IEEE P802.11
Wireless LANs

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| IEEE 802.11bf - May 2021 Interim Meeting Minutes |
| Date: 2021-05-17 |
| Author(s): |
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Abstract

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

Rev 1: Typo in relation to Motion 18 corrected.

**Tuesday, May 11, 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/21/11-21-0593-02-00bf-tgbf-meeting-agenda-2021-05-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 90 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 meetings” (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:** **Approve TGbf meeting minutes**

Move to approve TGbf minutes of meetings and teleconferences from March 2021 meeting to today:

* + March plenary: <https://mentor.ieee.org/802.11/dcn/21/11-21-0476-00-00bf-meeting-minutes-march-2021.docx>
	+ Teleconferences March - April:

https://[mentor.ieee.org/802.11/dcn/21/11-21-0547-00-00bf-802-11bf-teleconference-minutes-march-2021.docx](https://mentor.ieee.org/802.11/dcn/21/11-21-0547-00-00bf-802-11bf-teleconference-minutes-march-2021.docx)

https://[mentor.ieee.org/802.11/dcn/21/11-21-0645-03-00bf-802-11bf-teleconference-minutes-april-2021.docx](https://mentor.ieee.org/802.11/dcn/21/11-21-0645-02-00bf-802-11bf-teleconference-minutes-april-2021.docx)

**Move:** Leif Wilhelmsson

**Second:** Claudio Da Silva

Motion passed by unanimous consent.

1. The Chair presents the slide TGbf timeline.
2. The Chair presents the slide Call for contributions.
3. The Chair presents the slide Teleconference times.
4. Presentation of submissions

**11-21/0365r1, “Wi-Fi Sensing Parameters”, Halise Turkmen (Vestel)**

This contribution sas been presented before. The SP was not run then, but has been modified based on received feedback.

**SP 1: Do you agree with the following:**

* The following parameters may be determined (or specified) in the setup phase of a sensing session
	+ Periodicity (the rate of transmission of sensing transmissions)
	+ Bandwidth
	+ Number of antennas
	+ Power

**Y/N/A: 29/6/27**

**11-21/0746r1, “Q-D simulation & Modeling framework for sensing”, T. Ropitault (NIST/Prometheus Computing LLC):** The contribution gives an overview of the NIST Quasi-Deterministic (Q-D) framework and updates such that it can be used for sensing evaluation in the mmw band.

Question/Comment(Q):Is also beamforming at the receiver side supported?

Answer (A): Yes, there is support for beamsweeping at both ends.

Q: You are targeting mobilty, does this also include beamtracking?

A: We could consider beamtracking, but we really focused on the PHY and not higher level aspects.

Q: I believe it is similar to what has presented earlier, so I am very interested in understanding the details further.

**11-21/0747r1, “A preliminary channel model using ray tracing to detect human presence”, S. Blandino (NIST):** The contribution is concerned with extending the current channel model used in IEEE 802.11ay to be used for sensing evaluation.

Q: It seems it can also be used for more than passive radar

A: It could, we just started with this

Q: What are your next plans concerning this work?

A: We are doing measurements and are working on fine-tuning the model.

**11-21/0753r0, “Sub-7 PHY Long Training Field Selection”, Chris Beg (NIST):** The contribution discusses the fact that there are several different LTFs available, and which one to use for sensing.

Q: I don’t think it is possible to select at the MAC layer since today the legacy it is not used for channel estimation in case of sounding.

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 and the Straw Poll.

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is recessed without objection at 10.59 am (ET).

**Friday, May 14, 2021, 9:00-11:00 am (ET)**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document:

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1. Call the meeting to order
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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 9:01am (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 meetings” (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. The Chair presents the slide TGbf timeline.
2. The Chair presents the slide Call for contributions.
3. The Chair presents the slide Teleconference times.
4. Presentation of submissions

**11-21/0753r1, “Sub-7 PHY Long Training Field Selection”, Chris Beg (NIST)**

The contribution was presented on Monday, but there was no time to discuss the SP.

Q: What do you mean with negotiation more specifically?

A: Basically, what PPDU format. The SP is updated to reflect this.

Q: I was envisioning sensing on NDPs, do you envision sensing on data PPDUs?

A: Yes, I envision also using PPDUs.

Q: I believe what PPDU to be used will depend on the capabilities, rather than having to be negotiated with respect to sensing usage.

**Straw Poll 1:** Do you agree that during the setup phase of a sensing session, the participants should have the ability to negotiate: PPDU format, Channel Bandwidth, Nss and HE\_LTF\_TYPE?

**Y/N/A: 15/20/15**

Q: I believe we need more time.

**Straw Poll 2:** Do you agree that during the measurement phase of a sensing session, the participants should have the ability to identify which Long Training Field, Channel Bandwidth, Nss and HE\_LTF\_TYPE are used to produce a sensing measurement?

**Deferred**

**11-21/0669r1, “A Discussion on Measurement Results for Active Radar-Based Applications”, A. Haskou (InterDigital):** This topic has presented before, and this is an updated version.

Q: RP is a mapping of time and power if I understand it correctly. Would it not be possible to get the information from channel frequency response by applying the IFFT?

A: I believe that for this to be true, one needs to have more information with respect to sync.

**Straw Poll 1:** Do you agree to consider Range Profile (RP) as presented in slide 4 as a measurement result type for WLAN sensing in both sub-7GHZ and 60 GHz frequency bands?

**Y/N/A: 16/13/18**

Q: I don’t think this should be part of the standard.

**Straw Poll 2:** Do you agree to consider Localization Heatmap as presented in slide 5 as a measurement result type for WLAN sensing in both sub-7GHZ and 60 GHz frequency bands?

**Y/N/A: 9/18/21**

**11-21/0660r0, “Truncated Power Delay Profile (TPDP)”, R. Du (Huawei):** The presentation proposes a new measurement result that can be used for sensing.

Q: Wi-Fi is asynchronous, it is not clear to me how you ensure that time zero corresponds to distance zero.

Q: I believe it is critical for the result that there is no other movement in the room.

A: I agree.

Q: How does the speed of the movement of the finger impact the result?

A: Normal speed was assumed here.

Q: With respect to the SP, since this is quite new, would you be OK to add something like “need more information”?

A: I want to run it to see what the group thinks.

**Straw Poll 1:** Do you support that the TPDP calculated as follows should be considered as one of the sensing measurement result?

* Calculating time domain PDP from CSI through Inverse Fourier Transform (usually, could use IFFT).
* Reporting the first few complex values (corresponding to the range of interest) of the time domain PDP.

**Y/N/A: 19/7/26**

1. The Chair announces that there are only seven minutes left and asks if there is any other business. No response from group.
2. The meeting is recessed without objection at 10:55 am.

**Monday, May 17, 2021, 9:00-11:00 am (ET)**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document:

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1. Call the meeting to order
2. Patent policy and logistics
3. TGbf Timeline
4. Call for contribution
5. Teleconference Times
6. Motion
7. Presentation of submissions
8. Any other business
9. Adjourn
10. 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).
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 meetings” (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). The Chair explains that the intention is to have two presentations, run the motion, and then have the remaining presentations. The Chair asks if there are and questions or comments with respect to this. 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. The Chair presents the slide TGbf timeline.
2. The Chair presents the slide Call for contributions.
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**11-21/0782r2, “Channel Models for WLAN Sensing Systems”, M. Zhang (Huawei):** The contribution describes channel models for Wireless Local Area Networks (WLANs) Sensing systems based on the results of ray tracing and other possible approaches (e.g., measurement campaigns).

**Straw Poll:** Do you agree to adopt the document (21-0782r2) as the initial official Channel Models document for IEEE 802.11bf?

**Y/N/A: 15/6/16**

**11-21/0644r2, “Sensing session and measurement exchange identification”, S. Trainin (Qualcomm):**

This contribution relates to Sensing Session and the Sensing Measurement exchange.

Q: What is the scenario where you need to change the parameters?
A: An example is if you change the specific application for the sensing and these applications have very different requirements.

Q: I believe we need more discussion about how to involve unassociated STAs.

A: Actually, it is already available 11az. The suggestion is to reuse this.

Q: Is the measurement results reported after each measurement?

A: That is not required.

**Straw Poll 1:** Do you agree with the following:

* The Sensing Session is pairwise and is identified by MAC addresses and/or associated AID/UID?

**Y/N/A:** **12/17/10**

**Straw Poll 2:** Do you agree with the following:

* The Measurement Setup ID may be used to identify attributes of the sensing measurement instances
* The Measurement Instance ID may be used to identify the sensing measurement instance that utilizes attributes of the same Measurement Setup ID
* The Dialog Token field may contain both IDs

**Y/N/A: 12/13/11**

**Motion 18: Move to add the following to 11bf SFD:**

* The 11bf amendment defines an optional threshold based measurement and reporting procedure in which
	+ The difference between the current measured CSI and the previous measured CSI is quantified. The difference is referred to as CSI variation.
	+ A threshold value to be used by the sensing receiver in the threshold based procedure is defined.
	+ By comparing the CSI variation with the threshold, the sensing receiver can send a feedback resulting from the large CSI variation to the sensing transmitter.
	+ Whether the threshold is predefined, or defined by the sensing receiver, transmitter, initiator or responder is TBD.
	+ The threshold based procedure is not always required (Procedure A in 21/0351r5 is not always required).

**Move Mengshi Hu**

**Second: Junghoon Suh**

**Preliminary Result: Y/N/A: 21/7/11, Motion passes (Based on the votes in the call)**

**Result: Y/N/A: 21/6/10, Motion passes (Based on the votes in the call, after verifying voter status)**

**11-21/0770r0 “Trellis Coded Quantization for CSI Feedback
Part 1: Quantization for the Phase of CSI”, J. Suh (Huawei):** The presentation proposes a method to code the quantized values.

During the Q&A, we are running out of time and need to end the discussion.

1. The chair asks if there are any other business. No response from from the group.
2. The meeting adjourned without objection at 11:01.