IEEE P802.11
Wireless LANs

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| IEEE 802.11bf - January 2021 Interim Meeting Minutes |
| Date: 2021-01-14 |
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Abstract

Rev 0: This document contains the meeting minutes of IEEE 802.11bf teleconferences held during the January 2021 IEEE 802.11 Interim meeting.

Rev 1: Document number for 11-20/1712r2 “Wi-Fi Sensing use cases”, Assaf Kasher (Qualcomm) corrected.

**Tuesday, January 12, 2021, 9:00-11:00 am (ET)**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document: <https://mentor.ieee.org/802.11/dcn/20/11-20-1913-02-00bf-tgbf-meeting-agenda-2021-01-interim.pptx>

1. Call the meeting to order
2. Patent policy and logistics
3. Approve TGbf meeting minutes
4. TGbf Timeline
5. Call for contribution
6. Teleconference Times
7. Presentation of submissions
8. Any other business
9. Recess
10. The chair, Tony Xiao Han, calls the meeting to order at 9:00am (about 105 persons are on the call after a few minutes of the meeting).
11. The chair goes through “Meeting Protocol, Attendance, Voting &Documentation Status” (slide 4), “Participants have a duty to inform the IEEE” (slide 6), and “Ways to inform IEEE” (slide 7).

The chair makes a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked.

The chair goes through “Other Guideline for IEEE WG meeting” (slide 8), “Patent-related information” (slide 9), “ IEEE SA Copyright Policy” (slides 10 and 11), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 12), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 12), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 14), and “Required notices” (slide 15).

The chair goes through the agenda (slide 16) and asks if there are and questions or comments on the agenda. No response from the group.

The chair asks if there is any objection to approve the agenda with unanimous consent. No objection from the group so the agenda is approved.

1. **Motion - Minutes:**  Move to approve TGbf minutes of meetings and teleconferences from November 2020 meeting to today:
	* November plenary: <https://mentor.ieee.org/802.11/dcn/20/11-20-1834-00-00bf-ieee-802-11bf-november-2020-plenary-meeting-minutes.docx>
	* Teleconferences November - January: [https](https://ericsson-my.sharepoint.com/personal/leif_r_wilhelmsson_ericsson_com/Documents/WLAN/IEEE%20f2f/2021%20January/https)[://mentor.ieee.org/802.11/dcn/20/11-20-1909-00-00bf-802-11bf-teleconference-minutes-november-2020.docx](https://mentor.ieee.org/802.11/dcn/20/11-20-1909-00-00bf-802-11bf-teleconference-minutes-november-2020.docx)
	* https://[mentor.ieee.org/802.11/dcn/20/11-20-1955-01-00bf-802-11bf-teleconference-minutes-december-2020.docx](https://mentor.ieee.org/802.11/dcn/20/11-20-1955-01-00bf-802-11bf-teleconference-minutes-december-2020.docx)
	* https://[mentor.ieee.org/802.11/dcn/21/11-21-0038-00-00bf-802-11bf-teleconference-minutes-january-2021.docx](https://mentor.ieee.org/802.11/dcn/21/11-21-0038-00-00bf-802-11bf-teleconference-minutes-january-2021.docx)

Move: Leif Wilhelmsson

Second: Claudio da Silva

Motion passed by unanimous consent.

1. Tony goes through the timeline.
2. Tony goes through Call for contribution
3. Tony goes through Teleconference Times
4. Presentations of submissions

**11-20/1851r0 “Overview of Wi-Fi sensing protocol”, Cheng Chen (Intel):**

Cheng presents the proposed protocol framework, including the four phases Discovery, Negotiation, Measurement Exchange, and Teardown.

**Questions/Comment (Q):** If the transmitter or the receiver is a legacy device, this may not understand the protocol. We should probably address this.

**Answer (A):** I agree. This would in some way be part of the discovery phase.

The SP related to definition of the phases is deferred to allow for some more off-line discussions.

**11-20/1712r2 “Wi-Fi Sensing use cases”, Assaf Kasher (Qualcomm):**

Assaf presents the updated use cases document, where a new use case, 2.3.4, related to sneeze sensing has been added. The use case is envisioned to be for 60 GHz.

**Motion:** Move to adopt 11-20/1712r2 as the use cases document for TGbf.

Move: Assaf Kasher

Second: Rui Du

Motion passed by unanimous consent.

**11-21/0035r0 “Definitions and scenarios of the WLAN sensing”, Rui Du (Huawei):**

The contribution discusses different definitions and a relatively large number of scenarios. Some of the definitions have been discussed many times before, but there is also a proposal to define “illumination signal” and “echo signal” as the signal transmitted by the sensing transmitter and the signal received by the sensing receiver, respectively.

Furthermore, it is proposed to distinguish between “CSI based sensing” and “Radar based sensing”, and to make further classification within each one of these groups.

**Q:** For multi-static radar, do you foresee joint processing or that the processing is done individually/locally?

**A:** I believe both options are possible. You can either send back raw data for joint processing or do some local processing to reduce the amount of data that needs to be sent of the air.

**Q:** Referring to slide 4, how much data should be sent to the sensing processor?

**A:** For instance, the raw CSI.

**Q:** The measurement processing is more implementation specific I believe, what do you want to standardize?

**A:** The amount of raw data is huge, perhaps specify how to send e.g. a range-Doppler map or a range-time-map.

**Q:** There are many use cases in the document. It would be helpful if it would be possible to exemplify them with some real examples.

**Q:** What is the difference between bi-static and passive?

**A:** There is no dedicated transmitter in case of passive sensing.

The Chair announces that we are out of time and explains that he will allocate some time in the next session to continue the Q&A.

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is recessed without objection at 11.01 am (ET).

**Wednesday, January 13, 2021, 9:00-11:00 am (ET)**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document: <https://mentor.ieee.org/802.11/dcn/20/11-20-1913-03-00bf-tgbf-meeting-agenda-2021-01-interim.pptx>

1. Call the meeting to order
2. Patent policy and logistics
3. TGbf Timeline
4. Call for contribution
5. Teleconference Times
6. Presentation of submissions
7. Any other business
8. Recess
9. The chair, Tony Xiao Han, calls the meeting to order at 9:00am (about 45 persons are on the call after a few minutes of the meeting).
10. The chair goes through “Meeting Protocol, Attendance, Voting &Documentation Status” (slide 4), “Participants have a duty to inform the IEEE” (slide 6), and “Ways to inform IEEE” (slide 7).

The chair makes a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked.

The chair goes through “Other Guideline for IEEE WG meeting” (slide 8), “Patent-related information” (slide 9), “ IEEE SA Copyright Policy” (slides 10 and 11), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 12), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 12), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 14), and “Required notices” (slide 15).

The chair goes through the agenda (slide 21) and asks if there are and questions or comments on the agenda. No response from the group.

The chair asks if there is any objection to approve the agenda with unanimous consent. No objection from the group so the agenda is approved.

1. Tony goes through the timeline.
2. Tony goes through Call for contribution
3. Tony goes through Teleconference Times
4. Presentations of submissions

**11-21/0035r0 “Definitions and scenarios of the WLAN sensing”, Rui Du (Huawei):**

The Q&A continues from the last session.

**Question/Comment (Q):** Referring to page 8, is the difference between coordinated and uncoordinated that no negotiation takes place in case of uncoordinated?

**Answer (A):** Yes.

**Q:** I believe it is better to call it coordinated instead of active.

**Q:** What is the difference between uncoordinated CSU and passive radar?

**A:** For uncoordinated CSI you typically would use the legacy radio, whereas for passive radar any signal can be used.

The chair asks what the next step is with respect to this document as there is no SP.

Rui explains that he intends to discuss off-line and may come back with corresponding SPs.

**11-20/1849r3 “Wi-Fi Sensing Definitions”, Cheng Chen (Intel):**

The two SPs are run. The contribution has already been presented.

**Straw Poll 1:**

Do you agree with the following definitions?

* 1. A sensing procedure allows a STA to perform WLAN sensing and obtain measurement results. A sensing session is an instance of a sensing procedure with associated operational parameters of that instance.

**Result:** Y/N/A: 26/1/7

After some discussion of SP 2, the note at the end is removed. The SP is updated to read:

**Straw Poll 2:**

Do you agree with the following definitions?

* 1. Sensing initiator and sensing responder
		1. Sensing initiator: a STA that initiates a WLAN sensing session
		2. Sensing responder: a STA that participates in a WLAN sensing session initiated by a sensing initiator
	2. Sensing transmitter and sensing receiver
		1. Sensing transmitter: a STA that transmits PPDUs used for sensing measurements in a sensing session
		2. Sensing receiver: a STA that receives PPDUs sent by a sensing transmitter and performs sensing measurements in a sensing session
	3. A STA can assume multiple roles in one sensing session.

**Result:** Y/N/A: 24/2/8

**11-21/0032r0 “Comparison of the SENS approaches”, Solomon Trainin (Qualcomm):**

The contribution is a rather comprehensive overview of what is available in 802.11 when it comes to solutions for sensing.

**Q:** Referring to page 17, is there not also passive ranging?

**A:** It is intentionally not included here as I believe it is different than sensing.

The Chair announces that there is less than 20 minutes left of this session and that he believes there will be enough time tomorrow for presenting the remaining contributions. The Chair asks if there is any objection to recess early. No response from the group.

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is recessed without objection at 10.41 am (ET).

**Thursday, January 14, 2021, 9:00-11:00 am (ET)**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document: <https://mentor.ieee.org/802.11/dcn/20/11-20-1913-04-00bf-tgbf-meeting-agenda-2021-01-interim.pptx>

1. Call the meeting to order
2. Patent policy and logistics
3. TGbf Timeline
4. Call for contribution
5. Teleconference Times
6. Presentation of submissions
7. Any other business
8. Adjourn
9. The chair, Tony Xiao Han, calls the meeting to order at 9:00am (about 50 persons are on the call after a few minutes of the meeting).
10. The chair goes through “Meeting Protocol, Attendance, Voting &Documentation Status” (slide 4), “Participants have a duty to inform the IEEE” (slide 6), and “Ways to inform IEEE” (slide 7).

The chair makes a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked.

The chair goes through “Other Guideline for IEEE WG meeting” (slide 8), “Patent-related information” (slide 9), “ IEEE SA Copyright Policy” (slides 10 and 11), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 12), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 12), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 14), and “Required notices” (slide 15).

The chair goes through the agenda (slide 25) and asks if there are and questions or comments on the agenda. No response from the group.

The chair asks if there is any objection to approve the agenda with unanimous consent. No objection from the group so the agenda is approved.

1. Tony goes through the timeline.
2. Tony goes through Call for contribution
3. Tony goes through Teleconference Times
4. Presentations of submissions

**11-20/1960r1 “Analysis of SENS approaches”, Solomon Trainin (Qualcomm):**

Solomon presents classification of different approached to sensing, e.g. CSI measurements and radar and definitions, like sensing session, active/passive sensing. In addition, different requirements are discussed.

**Question/Comment (Q):** You define the consumer as the one that uses the result. This is then a function rather than the device. How can it then have a MAC address?

**Answer (A):** The MAC address refers to the device in which the function resides.

**Q:** If the consumer is not the same as the initiator, how can you know who is the consumer?

**A:** The consumer is not part of the measurement process, rather part of the application.

**Q:** On page 12, what do you mean with that the PPDU is backward compatible?

**A:** The PPDU should be understood by legacy devices in the sense that its duration can be determined, not that its contents can be understood.

**Q:** Can you elaborate on what you mean with opportunistic sensing?

**A:** Basically, what is shown on page 9.

**Q:** On page 15, does group coordination mean AP-AP?

**A:** It may, but it does not have to be only Ap-AP.

The chair asks Solomon what the next step is.

Solomon explains that he plans for another presentation where also SPs are included.

**11-21/0066r0 “Discussion on a Joint Communication and Sensing (JCS) Method”, Abdullah Haskou (Interdigital):** The presentation is proposing a new method to allow for joint communication and sensing with limited overhead.

**Q:** Referring to page 12, it is not really according to the assumption of a 20 MHz channel?

**A:** I agree, we need more than 20 MHz.

**Q:** Is coverage the same for both communication and sensing?

**A:** We did not calculate this exactly. Depends on both MCS used for communication and e.g. reflecting materials for the sensing application.

**Q:** Referring to page 7, how do you achieve high accuracy synchronization?

**A:** We don’t have the solution currently.

**Q:** Do you believe this can be used without major changed?

**A:** We believe the changes are on the MAC layer.

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is adjourned without objection at 11.03 am (ET).