IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGbp Ambient Power Communication  Teleconference Minutes February & March 2025 | | | | |
| Date: 2025-03-06 | | | | |
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Abstract

This document contains the IEEE 802.11 TGbp minutes for the teleconferences in February and March 2025.

Rev 0: Minutes for the IEEE 802.11 TGbp teleconference on 2025-02-11 added

Rev 1: Minutes for the IEEE 802.11 TGbp teleconference on 2025-02-25 added

Rev 2: Minutes for the IEEE 802.11 TGbp teleconference on 2025-03-04 added

Rev 3: Added attendees of the last two teleconferences

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, February 11 2025, 09:00am - 11:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0227r0).

* Chair calls the meeting to order at 09:00 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&12), and the meeting agenda for the telephone conference (slide 15).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0227r0 (slide 15).

* + 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 (11-24/1613r4)
  + Contribution discussion
    - ~~11-25/0096, Active AMP STA polling procedure, Liwen Chu (NXP)~~
  + Any other business?
  + Recess

Presenter of 11-25/0096 not present on the call.

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

No objection, agenda approved.

## Review of the updated SFD (11-24/1613r4)

Yinan Qi (OPPO) presents document IEEE 802.11-24/1613r4, which includes updates according to the motions passed during the January meeting.

Q: Section Definitions. Only AM-2 should be in the definitions section. AM-1 is for architecture, AM-3 in WPT section. Both are not definitions, but functionality.

A: Agree that these are not strictly definitions. But they are closely related to architecture.

Q: Suggest moving to "Architecture feature".

C: SFD is still taking shape. We can still shuffle things around. In the interest of moving forward let's keep them here.

C: Suggest moving AM-1 and AM-3 to "Architecture Feature"

C: SFD text will not map exactly to the specification text. The corresponding text may end up in different sections later.

## Adjourn

The chair announces the session adjourned at 10:31 EDT.

Next telephone conference will be on February 25th.

## List of Attendees

Timestamp Name Affiliation

02/11/2025 Wilhelmsson, Leif Ericsson AB

02/11/2025 Ben Arie, Yaron Huawei

02/11/2025 Trainin, Solomon Wiliot

02/11/2025 Ha, Taeyoung Samsung Electronics Co., Ltd.

02/11/2025 Sun, Bo Sanechips Technology Co., Ltd.

02/11/2025 Bower, Patricia HaiLa Technologies, Inc

02/11/2025 Qi, Yinan Guangdong OPPO Mobile Telecommunications Corp....

02/11/2025 Campiglio, Ugo Cisco Systems, Inc

02/11/2025 McCann, Stephen Huawei Technologies Co., Ltd

02/11/2025 Max, Sebastian Ericsson AB

02/11/2025 Costa, D.Nelson HaiLa Technologies

02/11/2025 Choi, JinHo SAMSUNG ELECTRONICS

02/11/2025 Kezys, Vytas HaiLa Technologies

# Tuesday, February 25 2025, 09:00am - 11:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0227r1).

* Chair calls the meeting to order at 09:00 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&12), and the meeting agenda for the telephone conference (slide 17).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0227r1 (slide 17).

* + 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
  + Contribution discussion
    - ~~11-25/0096, Active AMP STA polling procedure, Liwen Chu (NXP)~~
    - 11-25/0252, Slotted vs Pure Aloha for Active Transmitter AMP Use Cases, Amichai Sanderovich (Wiliot)
  + Any other business?
  + Recess

Presenter of 11-25/0096 not present on the call.

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

No objection, agenda approved.

## Contributions

Presentation of IEEE 802.11-25/0252, Slotted vs Pure Aloha for Active Transmitter AMP Use Cases, Amichai Sanderovich (Wiliot)

Q: We do not see impact of collisions in Aloha.

A: We do see ACK causes more collisions in slotted Aloha.

Q: So slot duration affects the efficiency.

A: The slot indication includes the slot duration.

Q: Slide 5, given the number of interfering Tags is the same. We would expect the pure Aloha would have more collisions.

A: it comes from the slotted Aloha only has 20 opportunities to TX, while there are 31 opportunities for slotted Aloha. We see there are more collisions with Aloha, which make the overall efficiency approximately the same. Would like to see others confirm our simulation.

Q: What does the success rate mean?

A: It’s the number of successful communications over the time.

Q: The maximum clock drift during the TXOP, we could add a guard time and then drop the Slot Indication transmissions. Would that improve the efficiency of the slotted Aloha.

A: Removing Slot Indication will reduce overhead. We assume 10,000 PPM clock. Do not want to have a high frequency clock.

Q: Slide 8, please explain the # TXOP.

A: The total time is #TXOP time the TXOP time.

Q: please explain the number of success reads. Why is there less than 100% success reads.

A: Its an artifact of simulation since we stop the simulation at some time. The effect is small.

Q: Why did you choose isotropic deployment I Slide 7?

A: It was for simplicity of the simulation.

C: Other deployments might make sense to consider.

Q: Can we assume in pure Aloha can also hear the ACKs to other STAs?

A: Good point, it is a design consideration. They can also hear an ACK on a different channel. We are open to studying that.

Q: I assume the slot indication are needed.

A: Slot indications are used for synchronization and can also be used to indicate the slot duration. In these simulations we used fixed slot durations.

Q: For a fixed slot time and TXOP = 3.8ms, If you get 1% clock accuracy, you can do without slot indication, is that correct?

A: I need to do the calculations.

## Adjourn

The chair announces the session adjourned at 10:15 EDT.

Next telephone conference will be on March 4th.

## List of Attendees

Timestamp Name Affiliation

02/25/2025 Ben Arie, Yaron Huawei

02/25/2025 Amtmann, Franz NXP Semiconductors

02/25/2025 Bajaj, Ian Huawei International Pte. Ltd.

02/25/2025 Nishat, Muhammad Kamran HaiLa Technologies Inc.

02/25/2025 Kain, Carl Noblis, Inc.; USDoT

02/25/2025 Kalamkar, Sanket Qualcomm Technologies, Inc.

02/25/2025 Robert, Joerg FAU Erlangen-Nuernberg / Fraunhofer IIS

02/25/2025 Sanderovich, Amichai Wiliot

02/25/2025 Shellhammer, Stephen Qualcomm Incorporated

02/25/2025 Sun, Bo Sanechips Technology Co., Ltd.

02/25/2025 Trainin, Solomon Wiliot

02/25/2025 Wilhelmsson, Leif Ericsson AB

02/25/2025 Zhong, Ke Ruijie Networks Co.,Ltd.

02/25/2025 Zhou, Lei H3C Technologies Co., Limited

02/25/2025 Campiglio, Ugo Cisco Systems, Inc

02/25/2025 Halasz, David Morse Micro

# Tuesday, March 04 2025, 09:00am - 11:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-25/0227r2).

* Chair calls the meeting to order at 09:00 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&12), and the meeting agenda for the telephone conference (slide 17).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-25-0227r2 (slide 19).

* + 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
  + Contribution discussion
    - ~~11-25/0096, Active AMP STA polling procedure, Liwen Chu (NXP)~~
    - 11-25/0267, SFD Review for Long-Range Backscatter, Nelson Costa (Haila)
    - 11-25/0285, SP Timing Synchronization with AMP Beacon, Ian Bajaj (Huawei)
  + Any other business?
  + Recess

Presenter of 11-25/0096 not present on the call.

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

No objection, agenda approved.

## Contributions

Presentation of IEEE 802.11-25/0267, SFD Review for Long-Range Backscatter, Nelson Costa (Haila)

Chair explains that SFD development and development on draft 0.1 will go along in parallel. Only draft 1.0 should be technically complete, but until then there is time to work on the SFD.

Presentation of IEEE 802.11-25/0285, SP Timing Synchronization with AMP Beacon, Ian Bajaj (Huawei)

Q: Slide 7. On "Type Dependen". How many types do you have?

A: Valid point. Maybe here it is not necessary. The bits may depent on the type of the AMP frame, we might have 4b / 16 types of frames.

Q: How does the device know the OSP id to associate / attach?

A: The AMP non-AP STA might not even be associated, or there is no association procedure at all. The AP may have several OSPs, with different parameters, e.g. different intervals. This information is included in the beacon frame. The AMP non-AP STA chooses to wake up at the AMP OSP.

Q: How does the AMP non-AP STA choose which OSP to use?

A: OSP is not intended for initial setup, it is for known AMP non-AP STA to enable long sleep durations.

Q: Do you assume triggered access?

A: Yes. The OSP starts with a trigger sent by the AP. This is expected by the AMP non-AP STA.

Q: Still don't understand how the access during the OSP is managed for multiple AMP non-AP STAs.

A: This will be detailed by a different contribution from a colleague. The scope here is only for the establishment of the OSP, and how to handle clock drift.

Q: Applies to active tx devices. Does this also apply to backscatter devices?

A: Also for backscatter devices the AP may setup the OSP, but this is transparent to the backscatter AMP non-AP STAs, they only wait for the excitation.

C: May be interesting to have numerical examples for different sleep cycles.

A: Agree, will include some more information.

Q: What is the expected AMP beacon interval?

A: Beacon interval should match the minimum wake duration. This depends on the capacitor / capability of the AMP non-AP STA to stay awake.

Q: Does every AMP non-AP STA need to awake at the start of the OSP?

A: There might be different OSPs with different intervals. This information is broadcasted in the beacons.

Q: Is the assumption that energy harvesting goes on always in the background, or only during the excitation signal?

A: For backscatter STA the excitation will be at the start of the OSP. For active tx non-AP STA the assumption is that there's a capacitor that is charged with enough capacity for channel sensing, reception and transmission of a frame.

Q: So the non-AP STA is constantly charging using WPT?

A: There are different approaches by different contributions. The WPT may be aligned with the OSP, such that the non-AP STA is charged before each OSP.

Q: On the SP advert count. What about new non-AP STAs, how do they get the SP advert count, if the TSF is not in every beacon?

A: SP advert count is only to handle drift of the clock. The AMP beacon can also carry the OSP parameters.

Q: So there's still a TSF?

A: No. The clock drift is only corrected by the difference between the beacons. The start of the OSP is not known to a new STA.

## Adjourn

The chair announces the session adjourned at 10:12 EDT.

Next meeting of TGbp will be during the IEEE 802.11 meeting starting from March 10th.

## List of Attendees

Timestamp Name Affiliation

03/04/2025 Campiglio, Ugo Cisco Systems, Inc

03/04/2025 Bower, Patricia HaiLa Technologies, Inc

03/04/2025 Bajaj, Ian Huawei International Pte. Ltd.

03/04/2025 Amtmann, Franz NXP Semiconductors

03/04/2025 Chen, You-Wei MediaTek Inc.

03/04/2025 Choi, JinHo SAMSUNG ELECTRONICS

03/04/2025 Kalamkar, Sanket Qualcomm Technologies, Inc.

03/04/2025 Ha, Taeyoung Samsung Electronics Co., Ltd.

03/04/2025 Kain, Carl Noblis, Inc.; USDoT

03/04/2025 Max, Sebastian Ericsson AB

03/04/2025 Nishat, Muhammad Kamran HaiLa Technologies Inc.

03/04/2025 Pettersson, Charlie Ericsson AB

03/04/2025 Qi, Yinan Guangdong OPPO Mobile Telecommunications Corp....

03/04/2025 Rosdahl, Jon Qualcomm Technologies, Inc.

03/04/2025 Shellhammer, Stephen Qualcomm Incorporated

03/04/2025 Sun, Bo Sanechips Technology Co., Ltd.

03/04/2025 Trainin, Solomon Wiliot

03/04/2025 Zhou, Lei H3C Technologies Co., Limited

03/04/2025 Costa, D.Nelson HaiLa Technologies