IEEE P802.11
Wireless LANs

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| IEEE 802.11 TGbp Ambient Power CommunicationTeleconference Minutes May, June, July 2025 |
| Date: 2025-07-08 |
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Abstract

This document contains the IEEE 802.11 TGbp minutes for the teleconferences in May, June, and July 2025.

Rev 0: Minutes for the IEEE 802.11 TGbp teleconference on 2025-05-27 added.

Rev 1: Minutes for the IEEE 802.11 TGbp teleconference on 2025-06-17 added.

Rev 2: Added attendees of 2025-06-17. Minutes for the IEEE 802.11 TGbp teleconference on 2025-07-08 added

Rev 3: Added attendees of 2025-07-08.

TG Chair: Bo Sun (Sanechips)

TG Vice Chairs: Steve Shellhammer (Qualcomm)

 Rakesh Taori (Infineon)

TG Secretary: Sebastian Max (Ericsson)

TG Technical Editor: Yinan Qi (OPPO)

Abbrevations:

Q Question

A Answer

C Comment

SP Straw Poll

# Tuesday, May 27 2025, 10:00am - 12:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0989r1).

* Chair calls the meeting to order at 10:00 EDT.
* Chair instructs members to record attendance in IMAT.
* Chair reviews the meeting rules and patent policy (slides 2-6).
* No response to the call for patents.
* Chair reviews IEEE-SA COPYRIGHT POLICY (slides 7-8)
* Chair reviews other Guidelines, Participation, Suggested Best Practices (slides 9-10).
* Chair reviews the current TGbp session submission list (slide 11-13), the teleconference plan (slide 14).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0989r1 (slide 16).

* + Call meeting to order and remind the group to record attendance on imat.ieee.org
	+ IEEE-SA IPR policies and meeting rules
	+ Approve meeting agenda
	+ Review updated SFD (11-24/1613r8)
	+ Spec draft skeleton introduction (11-25/0613, 11-25/0614)
	+ Call for volunteers for PoC/TTT
	+ Any other business?
	+ Recess

Chair calls for approval of the agenda of the TGbp session.

No objection, agenda approved.

## Review of the updated SFD (11-24/1613r8)

Yinan Qi (OPPO) presents document IEEE 802.11-24/1613r8, the current SFD, which includes updates according to the motion passed during the May meeting.

C: Typo in 3.6, should be "logical"

C: MM-19, check text.

C: There are multiple trigger frame motions in the uplink part, they should be in the frame format section.

A: Put them there as they also describe behavior.

Q: AMP PHY, sub-1GHz will be there. How will we organize this? Will there be separate sections?

A: Might depend on the design. If it is substantial different, it will be its own section.

Q: Everything is in clause 4?

A: Yes.

Q: There will be substantial differences. There should be different sections under chapter 4.

C: There are hardware differences between sub-1GHz and 2.4GHz.

C: In the proposed specification skeleton the trigger frame is also in the frame format section.

Q: Did you already get the clause number assigned?

A: Yes. TGbp has clauses assigned. 39 for MAC, 40 for PHY.

The chair announces that there will be a motion on the updated SFD at the beginning of the next face-to-face meeting.

## Specification draft skeleton introduction

Yinan Qi (OPPO) presents document IEEE 802.11-25/0614r2, "Proposed Specification Skeleton for TGbp".

C: Frame format section titles, it should be "AMP ..." to distinguish them from the baseline frame format.

C: Same section. We should follow the WUR writing style.

Q: We discussed at least 4 different use cases. There are no corresponding sections. For example, in 11ba, there is a wake-up operation section. Shall we add one sub-clause for each of the possible modes of operation.

A: Currently MAC is organized by technical topic. E.g., UHF RFID logic interface support – this is only for backscattering.

Q: We already know the different modes. A section should descibe how each mode operates.

A: Shall we leave this to the POC?

Q: We might have a unified section for each topic (e.g., channel access), and then clarify the operation for each mode in a dedicated section.

C: From MAC point-of-view, different modes may share types of operation. Channel access might not be unique for one point of operation.

C: Suggestion to have an additional section, (e.g. 39.10) that describes special settings for the different modes.

C: Suggest having sync field sections for each mode, as motioned.

C: Backscatter signal processing should have a PHY section, as it's very different to legacy mode of operation.

C: Expect to have WPT PHY-layer motions, they should be put somewhere.

Yinan will update to a r3 based on the discussion.

## Specification Text Topics and Volunteers

Yinan Qi (OPPO) presents document IEEE 802.11-25/0613r2.

Q: Can we add AMP sub-1G as PHY topic?

A: Need to modify spec skeleton first for this, and we don't have a specific design yet. If we have further motions related to sub-1GHz agreed, then we will insert a new subclause.

Q: Text (and thus table) should be for the skeleton, not for the SFD. Thus the table should be organized by the skeleton format.

C: As long as there's a 1-to-1 mapping from the SFD topic to the skeleton topic it does not matter.

SP on the discussion: It is proposed to use Skeleton to assign POC and TTT for Draft 0.1 of the 802.11bp specification.

Y: 14; N: 4; A: 5

Clarification: SP is just for information, no decision. It's up to the editor to take the result into account and decide to adapt the table.

Chair presents IEEE 802.11-25/0989r1, slide 17, Principles for the PDT development to generate 11bp D0.1.

## Adjourn

The chair announces the session adjourned at 11:55 EDT.

Next telephone conference will be on June 17th.

## Attendance

Zhou, Lei New H3C Technologies Co., Limited

Bajaj, Ian Huawei International Pte Ltd

Bao, Zhanjing TCL

Ben Arie, Yaron Huawei

Bower, Patricia HaiLa Technologies, Inc

Chen, You-Wei MediaTek Inc.

Chitrakar, Rojan Huawei International Pte Ltd

Costa, D.Nelson HaiLa Technologies

Cui, Yaoshen TP-Link Systems Inc.

Amtmann, Franz NXP Semiconductors

Kalamkar, Sanket Qualcomm Technologies, Inc.

Max, Sebastian Ericsson AB

McCann, Stephen Huawei Technologies Co., Ltd

Namvar, Nima Charter Communications

Regev, Dror Huawei

Sanderovich, Amichai Wiliot

Shellhammer, Stephen Qualcomm Incorporated

Silverman, Matt Cisco Systems, Inc.

Sun, Bo Sanechips Technology Co., Ltd

Li, Jialing Qualcomm Incorporated; Qualcomm Technologies, Inc

Trainin, Solomon Wiliot

# Tuesday, June 17 2025, 10:00am - 12:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0989r1).

* Chair calls the meeting to order at 10:00 EDT.
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* Chair reviews the meeting rules and patent policy (slides 2-6).
* No response to the call for patents.
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* Chair reviews other Guidelines, Participation, Suggested Best Practices (slides 9-10).
* Chair reviews the current TGbp session submission list (slide 11-13), the teleconference plan (slide 14).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0989r1 (slide 16).

* + Call meeting to order and remind the group to record attendance on imat.ieee.org
	+ IEEE-SA IPR policies and meeting rules
	+ Approve meeting agenda
	+ Spec draft skeleton review and PoC/TTT assignment
	+ Tech contribution discussion
		- 11-25/0917, multiple TXOP discussion, Liwei Chu (NXP)
		- 11-25/1002, Comparison between FEC/no-FEC for UL of active TX AMP STA, Amichai Sanderovich (Wiliot)
	+ Any other business?
	+ Recess

Chair calls for approval of the agenda of the TGbp session.

No objection, agenda approved.

## Spec draft skeleton review and PoC/TTT assignment

Yinan Qi (OPPO) presents document IEEE 802.11-25/1613r9, the current Specification Framework Document (SFD), with focus on the updates according to the comments received in the last telephone conference.

C: Dates in the header / table needs to be updated.

Yinan Qi (OPPO) presents document IEEE 802.11-25/0614r3 with focus on the updates according to the comments received in the last telephone conference.

C: Title of 9.10 should reflect that it is only for AMP.

Yinan Qi (OPPO) presents document IEEE 802.11-24/0613r4.

Chair clarifies the role of the POC.

Yinan goes through the document and the groups discusses and decides on the POCs of the different SFD topics.

Chair clarifies that PDTs may come in as contributions starting from the July meeting.

## Technical Contributions

### Presentation of IEEE 802.11-25/0917, multiple TXOP discussion, Liwei Chu (NXP)

Q: Slide 6. It uses the RFID approach, optimized for backscatter. It might be tricky for other modes, where devices have less energy.

A: Different use cases may need different frames, with optional fields.

Q: There is no ACK for the EPC.

A: All frames are solicited by the reader. Reader will know if the transmission is correct or not; if not, it will poll again. An ACK would waste the medium time. It is similar to polling the buffer status in 11ax; there, also no ACK is required.

Q: What about privacy concerns, if the EPC never changes?

A: For differen device types we will have different security requirements.

Q: Slide 6. In the random trigger, do you assume contention?

A: Yes.

Q: Do you think there will be enough time in the TXOP for both random access and unidirectional polling?

A: Yes.

Q: How long do you think the random phase will be?

A: The trigger frame can allocate one or more slots.

C: I would like to see some numbers for duration assumptions / timings.

Q: Slide 12. Tag can record the reader id?

A: Yes, that understanding is correct. The frame contains the reader id as TA.

Q: Tag may not be able to carry information from one to the next TXOP. So how does it remember the reader id?

A: It must remember that it has sent a response, so the flag.

Q: Proposal tries to re-use the methods from RFID. If RN16 is used, the probability of collision is low. Similar, as the session id in UHF RFID, which must be persisted for at least 2s.

A: We considered using this mechanism.

## Adjourn

The chair announces the session adjourned at 11:56 EDT.

Next telephone conference will be on July 8th.

## Attendance

 Zhou, Lei New H3C Technologies Co., Limited

 Sun, Bo Sanechips Technology Co., Ltd

 Hasabelnaby, Mahmoud Huawei Technologies Canada; Huawei Technologie...

 Chen, You-Wei MediaTek Inc.

 Silverman, Matt Cisco Systems, Inc.

 CHEN, JIANQIANG ZTE Corporation

 Chu, Liwen NXP

 Li, Panpan Huawei Technologies Co., Ltd

 Chitrakar, Rojan Huawei International Pte Ltd

 Amtmann, Franz NXP Semiconductors

 Taori, Rakesh Infineon Technologies

 Kalamkar, Sanket Qualcomm Technologies, Inc.

 Ben Arie, Yaron Huawei

 Campiglio, Ugo Cisco Systems, Inc

 Dunna, Manideep Qualcomm

 Li, Jialing Qualcomm Incorporated; Qualcomm Technologies, Inc

 Wilhelmsson, Leif Ericsson AB

 Bajaj, Ian Huawei International Pte Ltd

 Trainin, Solomon Wiliot

 Shellhammer, Stephen Qualcomm Incorporated

 McCann, Stephen Huawei Technologies Co., Ltd

 Max, Sebastian Ericsson AB

 Costa, D.Nelson HaiLa Technologies

 Qi, Yinan Guangdong OPPO Mobile Telecommunications Corp....

 Bao, Zhanjing TCL

 Ke, Wang Guangdong OPPO Mobile Telecommunications Corp....

 Liu, Lumin Huawei Technologies Co., Ltd

 Sanderovich, Amichai Wiliot

# Tuesday, July 08 2025, 10:00am - 12:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0989r3).

* Chair calls the meeting to order at 10:00 EDT.
* Chair instructs members to record attendance in IMAT.
* Chair reviews the meeting rules and patent policy (slides 2-6).
* No response to the call for patents.
* Chair reviews IEEE-SA COPYRIGHT POLICY (slides 7-8)
* Chair reviews other Guidelines, Participation, Suggested Best Practices (slides 9-10).
* Chair reviews the current TGbp session submission list (slide 11-13), the teleconference plan (slide 14).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0989r3 (slide 21).

* + Call meeting to order and remind the group to record attendance on imat.ieee.org
	+ IEEE-SA IPR policies and meeting rules
	+ Approve meeting agenda
	+ PoC/TTT assignment (cont.)
	+ Tech contribution discussion
		- 11-25/0776, AMP frames follow up, Alfred Asterjadhi (Qualcomm)
		- 11-25/0918, Frame format discussion, Liwei Chu (NXP)
		- 11-25/1102, AMP Frame format, Rojan Chitrakar (Huawei)
		- 11-25/1028, Uplink BPSK Modulation for AMP Backscatter, Yuxiao Hou (TP-Link System Inc.)
		- 11-25/1086, Low-Complexity Provisioning Methods for Low-Complexity Secure AMP Communications Follow Up, Hui Luo (Infineon)
	+ Any other business?
	+ Recess

Chair calls for approval of the agenda of the TGbp session.

No objection, agenda approved.

## PoC/TTT assignment (cont.)

Yinan Qi (OPPO) presents document IEEE 802.11-24/0613r4. The group discusses the remaining three PoC assignments.

## Technical Contributions

### Presentation of IEEE 802.11-25/0776, AMP frames follow up, Alfred Asterjadhi (Qualcomm)

Q: Slide 5. 64 octets. Can we still do multiple slots per TXOP with frames of this length?

A: Duration of slots is determined by AP. Need to be careful with the slot assignment. Can be maximum length of AMP UL frame, or the AP dictates the length and the STA adjusts.

Q: Slide 4. AMP frame type follows WUR. WUR already has 5 frame types defined. Need to have room for more frame types.

A: Details not yet decided, types might not be inherited. May not need the WUR beacon, for example.

Q: Ack might not be needed for some use cases.

A: Ack is sent dependent on the functionality. If the frame does not require an Ack reply, it is not sent.

Q: We might need a response frame for the reader reading information from the tag.

Q: Max. frame size is 64B, is 16b FCS needed? Maybe 8b or less is recommended.

A: Things should be simple. Different length CRCs may be too complex.

Q: Seems there are some fields that we don't need.

A: So, the ACK only contains Frame control, Id, Type, and CRC? Then the CRC only checks if the type is correct or not.

Q: Agree with previous speaker. Every bit counts. 192µs is only the frame size without preamble. In total will be 256µs.

A: Agree with optimization on bits but also need to be careful not to make receiver too complex (e.g. by dynamic FCS size). Also check in some cases a 0µs PSDU airtime (just the header) might be sufficient.

### Presentation of IEEE 802.11-25/0918, Frame format discussion, Liwei Chu (NXP)

Q: TA might not be needed in certain cases? Is that for certain types?

A: For backscatter, TA is only useful for one TXOP. Tag cannot maintain it for longer.

C: Also, regarding not needing an ACK, I agree that it is not needed in some use cases.

Q: Slide 8. RF-Select command?

A: Might not be needed for the very short distances.

### Presentation of IEEE 802. 11-25/1102, AMP Frame format, Rojan Chitrakar (Huawei)

C: In WUR MAC header is not constant. We defined constant-length frames to simplify the receiver.

C: CRC-8 is already used in baseline, SIG-B for example.

C: Up to 256 octetts payload. Are there use cases for this? The larger the payload, the higher the requirements for the transmitter and receiver. Large payload will use mainstream Wi-Fi.

A: Large frame may be relevant for the 4Mb/s mode, where it takes 544µs. Don't want to restrict capability, unless we want to reduce by 2b in the header.

Q: Slide 7. ACW field?

A: Contains parameters for the random access phase. More details are in a follow-up presentations, left out here.

## Adjourn

The chair announces the session adjourned at 12:00 EDT. Next meeting will be during the IEEE 802 plenary session starting from 2025-07-27.

## Attendance

Cui, Yaoshen TP-Link Systems Inc.

Silverman, Matt Cisco Systems, Inc.

Kalamkar, Sanket Qualcomm Technologies, Inc.

Hasabelnaby, Mahmoud Huawei Technologies Canada; Huawei Technologie...

Dunna, Manideep Qualcomm

Ke, Wang Guangdong OPPO Mobile Telecommunications Corp....

Fang, Juan intel

Nishat, Muhammad Kamran HaiLa Technologies

Hou, Justin TP-Link System Inc.

Sun, Bo Sanechips Technology Co., Ltd

Shellhammer, Stephen Qualcomm Incorporated

Li, Jialing Qualcomm Incorporated; Qualcomm Technologies, Inc

Li, Panpan Huawei Technologies Co., Ltd

He, Chuanfeng Beijing OPPO telecommunications corp., ltd

Qi, Yinan Guangdong OPPO Mobile Telecommunications Corp....

Jeffries, Timothy Futurewei Technologies

Max, Sebastian Ericsson AB

Campiglio, Ugo Cisco Systems, Inc

Bajaj, Ian Huawei International Pte Ltd