IEEE P802.11
Wireless LANs

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| 802.11 AMP TIG Session minutes for February 2023 IEEE Teleconferences  |
| Date: 2023-2-7 |
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Abstract

This document includes minutes of AMP TIG Sessions of February 2023 IEEE 802 Teleconferences.

Version Tracking:

R0: Creating the minutes, February 7th.

R1: Adding the minutes for the second TC, February 28th.

# Tuesday 7 February 2023 @ 9:00-11:00 am ET

## Opening (IEEE 802.11-23/ 0171 r1)

* 1. Call to order 9:00 am ET.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy and meeting rules (slides 2-8).
	4. No response to the call for patents.
	5. Chair introduced IEEE-SA COPYRIGHT POLICY (slides 9-10)
	6. Chair reviewed other Guidelines, Participation and Guideline for Straw Polls (slides 11-13).
	7. Chair reviewed current AMP TIG Session submission list (slides 14).
	8. Zhisong Zuo is executive secretary.
	9. Chair call for approval of the agenda of the AMP session.

## Agenda (IEEE 802.11-23/ 0171 r1)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/23/11-23-0171-01-0amp-amp-tig-tc-agenda-for-feb-2023.pptx. (slide 19)
		+ Call meeting to order and remind the group to record attendance on imat.ieee.org
		+ IEEE-SA IPR policies and meeting rules
		+ Approval of agenda
		+ Call for comments to tech report draft (11-22/1562r5)
		+ Contribution presentation and discussion

11-23/0173r0 Discussion on examplary AMP use scenarios for S1G Yinan Qi (OPPO)

11-22/1960r4, Summary and recommendation for AMP IoT, Yinan Qi (OPPO)

11-23/0197r0, Proposal for "Polished" SG Scope, Joerg Robert (TU Ilmenau / Fraunhofer IIS)

11-23/0198r0, Open Issues in TIG Report, Joerg Robert (TU Ilmenau / Fraunhofer IIS)

11-23/0063r1, Proposal for consensus straw poll, Weijie Xu (OPPO)

* + - AMP TIG report to WG draft
		- Any other business?
		- Adjourn
	1. No objection, Agenda approved.

## Contribution discussion

* 1. Presentation of IEEE 802. 11-23/0173r0, Discussion on examplary AMP use scenarios for S1G, by Yinan Qi (OPPO):

Q(uestion): Is this tech used for both transmitting and backscattering.

A(nswer): Yes, can be for both.

Q(uestion): The China regulation will allow that S1G operation?

A(nswer): We cannot predict the regulation

Q(uestion): Do you think the regulation will restrict the 802.11ah be used in China.

A(nswer): We generally think the sub1G in China is in 900MHz. 250Hz bandwidth and occupation time. Those may not allow 11ah.

* 1. Presentation of IEEE 802. 11-22/1960r4, Summary and recommendation for AMP IoT, by Yinan Qi (OPPO)

Q(uestion): We agree the statement in slide 5, that “reuse” is very important. In slide 17 we should show the strong link for WiFi with the backscattering and what we will do in the study scope.

A(nswer): Yes

Q(uestion): Do you want to simply reuse the infrastructure of 802.11?

A(nswer): We need to do some enhancement to 802.11 to support AMP. In some blank area, this is total new market and can have something more enhanced.

Q(uestion): The simplify the scheme seems only support some specific tech like OOK/FSK.

A(nswer): No, we actually could consider more in. The next paper by Joerg may shows how we can do that.

* 1. Presentation of IEEE 802.11-23/0197r0, Proposal for "Polished" SG Scope, by Joerg Robert (TU Ilmenau / Fraunhofer IIS)

 Q(uestion): The slide 5, the DSSS proposal seems to be the only modulation. For OPPO, we start with some simple modulation is due low complexity/power. But OPPO don’t exclude DSSS. Those can be part of scope.

A(nswer): We agree that can be discussed. Our proposal is also not excluding OOK and others.

Q(uestion): We think the AMP should consider general requirement as it support both 2.4GHz, and S1G. All those potential scheme can be discussed in the study.

A(nswer): We can agree that suggest.

Q(uestion): DL can use the existing signal. For UL, it actually have modification by phase shifting. Then there need some changes in the existing signal.

A(nswer): Agree

Q(uestion): In WUS/WUR, the bit is modulated in to symbols. But it is not clear that the WUS modulation is DSSS or other. As the Helia said, the UL actually use other modulation like PSK. We see TIG at least discuss use cases, requirement. The study phase can actually consider the different technologies.

A(nswer): Agree, the point is how we start from the 802.11 ecosystem in the study.

Q(uestion): In AMP, we considered many different modulation for low power. Others like BPSK can be discussed.

A(nswer): We should avoid complicate scheme like OFDM. I agree.

C(omment): The Vytas scheme is based the DL DSSS. The Tag does not change the Waveform and only change the phase in backscattering.

C(omment): The waveform can be discussed in the study phase.

C(omment): For DL, using WUS is quite reasonable for AMP.

* 1. Presentation of IEEE 802. 11-23/0198r0, Open Issues in TIG Report, by Joerg Robert (TU Ilmenau / Fraunhofer IIS)

Q(uestion): Power sourcing should be not be studied in the study phase. Also, many power sources other than radio power are available. It can be mentioned in the technical report, but power sourcing should not be standardized.

A(nswer): Yes, that is not the target of studying AMP IoT. But it may help for the technical solutions. It may help to decide the selection of waveforms and transmitters.

Q(uestion): Power of device can be far less than the example (10w). Some previous heatmap results has shown it is possible to achieve good coverage. Also, the normal WiFi devices can be lower as 23dBm.

A(nswer): We are not sure for that. The point is we need to take that consideration into the study.

Q(uestion): Can you give full list of those regulation limits to be considered in the AMP study?

A(nswer): I will try to find the full list for the next meeting. May be some others with expertise can also do that.

Q(uestion): The back scattering may have some problem as you state. But it may not be the only candidate of solution. The power source can be varied like solar and others. The duty cycle for AMP Tag can allow some storage and that will not require higher power energizer.

A(nswer): But we should study those issues.

C(omment): The power coverage is feasible by collaborative transmission as show in demo (Vytas, HaiLa)

C(omment): We have shown in our demo (Willot), that we don’t need as much as 40dBm TX power.

* 1. Quick reviewing of IEEE 802.11-23/xxxx, draft TIG Report for AMP to WG, by Bo Sun (Sanechips).

# Tuesday 28 February 2023 @ 9:00-11:00 am ET

## Opening (IEEE 802.11-23/ 0171 r3)

* 1. Call to order 9:00 am ET.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy and meeting rules (slides 2-8).
	4. No response to the call for patents.
	5. Chair introduced IEEE-SA COPYRIGHT POLICY (slides 9-10)
	6. Chair reviewed other Guidelines, Participation and Guideline for Straw Polls (slides 11-13).
	7. Chair reviewed current AMP TIG Session submission list (slides 14).
	8. Zhisong Zuo is executive secretary.
	9. Chair call for approval of the agenda of the AMP session.

## Agenda (IEEE 802.11-23/ 0171 r3)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/23/11-23-0171-01-0amp-amp-tig-tc-agenda-for-feb-2023.pptx. (slide 18)
		+ Call meeting to order and remind the group to record attendance on imat.ieee.org
		+ IEEE-SA IPR policies and meeting rules
		+ Approval of agenda
		+ Contribution presentation and discussion

11-23/0213r0, Suggested addition to 22/1960 Summary and recommendation for AMP IoT, Amichai Sanderovich (Wiliot)

11-23/0251r0, Technical solution to full duplex problem, Joerg Robert (TU Ilmenau / Fraunhofer IIS)

11-22/1562r7, Draft technical report on support of AMP IoT devices in WLAN, Weijie Xu (OPPO)

11-23/0063r3, Proposal for consensus straw poll, Weijie Xu (OPPO)

* + - AMP TIG report to WG draft
		- Any other business?
		- Adjourn
	1. No objection, Agenda approved.

## Contribution discussion

* 1. Presentation of IEEE 802.11-23/0213r0, Suggested addition to 22/1960 Summary and recommendation for AMP IoT, by Amichai Sanderovich (Wiliot):

Q(uestion): The limiting of message sizes, would restrict the usage of AMP IoT. The 100 bits are quite small.

A(nswer): This is to ensure the performance of AMP devices, limited power.

C(omment): We have some example of payload sizes in the report. 100 bits could be some use case. The report did not exclude other sizes. The current report already covers the modulation scheme and carrier bands.

C(omment): We should consider the S1G band, and we can also consider 2.4G. However, we are not thinking it is feasible in 5GHz band.

Q(uestion): Rapporteur would like to know if the companies acceptable to remove the 5GHz in the AMP TIG report？

A(nswer): Vytas Kezys(HaiLa) would like to have 5GHz in the report for the future use.

* 1. Presentation of IEEE 802.11-23/0251r0, Technical solution to full duplex problem, by Joerg Robert (TU Ilmenau / Fraunhofer IIS)

Q(uestion): UL 2.4 of amp device is backscattering or active transmitter.

A(nswer): It is actually active transmitter.

Q(uestion): The clock issue? Implementation issue by smart phone.

A(nswer): The downlink sub-1GHz could also be the clock reference for UL transmission in higher frequency. The implementation of phone can easily adapt to transmit the DL signal and receive UL signal.

Q(uestion): How the DL signal is used as UL with much different frequency.

A(nswer): Do you have the idea of overall consumption with active transmitter?

Q(uestion): My colleague of implement expects be low as several mWs. The working procedure would be in duty cycle.

* 1. Presentation of IEEE 802.11-22/1562r7, Draft technical report on support of AMP IoT devices in WLAN, by Yinan Qi (OPPO)

C(omment): This report well captures the discussion of AMP TIG been done.

C(omment), by Chair: Updated report will create formal version of technical report of AMP IoT.

* 1. Presentation of IEEE 802.11-23/0063r3, Proposal for consensus straw poll, by Weijie Xu (OPPO)

Q(uestion): For the spectrum, is the draft means the s1G is supported and further consider 2.4G and 5G, although 2.4G is commonly used and sub1G is relatively new?

A(nswer): We can consider set S1G and 2.4G in same level. 5GHz can be removed.

Q(uestion): Is the “How energy harvesting is not in the scope” can add RF energy and exception?

A(nswer): We can remove the bullet.

Q(uestion): Does that means we will let the RF energy harvesting in the scope?

A(nswer): They can be discussed in future, not in the straw poll.

Q(uestion): Should we state the UL waveform in the straw poll?

A(nswer): We can remove the waveforms and just say simplified UL PHY.

Q(uestion): If both active and backscattering supported, the UL PHY could be different.

A(nswer): We can decide that later.

Q(uestion): Is the “simplified security” really good wording? It may be.

A(nswer): We can change it into “optimized security”.

C(omment): In the report the RF energy harvesting is TBD.

Q(uestion): How we progress in the March meeting. Do we present the results?

A(nswer): By chair, the straw poll will be driven by technical report.

A(nswer): Technical slides for AMP IoT will be prepared by OPPO to WNG.

Q(uestion): We should explain the name change to the SG in the straw poll.

A(nswer): Yes.

* 1. Quick reviewing on draft of IEEE 802.11-23/0260, TIG Report for AMP to WG, by Bo Sun (Sanechips). It is collecting comments and suggestions and will be uploaded for the next meeting.

## Closing

* 1. Chair adjourned the session at 11:00am ET.