IEEE P802.11
Wireless LANs

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| AMP TIG session minutes of Sept22 802.11 mixed-mode  |
| Date: 2022-9-13 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Zhisong Zuo | OPPO | Hua Run Building B, Gui Wan 4th road, Shenzhen, China |  | zuozhisong@oppo.com |

Abstract

This document includes minutes of AMP TIG Session of September 2022 IEEE 802 mixed-mode Interim meetings.

Version Tracking:

R0: September 12th&13th mixed-mode meetings minutes.

R1: Date corrections.

# Monday 12 September 2022 @ 19:30-21:30 HST

## Opening (IEEE 802.11-22/1291r0)

* 1. Call to order 19:30 HST.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy and meeting rules (slides 2-7).
	4. No response to the call for patents.
	5. Chair introduced IEEE-SA COPYRIGHT POLICY (slides 8-9)
	6. Chair reviewed other Guidelines and new Motion rules for IEEE WG Meetings, and Registration requirements for September mixed-mode Meetings (slides 10-15).
	7. Chair reviewed current AMP TIG Session Plan, AMP-IoT Documents Update, AMP TIG Background, and AMP session Agenda (slides 16-19).
	8. Chair call for approval of the agenda of AMP session.

## Agenda (IEEE 802.11-22/1291r0)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/22/11-22-1291-01-0amp-tig-amp-session-agenda-for-sep-interim-2022.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
		+ AMP TIG Aug TC summary
		+ Contribution discussion
		+ Any other business?
		+ Recess
	2. No objection, Agenda approved.

## Contribution discussion

* 1. IEEE 802. 11-22/1338 cancelled, replaced by presentation of IEEE 802. 11-22/1559, Updated Use Cases for AMP IoT Devices, by Yinan Qi (OPPO):

Q(uestion) : How close the reader to the container? How to distinguish objects.

A(nswer): 10-30 meters would be the maximum. Using proper distance between. Additional using some MIMO scheme to distinguish.

Q(uestion: How to use the indoor positioning the car?

A(nswer): Can use the relative location from the driver to the car.

Q(uestion): Second use case, how you use the signal to acquire position. Can you have accurate position?

A(nswer): The tag are pre-stored with its location. You can also measure the tag distance to get your location.

Q(uestion): Coverage and location accuracy.

A(nswer): 0.5 meter location accuracy is from real application(Jingdong). Separation of Goods.

Q(uestion): Power comsuption of AMP IoT

A(nswer): <1mW

* 1. Presentation of IEEE 802.11-22/1560 Ambient powers and energy storage, by Zhisong Zuo(OPPO)

Q(uestion): Peak voltage/current (power) discharging, to understand what kind of circuits it can drive.

A(nswer): The slides give a typical discharging rate for normal backscattering, 10uA@1.5v. Plus, the AMP-IoT device often restricted by available ambient power, not the discharging power. Generally the discharging power is sufficient for Back scattering circuits.

We can capture the peak values in the technical report.

Q(uestion): The minimum -30dBm power in receiver side for power harvesting is based on what technical reasons?

A(nswer): It is proven by implementation. The -30dBm is currently verified by some real design.

Q(uestion): We have done some study, the power converting rate of RF can be as much as 70%. But, we have problem to utilized this in DAC/ADC.

A(nswer): We can discuss further offline on the detail if more parameter can be given.

* 1. Presentation of IEEE 802.11-22/1561, Further discussion on feasibility of supporting AMP IoT devices in WLAN, by Weijie Xu (OPPO)

Till slide 4, to be continued in the next session.

## Closing

* 1. The chair announced the session recessed at 21:30 HST.
	2. Next session will be on Tuesday 13th.

# Tuesday 13 September 2022 @ 13:30-15:30 HST.

## Opening (IEEE 802.11-22/1291r2)

* 1. Call to order 13:30 HST.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy, Copyright Policy, and other meeting rules (slides 2-15).
	4. No response to the call for patents.
	5. Chair reviewed current AMP TIG Session Plan and updated AMP session Agenda (slides 16-23).

## Agenda (IEEE 802.11-22/1291r2)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/22/11-22-1291-02-0amp-tig-amp-session-agenda-for-sep-interim-2022.pptx. (slide 22)
		+ 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 discussion
			- 11-22/1561, Further discussion on feasibility of supporting AMP IoT devices in WLAN, Weijie Xu (OPPO)
			- 11-22/1562, Draft Technical Report on support of AMP IoT devices in WLAN, Weijie Xu (OPPO)
		+ Teleconference plan
		+ Any other business?
		+ Adjourn
	2. Agenda was approved without objection.

## Contribution discussion

* 1. Presentation of IEEE 802.11-22/1561, Further discussion on feasibility of supporting AMP IoT devices in WLAN, by Weijie Xu (OPPO)

Presented from slide 5.

Q(uestion): What is the assumption of backscattering device for link budget calculation? 1) energy is split into energy harvesting and reflection 2) time division mode?

A(nswer): It depends on detailed design. After wake-up, for most of the cases, energy harvesting and signal transmission happen at the same time.

Q(uestion): Does signal need to be on all the time or most of the time for energy harvesting? Is possible to use a dedicated channel for energy harvesting? There might be some regulation problem in US for 900MHz.

A(nswer): Possible to use dedicated channel. Energy harvesting and signal transmission can be FDM.

Q(uestion): You can get power for RF in a dedicated channel. Wide band or narrowband. Is that possible for all different environments?

A(nswer): The RF signals should also follow the regulations. We agree the deployment should consider the factor. But still, it can find channel in many places.

C(omment): In some country you must occupy more than 100 MHz. That’s depends on local policy.

Q(uestion): 2.4 GHz is busy and there is co-existence problem. Using backscattering could be challenging. Need to narrow down scenarios. Symbol duration can be long. Where is the gain from in wideband case for energy harvesting?

A(nswer): Still possible to use in certain cases where 2.4GHz is not busy. So, there are spared channel can be used. Several types of AMP IoT shown. The payload of data is small. The transmission duration is not too long. Few symbols may not take channel for long time.

Q(uestion): We think backscattered signal may use very long symbol duration, due to the lower power.

A(nswer): That is not always long. We can discuss in details.

Q(uestion): For multi-carrier, the total power should be in same limit. How the gain comes.

A(nswer): The gain is more in frequency diversity.

Q(uestion): In the frequency selective channel, it may be valid. But in LOS channel, it may not.

A(nswer): In some case the frequency diversity can be limited.

* 1. Presentation of IEEE 802. 11-22/1562, Draft Technical Report on support of AMP IoT devices in WLAN, Weijie Xu (OPPO)

Q(uestion): Is the Draft TR can receive further comment? We need to have further check with the content.

A(nswer) by Chair: Can be collected further, we can also use some more tele conference before November. Email discussion is also fine.

Chair will announce the schedule of calling for comments on the Draft Technical Report.

## Future teleconference plan

* 1. Chair propose one more tele con before Sept. The Oct 25th is suggested by chair.

Oct 25th, 2022, 10:00am ~ 11:59am, ET

No objection, time approved.

## Closing

* 1. Chair adjourned the session at 14:55 HST.