

SUMMARY

[6] Non-limiting examples on communication apparatuses and communication methods for channel sounding in context of EHT WLAN are provided in this disclosure.

[7] In one example, the present disclosure provides a communication apparatus comprising: circuitry, which, in operation, generates a first frame for a sounding procedure; and a transmitter, which, in operation, transmits the first frame to each of one or more peer communication apparatuses, the first frame comprising a first field which indicates an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

[8] In another example, the present disclosure provides a peer communication apparatus comprising: a receiver, which, in operation, receives a first frame for a sounding procedure from a communication apparatus; and circuitry, which, in operation, processes the first frame, the first frame comprising a first field which indicates an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

[9] In another example, the present disclosure provides a communication method comprising: generating a first frame for a sounding procedure; and transmitting the first frame to each of one or more peer communication apparatuses, the first frame comprising a first field which indicates an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

[9a] In another example, the present disclosure provides a communication method comprising: receiving a first frame for a sounding procedure from a communication apparatus; and processing the first frame, the first frame comprising a first field which indicates an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

[9b] In another example, the present disclosure provides an integrated circuit comprising: at least one input, which, in operation, inputs an electronic signal; and control circuitry coupled to the at least one input, which, in operation, controls: generating a first frame for a sounding procedure; and transmitting the first frame to
 5 each of one or more peer communication apparatuses, the first frame comprising a first field which indicates an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

10 [9c] In another example, the present disclosure provides an integrated circuit comprising: at least one input, which, in operation, inputs an electronic signal; and control circuitry coupled to the at least one input, which, in operation, controls: receiving a first frame for a sounding procedure from a communication apparatus; and processing the first frame, the first frame comprising a first field which indicates
 15 an intended scheme of a transmission which utilizes results of the sounding procedure, and the intended scheme being selected from a plurality of candidates.

[9d] In an aspect, the present disclosure refers to a first communication apparatus comprising:
 20 circuitry, which, in operation, generates a sounding setup request frame indicating an intended usage of a sounding procedure;
 a transmitter, which, in operation, transmits the sounding setup request frame to a second communication apparatus, and transmits a Null Data Packet (NDP) Announcement frame after transmission of the sounding setup request frame; and
 25 a receiver, which in operation, receives a sounding setup response frame from the second communication apparatus after transmission of the sounding setup request frame and before transmission of the NDP Announcement frame.

[9d] In an aspect, the present disclosure refers to a communication method by a first
 30 communication apparatus, the communication method comprising:
 generating a sounding setup request frame indicating an intended usage of a sounding procedure;
 transmitting the sounding setup request frame to a second communication apparatus;
 35 transmitting a Null Data Packet (NDP) Announcement frame after transmission of the sounding setup request frame; and

receiving a sounding setup response frame from the second communication apparatus after transmission of the sounding setup request frame and before transmission of the NDP Announcement frame.

- 5 [10] It should be noted that general or specific examples may be implemented as a system, a method, an integrated circuit, a computer program, a storage medium, or any selective combination thereof.

- 10 [11] Additional benefits and advantages of the examples in this disclosure will become apparent from the specification and drawings. The benefits and/or advantages may be individually obtained by the various examples and features of the specification and drawings, which need not all be provided in order to obtain one or more of such benefits and/or advantages.

CLAIMS

1. A first communication apparatus comprising:
circuitry, which, in operation, generates a sounding setup request frame
5 indicating an intended usage of a sounding procedure;
a transmitter, which, in operation, transmits the sounding setup request frame
to a second communication apparatus, and transmits a Null Data Packet (NDP)
Announcement frame after transmission of the sounding setup request frame; and
a receiver, which in operation, receives a sounding setup response frame
10 from the second communication apparatus after transmission of the sounding setup
request frame and before transmission of the NDP Announcement frame.

2. The first communication apparatus of claim 1, wherein the sounding setup
request frame comprises a first field which indicates an intended type of the sounding
15 procedure.

3. The first communication apparatus of claim 1, wherein the sounding setup
request frame comprises a second field which indicates one or more intended
communication apparatuses which will be engaged in the sounding procedure.
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4. The first communication apparatus of claim 1, wherein:
the receiver, which, in operation, receives a second frame from the second
communication apparatus, the second frame comprising a first field which indicates
one or more recommended type of the sounding procedure.
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5. The first communication apparatus of claim 4, wherein the first field of the
second frame indicates that the second communication apparatus is to be exempted
from the sounding procedure.

- 30 6. The first communication apparatus of claim 1, wherein the circuitry, which, in
operation, further generates the NDP Announcement frame which starts the
sounding procedure.

7. The first communication apparatus of claim 6, wherein the NDP
35 Announcement frame comprises a first field which indicates a type of the sounding
procedure and a second field which indicates a type of sounding feedback.

8. The first communication apparatus of claim 7, wherein when the type of the sounding procedure refers to an explicit sounding procedure and the type of the sounding feedback refers to calibration feedback, the sounding procedure includes a calibration procedure.

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9. The first communication apparatus of claim 1, wherein when the sounding procedure is a hybrid sounding procedure comprising an explicit sounding portion and an implicit sounding portion, at least one communication apparatus among the first communication apparatus and the second communication apparatuses is configured to be engaged in the explicit sounding portion of the sounding procedure, and the remaining communication apparatus is configured to be engaged in the implicit sounding portion of the sounding procedure.

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10. The first communication apparatus of claim 1, wherein the sounding setup request frame requests the second communication apparatus to transmit a sounding setup response frame, and wherein the transmitter transmits the NDP Announcement frame after receiving the sounding setup response frame.

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11. A communication method by a first communication apparatus, the communication method comprising:

generating a sounding setup request frame indicating an intended usage of a sounding procedure;

transmitting the sounding setup request frame to a second communication apparatus;

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transmitting a Null Data Packet (NDP) Announcement frame after transmission of the sounding setup request frame; and

receiving a sounding setup response frame from the second communication apparatus after transmission of the sounding setup request frame and before transmission of the NDP Announcement frame.

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