

CLAIMS

What is claimed is:

1. A data transmission method performed by a first station, wherein a first multi-link device comprises multiple stations among which the first station is one of them, and each station among the multiple stations operates on a different link among multiple links, wherein the method comprises the steps of:

- generating a frame, wherein the frame comprises:
 - either a first field, wherein the first field indicates, for each modulation and coding scheme, MCS, among a plurality of MCSs, a maximum quantity of shared spatial streams whose reception at the first multi-link device is supported by the first multi-link device, and the first field is carried in a Supported EHT MCS and NSS Set field of the frame, or
 - a second field, wherein the second field indicates, for each MCS among the plurality of MCSs, a maximum quantity of shared spatial streams whose transmission from the multi-link device is supported by the first multi-link device, and the second field is carried in a Supported EHT MCS and NSS Set field of the frame; and
- sending (S 301) the frame to a peer device.

2. The method according to claim 1, wherein the frame comprises a shared station field, and the shared station field indicates a plurality of stations participating in a shared spatial stream.

3. The method according to claim 2, wherein the shared station field comprises a plurality of link identifier fields.

4. The method according to any one of claims 1 to 3, wherein the frame further indicates a maximum quantity of shared spatial streams supported by each station in the first multi-link device.

5. The method according to claim 4, wherein the frame comprises a third field, and the third field comprises a field of a quantity of spatial streams for the reception, a field of a quantity of spatial streams for the transmission, and a link identifier field.

6. The method according to claim 5, wherein the field of the quantity of spatial streams for the reception and the field of the quantity of spatial streams for the transmission are carried in the Supported EHT MCS and NSS Set field of the frame.

7. The method according to any one of claims 1 to 6, wherein the frame is an association request frame or an association response frame.

8. A data transmission method performed by a peer device, wherein the method comprises the steps of:

- receiving a frame from a first station, wherein a first multi-link device comprises multiple stations among which the first station is one of them, and each station among the multiple stations operates on a different link among multiple links, wherein the frame comprises:
 - either a first field, wherein the first field indicates, for each modulation and coding scheme, MCS, among a plurality of MCSs, a maximum quantity of shared spatial streams whose reception at the first multi-link device is supported by the first multi-link device, and the first field is carried in a Supported EHT MCS and NSS Set field of the frame, or
 - a second field, wherein the second field indicates, for each MCS among the plurality of MCSs, a maximum quantity of shared spatial streams whose transmission from the first multi-link device is supported by the first multi-link device, and the second field is carried in a Supported EHT MCS and NSS Set field of the frame, and
- determining (S 302), based on the frame, for each MCS:
 - when the frame contains the first field, the maximum quantity of shared spatial streams whose reception at the first multi-link device is supported by the first multi-link device, and
 - when the frame contains the second field, the maximum quantity of shared spatial streams whose transmission from the first multi-link device is supported by the first multi-link device.

9. A first station, wherein a first multi-link device comprises multiple stations among

which the first station is one of them, and each station among the multiple stations operates on a different link among multiple links, wherein the first station is configured to perform any of the methods according to claims 1 - 7.

10. A peer device configured to perform the method according to claim 8.

11. A computer program product comprising computer instructions, wherein, when the computer instructions are executed by a first station, wherein a first multi-link device comprises multiple stations among which the first station is one of them, and each station among the multiple stations operates on a different link among multiple links, the first station is caused to perform any of the methods according to claims 1 - 7.

12. A computer program product comprising computer instructions, wherein, when the computer instructions are executed by a peer device, the peer device is caused to perform the method according to claim 8.