CLAIMS

1. A communication device including transmission means for transmitting a physical (PHY) frame including a preamble and a data field, characterized in that

the preamble includes:

a Legacy Short Training Field (L-STF);

a Legacy Long Training Field (L-LTF) arranged immediately after the L-STF in the frame;

a Legacy Signal Field (L-SIG) arranged immediately after the L-LTF in the frame;

a first Signal Field arranged after the L-SIG in the frame;

a second Signal Field arranged immediately after the first Signal Field in the frame;

an EHT (Extremely High Throughput) Short Training Field (EHT-STF) arranged immediately after the second Signal Field in the frame; and

an EHT Long Training Field (EHT-LTF) arranged immediately after the EHT-STF in the frame, and

the second Signal Field has a User field which includes at least a first subfield having consecutive 6 bits for indicating a number of spatial streams allocated to each of not less than two devices that communicates with the communication device, a second subfield, which is different from the first subfield, having consecutive 4 bits for indicating MCS (Modulation and Coding Scheme) and a third subfield having 1 bit for indicating information related to a coding,

wherein in a case where the third subfield is set to zero, the coding is performed by BCC (Binary Convolution Code), and in a case where the third subfield is set to one, the coding is performed by LDPC (Low Density Parity Check),

wherein the PHY frame, in which a value 000100 is set to the first subfield, is a PHY frame through which data is transmitted to a first device using two spatial streams, data is transmitted to a second device using two spatial streams, data is transmitted to a third device using a single spatial stream, data is transmitted to a forth device using a single spatial stream, data is transmitted to a fifth device using a single spatial stream and data is transmitted to a sixth device using a single spatial stream.

2. A communication device including reception means for receiving a physical (PHY) frame including a preamble and a data field, characterized in that

the preamble includes:

a Legacy Short Training Field (L-STF);

a Legacy Long Training Field (L-LTF) arranged immediately after the L-STF in the frame;

a Legacy Signal Field (L-SIG) arranged immediately after the L-LTF in the frame;

a first Signal Field arranged after the L-SIG in the frame;

a second Signal Field arranged immediately after the first Signal Field in the frame;

an EHT (Extremely High Throughput) Short Training Field (EHT-STF) arranged immediately after the second Signal Field in the frame; and

an EHT Long Training Field (EHT-LTF) arranged immediately after the EHT-STF in the frame, and

the second Signal Field has a User field which includes at least a first subfield having consecutive 6 bits for indicating a number of spatial streams allocated to each of not less than two devices, including the communication device, that communicate with another communication device, a second subfield, which is different from the first

subfield, having consecutive 4 bits for indicating MCS (Modulation and Coding Scheme) and a third subfield having 1 bit for indicating information related to a coding,

wherein in a case where the third subfield is set to zero, the coding is performed by BCC (Binary Convolution Code), and in a case where the third subfield is set to one, the coding is performed by LDPC (Low Density Parity Check);

wherein the PHY frame, in which a value 000100 is set to the first subfield, is a PHY frame through which data is transmitted to the communication device using two spatial streams, data is transmitted to a first device using two spatial streams, data is transmitted to a second device using two spatial streams, data is transmitted to a third device using a single spatial stream, data is transmitted to a forth device using a single spatial stream and data is transmitted to a fifth device using a single spatial stream.

3. The communication device according to claim 1 or 2, wherein it can be indicated by the first subfield that 8 or more in total of spatial streams are allocated to each of not less than two devices.

4. The communication device according to claim 3, wherein a maximum number of spatial streams allocated to a single device, indicated by the first subfield, is 4.

5. The communication device according to claim 3, wherein the User field further includes a STA-ID subfield having 11 bits for indicating a STA-ID (station identity) which is an identification information of a device, wherein the first subfield is arranged after the STA-ID subfield.

6. The communication device according to claim 1 or 2, wherein, under a condition that data is concurrently transmitted to a predetermined number of the devices, it is indicated, in a case where a value 010100 is set to the first subfield, that two spatial streams are allocated to each of 4 devices.

7. A control method of a communication device including transmission means for transmitting a physical (PHY) frame including a preamble and a data field, characterized in that

the preamble includes:

a Legacy Short Training Field (L-STF);

a Legacy Long Training Field (L-LTF) arranged immediately after the L-STF in the frame;

a Legacy Signal Field (L-SIG) arranged immediately after the L-LTF in the frame;

a first Signal Field arranged after the L-SIG in the frame;

a second Signal Field arranged immediately after the first Signal Field in the frame;

an EHT (Extremely High Throughput) Short Training Field (EHT-STF) arranged immediately after the second Signal Field in the frame; and

an EHT Long Training Field (EHT-LTF) arranged immediately after the EHT-STF in the frame, and

the second Signal Field has a User field which includes at least a first subfield having consecutive 6 bits for indicating a number of spatial streams allocated to each of not less than two devices that communicates with the communication device, a second subfield, which is different from the first subfield, having consecutive 4 bits for indicating MCS (Modulation and Coding Scheme) and a third subfield having 1 bit for indicating information related to a coding,

wherein in a case where the third subfield is set to zero, the coding is performed by BCC (Binary Convolution Code), and in a case where the third subfield is set to one, the coding is performed by LDPC (Low Density Parity Check),

wherein the PHY frame, in which a value 000100 is set to the first subfield, is a PHY frame through which data is transmitted to a first device using two spatial streams, data is transmitted to a second device using two spatial streams, data is transmitted to a third device using a single spatial stream, data is transmitted to a forth device using a single spatial stream, data is transmitted to a fifth device using a single spatial stream and data is transmitted to a sixth device using a single spatial stream.

8. A control method of a communication device including reception means for receiving a physical (PHY) frame including a preamble and a data field, characterized in that

the preamble includes:

a Legacy Short Training Field (L-STF);

a Legacy Long Training Field (L-LTF) arranged immediately after the L-STF in the frame;

a Legacy Signal Field (L-SIG) arranged immediately after the L-LTF in the frame;

a first Signal Field arranged after the L-SIG in the frame;

a second Signal Field arranged immediately after first Signal Field in the frame;

an EHT (Extremely High Throughput) Short Training Field (EHT-STF) arranged immediately after the second Signal Field in the frame; and

an EHT Long Training Field (EHT-LTF) arranged immediately after the EHT-STF in the frame, and

the second Signal Field has a User field which includes at least a first subfield having consecutive 6 bits for indicating a number of spatial streams allocated to each of not less than two devices, including the communication device, that communicate

with another communication device, a second subfield, which is different from the first subfield, having consecutive 4 bits for indicating MCS (Modulation and Coding Scheme) and a third subfield having 1 bit for indicating information related to a coding,

wherein in a case where the third subfield is set to zero, the coding is performed by BCC (Binary Convolution Code), and in a case where the third subfield is set to one, the coding is performed by LDPC (Low Density Parity Check),

wherein the PHY frame, in which a value 000100 is set to the first subfield, is a PHY frame through which data is transmitted to the communication device using two spatial streams, data is transmitted to a first device using two spatial streams, data is transmitted to a second device using two spatial streams, data is transmitted to a third device using a single spatial stream, data is transmitted to a forth device using a single spatial stream and data is transmitted to a fifth device using a single spatial stream.