IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGbp Ambient Power Communication  Teleconference Minutes January 2025 | | | | |
| Date: 2025-01-07 | | | | |
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Abstract

This document contains the IEEE 802.11 TGbp minutes for the teleconferences in Januar 2025.

Rev 0: Minutes for the IEEE 802.11 TGbp teleconference on 2024-01-07 added

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, January 07 2025, 09:00am - 11:00am (EDT)

## Opening

The TG Chair, Bo Son (Sanechips), presents the TG bp meeting agenda slides (IEEE 802.11-24/1996r3).

* 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 11-16), and the meeting agenda for the telephone conference (slide 18).

## Agenda

Chair presents the agenda of the session: https://mentor.ieee.org/802.11/dcn/24/11-24-1996r3 (slide 18).

* + 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
  + Report of updated FRD and SFD
  + Contribution discussion (Sec and Functional Requirements)
    - ~~11-24/1916, Recap of Compact Secure Transaction Methods for AMP, Hui Luo (Infineon)~~
    - 11-24/1998, Secure Transaction Methods with Low Computation Complexity for AMP Devices, Hui Luo (Infineon)
    - 11-25/0010r0, Discussion on amp energizer: function and operation frequency, Yinan Qi (OPPO)
    - 11-24/2115, Long Range Backscatter Use Case, Nelson Costa (Haila Technologies)
  + Any other business?
  + Recess

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

11-24/1916 is deferred to the f2f meeting.

No objection, agenda approved.

## Contributions

### Presentation of IEEE 802.11-24/1998, Secure Transaction Methods with Low Computation Complexity for AMP Devices, Hui Luo (Infineon)

Q: Slide 4. How does the device know the P?

A: Assume it's pre-configured, as the ambient device is very simple here. It is hard-coded.

Q: Is it hard-coded in the device or configured by the user? In the first case any person can obtain P.

A: We assume that after deployment the P cannot be easily changed. Ambient device has no volatile memory. The configuration could happen beforehand in a wired setting, which includes setting P. Afterwards it would be static.

Q: The ambient device is authenticated by the reader, but not the other way around?

A: Correct. Ambient device is a single-purpose read-only device. There is no DL encyption and authentication.

Q: Slide 4, first message. What kind of frame is this?

A: I'm not a PHY expert. There should be a DL frame that includes excitement / wake-up. If the size allows (see slide 4) this can be combined with the first message.

Q: Is it possible to use a trigger frame?

A: Yes, this could be possible.

### Presentation of IEEE 802.11-25/0010r0, Discussion on amp energizer: function and operation frequency, Yinan Qi (OPPO)

C: Slide 9. To transmit a PPDU, the energizer needs a PHY. This needs to be clarified.

C: Slide 9. For many applications the AP will know the UL payload size, as it has a pre-defined length. For a backscatterer is should be known.

A: Exitation duration also relies on transmission rate, not only on payload size.

C: Exitation length should consider the worst-case transmission rate.

Q: Slide 9. Challenging to have portions of the PPDU send by the AP and by the energizer. Hard to be perfectly timed.

A: Agree, perfect sync is needed.

Q: In the deployment it can be beneficial to have more energizers than APs. But do we really need more than one device?

A: For close-range backscattering it's only one device. For longer ranges it might be beneficial to use bi-static backscattering.

Q: What is the mentioned "Wake-Up" function?

A: Devices with energy harvesting capability can be woken up.

Q: But if they are sleeping they cannot be woken up. If it's active transmission they might not have any energy.

A: Wake-up is for AMP-assisted device.

Q: Wake-up signal is sent by the energizer, why?

A: Both can send out the wake-up signal.

### Presentation of IEEE 802.11-24/2115, Long Range Backscatter Use Case, Nelson Costa (Haila Technologies)

Q: How can monostatic reach >1m distance? And how is the short range vs. long range defined? Maybe it should not be a part of the specification?

A: We can do up to 6m mono-static backscatter with existing of-the-shelve Wi-Fi devices.

A: Our goal is not to define ranges. We try to introduce features for longer ranges. Currently that does not show up in the SFD.

C: Probably with frequency-shifting monostatic can do more than 20cm, agree.

Q: Can you explain why OOK results in a loss of range?

A: OOK waves half of the waveform. Without waveform, there's no energy on the air. With BSPK1/2 more energy is reflected back.

Q: Is there are trade-off?

A: Yes. OOK provides for a much simpler receiver architecture. Also the modulator becomes much simpler for the UL. BPSK backscatters all energy, this drains the energy storage quicker. For OOK-backscatter half of the energy can be stored.

## Adjourn

The chair announces the session adjourned at 10:50 EDT.

Next hybrid (face to face & online) session will be the IEEE 802 wireless interim meeting starting from January 13th.

## List of Attendees

Breakout Timestamp Name Affiliation

TGbp 01/07/2025 Qi, Yinan Guangdong OPPO Mobile Telecommunications Corp....

TGbp 01/07/2025 ouzane, riadh IMU, VESTEL

TGbp 01/07/2025 Beg, Chris Cognitive Systems Corp.

TGbp 01/07/2025 Kalamkar, Sanket Qualcomm Technologies, Inc.

TGbp 01/07/2025 Kain, Carl Noblis, Inc.; USDoT

TGbp 01/07/2025 Regev, Dror Huawei

TGbp 01/07/2025 Shellhammer, Stephen Qualcomm Incorporated

TGbp 01/07/2025 McCann, Stephen Huawei Technologies Co., Ltd

TGbp 01/07/2025 Bajaj, Ian Huawei International Pte. Ltd.

TGbp 01/07/2025 Sun, Bo Sanechips Technology Co., Ltd.

TGbp 01/07/2025 Costa, D.Nelson HaiLa Technologies

TGbp 01/07/2025 Trainin, Solomon Wiliot

TGbp 01/07/2025 Max, Sebastian Ericsson AB

TGbp 01/07/2025 Wilhelmsson, Leif Ericsson AB

TGbp 01/07/2025 Chen, You-Wei MediaTek Inc.

TGbp 01/07/2025 Zhong, Ke Ruijie Networks Co.,Ltd.

TGbp 01/07/2025 Bao, Zhanjing TCL

TGbp 01/07/2025 Campiglio, Ugo Cisco Systems, Inc

TGbp 01/07/2025 Choi, JinHo SAMSUNG ELECTRONICS

TGbp 01/07/2025 Zhou, Lei H3C Technologies Co., Limited