IEEE P802.11  
Wireless LANs

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| 802.11 AMP SG Telecon minutes for October 10th 2023 | | | | |
| Date: 2023-10-10 | | | | |
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Abstract

This document includes minutes of AMP TIG Telecon of October 10th 2023.

Version Tracking:

R0: Creating the minutes, October 10th.

# Tuesday 10 October 2023 @ 10:00-12:00 am ET

## Opening (IEEE 802.11-23/ 1722 r0)

* 1. Call to order 10:00 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 TC plan till July Plenary (slides 14).
  8. Hao Wang is taking minutes.
  9. Chair call for approval of the agenda of the AMP session.

## Agenda (IEEE 802.11-23/ 1722 r0)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/23/11-23-0930-01-0amp-amp-sg-tc-agenda-till-jul-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 discussion
       - 11-23/1724, Ambient IoT Positioning, Weijie Xu (OPPO)
     + Any other business?
     + Adjourn
  2. No objection, Agenda approved.

## Contribution discussion

* 1. Presentation of IEEE 802.11-23/1724, Ambient IoT Positioning, Weijie Xu (OPPO)

Q(uestion): Slide 8, What is the bandwidth?

A: For Sub-1Ghz, based on regulation, bandwidth should be smaller than 1Mhz. For 2.4Ghz band, it is possible to achieve 20Mhz or 22Mhz.

Q: I think positioning is mandatory. For 2.4Ghz band, good accuracy can be achieved. On slide 12, you have to deploy multiple readers to do localization.

A: yes, in the demo, just distance is measured.

Q: Two antennas shown at AP side, one is for TX and the other is for RX? The full duplex operation needs to separate antennas, which is doable for narrow band signal. The phase based localization is not mandatory to use backscatter.

A: Agree. The tag supports backscatter, so we use it in the demo. In simulation, we can do active transmission. In the demo, we shift the backscatter signal to another frequency. The issue will be lighter.

Q: But it doesn’t follow the regulation requirement. It could be an issue.

A: OK.

C: For time based positioning, wider bandwidth means higher accuracy. But it requires additional power for AMP device to handle the complexity.

Q: Slide 11, this channel model A is for 11ah?

A: We follow the IEEE spec for this channel model. It’s a general model and simple one.

Q: Channel model A is defined for 11n and on 2.4Ghz band. In 11ah, the shadow fading factor is rand(0,2).

A: Will check the spec.

Q: Channel model A is for office, not for outdoor channel.

A: Will do further simulation.

Q: Phase based positioning needs more discussion. Will it work for Sub-1Ghz or 2.4Ghz? Two CW tone and waveform are proposed to use on Sub-1Ghz band? How about the complexity of phase-based algorithm? How about the clock accuracy for the phase-based positioning?

A: We can use CW carrier to measure the phase difference. We can use the same principle for other waveforms and applied on Sub-1Ghz and 2.4Ghz. Currently, Sin wave is used but other waveform works too, like OOK and FSK. Once the phase difference is measured, we can achieve similar results. For backscatter case, open look may work. We can place the device close AP, and get the initial calibration. For active transmission case, if the initial phase of two signals are aligned, the calibration will be simple. The signal frequency may be floating due to the poor oscillator performance, it brings challenges for the AP to measure the phase. But it can be solved by proper design.

Q: In the simulation, how long the pair of tones is being measured? And how it affects the performance?

A: In the simulation, we measured for less than 1ms. But in the demo, the time duration is shorter for hundreds of microseconds.

Q: The accuracy depends on the frequency. It may change over temperature.

A: Assume 200ppm at 2.4Ghz, it means 480kHz frequency floating. The distance between two signals is nearly 1Mhz. I think the performance will not be affected much.

Q: When you use single tone, it may interfere to other system. It is worse than using 11b signal.

A: For 2.4Ghz band, we need to use other waveforms.

## Closing

* 1. Chair adjourned the teleconference at 11:16am ET.