFDM signal to be transmitted from a second antenna at the first period at the first frequency.

2. An OFDM signal generation system comprising:

a first OFDM signal generator; and

a second OFDM signal generator,

wherein the first OFDM signal generator, in operation,

modulates each of a plurality of coded blocks to a first modulated signal s1, the coded blocks each made up of a plurality of bits by using a predetermined error correction block coding scheme;

inserts one or more pilots to the first modulated signal s1 to obtain a first pilot-inserted signal s1';

phase-changes, while regularly varying a first scheme of phase change for each of a plurality of slots, the first pilot-inserted signal s1' to obtain a first transmission signal z1; and

converts the first transmission signal z1 to a first OFDM signal to be transmitted from a first antenna at a first period at a first frequency; and

wherein the second OFDM signal generator, in operation,

modulates each of the coded blocks to a second modulated signal s2, data included in the first modulated signal s1 being same as data included in the second modulated signal s2;

inserts the one or more pilots to the second modulated signal s2 to obtain a second pilot-inserted signal s2';

phase-changes, while regularly varying a second scheme of phase change for each of the plurality of slots, the second pilot-inserted signal s2' to obtain a second transmission signal z2; and

converts the second transmission signal z2 to a second OFDM signal to be transmitted from a second antenna at the first period at the first frequency.

3. A reception data generation method of a reception apparatus, the method comprising:

acquiring a reception signal obtained by converting a first OFDM signal transmitted from a first antenna of a first transmitter at a first period at a first frequency and a second OFDM signal transmitted from a second antenna of a second transmitter at the first period at the first frequency, the first OFDM signal and the second OFDM signal having been generated through a predetermined generation process; and

demodulating the reception signal to reception data, through a demodulation process corresponding to the predetermined generation process, wherein

at least one of the acquiring and the demodulating is performed by the reception apparatus, and

the predetermined generation process is a process of:

modulating, by the first transmitter, each of a plurality of coded blocks to a first modulated signal s1, the coded blocks each made up of a plurality of bits by using a predetermined error correction block coding scheme;

modulating, by the second transmitter, each of the coded blocks to a second modulated signal s2, data included in the first modulated signal s1 being same as data included in the second modulated signal s2;

inserting, by the first transmitter, one or more pilots to the first modulated signal s1 to obtain a first pilot-inserted signal s1';

inserting, by the second transmitter, the one or more pilots to the second modulated signal s2 to obtain a second pilot-inserted signal s2';

phase-changing, by the first transmitter, while regularly varying a first scheme of phase change for each of a plurality of slots, the first pilot-inserted signal s1' to obtain a first transmission signal z1; and

phase-changing, by the second transmitter, while regularly varying a second scheme of phase change for each of the plurality of slots, the second pilot-inserted signal s2' to obtain a second transmission signal z2; and

converting, by the first transmitter, the first transmission signal z1 to the first OFDM signal, which is transmitted from the first antenna at the first period at the first frequency; and

converting, by the second transmitter, the second transmission signal z2 to the second OFDM signal, which is transmitted from the second antenna at the first period at the first frequency.

4. A reception data generation apparatus comprising:

a memory; and

control circuitry,

wherein the control circuitry, in operation, performs the steps of:

acquiring a reception signal obtained by converting a first OFDM signal transmitted from a first antenna of a first transmitter at a first period at a first frequency and a second OFDM signal transmitted from a second antenna of a second transmitter at the first period at the first frequency, the first OFDM signal and the second OFDM signal having been generated through a predetermined generation process; and

demodulating the reception signal to reception data, through a demodulation process corresponding to the predetermined generation process, wherein

at least one of the acquiring and the demodulating is performed by the control circuitry, and

the predetermined generation process is a process of:

modulating, by the first transmitter, each of a plurality of coded blocks to a first modulated signal s1, the coded blocks each made up of a plurality of bits by using a predetermined error correction block coding scheme;

modulating, by the second transmitter, each of the coded blocks to a second modulated signal s2, data included in the first modulated signal s1 being same as data included in the second modulated signal s2;

inserting, by the first transmitter, one or more pilots to the first modulated signal s1 to obtain a first pilot-inserted signal s1';

inserting, by the second transmitter, the one or more pilots to the second modulated signal s2 to obtain a second pilot-inserted signal s2';

phase-changing, by the first transmitter, while regularly varying a first scheme of phase change for each of a plurality of slots, the first pilot-inserted signal s1' to obtain a first transmission signal z1; and

phase-changing, by the second transmitter, while regularly varying a second scheme of phase change for each of the plurality of slots, the second pilot-inserted signal s2' to obtain a second transmission signal z2; and

converting, by the first transmitter, the first transmission signal z1 to the first OFDM signal, which is transmitted from the first antenna at the first period at the first frequency; and

converting, by the second transmitter, the second transmission signal z2 to the second OFDM signal, which is transmitted from the second antenna at the first period at the first frequency.