IEEE P802.11
Wireless LANs

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| IEEE 802.11bf - July 2021 Plenary Meeting Minutes |
| Date: 2021-07-20 |
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Abstract

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

**Tuesday, July 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/21/11-21-0934-01-00bf-tgbf-meeting-agenda-2021-07-plenary.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 170 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), “Registration for the July 802 electronic plenary session” (slide 5), “Participants have a duty to inform the IEEE” (slide 7), and “Ways to inform IEEE” (slide 8).

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 9), “Patent-related information” (slide 10), “ IEEE SA Copyright Policy” (slides 11 and 12), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 13), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 14), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 15), and “Required notices” (slide 16).

The chair goes through the agenda (slide 17) 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 by unanimous consent. No objection from the group so the agenda is approved.

1. **Motion:** Move to approve TGbf minutes of meetings and teleconferences from May 2021 meeting to today:
	* May Interim: <https://mentor.ieee.org/802.11/dcn/21/11-21-0870-02-00bf-meeting-minutes-may-2021.docx>
	* Teleconferences May - July: [https](file:///C%3A%5CUsers%5Cecswilh%5COneDrive%20-%20Ericsson%20AB%5CWLAN%5CIEEE%20f2f%5C2021%20July%5Chttps)[://mentor.ieee.org/802.11/dcn/21/11-21-0914-03-00bf-ieee-802-11bf-teleconference-minutes-may-july-2021.docx](https://mentor.ieee.org/802.11/dcn/21/11-21-0914-03-00bf-ieee-802-11bf-teleconference-minutes-may-july-2021.docx)

**Move:** Leif Wilhelmsson

**Second:** Assaf Kasher

Motion passed by unanimous consent.

1. The Chair presents the TGbf Timeline, slide 19.
2. The Chair presents slide 20, Call for contributions.
3. The Chair presents the teleconference times, slide 21. It is suggested to cancel the telco on August 3 due to vacation. The group agrees to this.
4. Presentation of submissions

**11-21/1035r1, “Sensing-Specific feedback using NDPA and trigger frames”, Satyanarayana Katla (Interdigital):** The contribution discusses using sensing specific feedback information.

Q: I believe the sensing type will be static and can be agreed in set-up phase, so I don’t think you need include this for each sensing transmission. This is the case even if different STAs will use different types.

Q: I don’t understand what you mean by “processor”, in your figures indicating RX/processor and TX/processor.

Q: I think there are things we need to decide on before we can discuss this, like e.g. that we should base this on 11be.

**SP 1: Do you agree to add the following into 11bf SFD:**

* In measurement phase of sensing session, an NDP Announcement frame can include sensing-specific information in sub 7Ghz band.
	+ The sensing-specific information is TBD
	+ NDPA format for sensing is TBD.

**The SP is deferred.**

**SP2 is deferred.**

**11-21/1047r0, “Legacy Support in 11bf”, Rojan Chitrakar (Panasonic)**

Legacy specifically mean 11n and 11ac in this presentation, and focus is on non-OFDMA. It is believed that if 11bf support legacy devices this will lead to earlier adoption of WLAN sensing. It is believed that this is already supported by the PAR, so there is no need to change the PAR. At least one mode of operation should support legacy devices. The possible impact on 11bf to realize this is also discussed.

Q: I agree that legacy support is very valuable for 11bf.

Q: I think it may not be so easy to upgrade the legacy devices to support this.

Based on this comment the SP is updated to talk about “investigate” the possibility to support legacy. This is reflected in rev. 1 of the presentation.

Q: It should be noted that even small changes may require hardware changes.

Q: I like the intention, but I am not sure if it is possible to support it. I believe it must be done at higher layers.

Q: Is it really a problem if, say, only 70-80% can support it with some high-level SW upgrade?

A: Don’t know, and of course we do not expect all devices to be upgraded.

**Straw Poll 1**:

Do you agree that 11bf Task group should investigate supporting devices with legacy PHYs (11n,11ac) and that such devices can participate in WLAN Sensing?

**Y/N/A: 78/14/34**

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is recessed without objection at 10.55 am (ET).

**Friday, July 16, 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/21/11-21-0934-02-00bf-tgbf-meeting-agenda-2021-07-plenary.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 110 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), “Registration for the July 802 electronic plenary session” (slide 5), “Participants have a duty to inform the IEEE” (slide 7), and “Ways to inform IEEE” (slide 8).

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 9), “Patent-related information” (slide 10), “ IEEE SA Copyright Policy” (slides 11 and 12), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 13), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 14), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 15), and “Required notices” (slide 16).

The chair goes through the agenda (slide 22) 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 by unanimous consent. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf Timeline, slide 23.
2. The Chair presents slide 24, Call for contributions.
3. The Chair presents the teleconference times, slide 25.
4. Presentation of submissions

**11-21/1069r1, “Threshold Based Sensing Measurement Follow up”, Mengshi Hu (Huawei):** This is continuation of a previous presentation related to threshold-based sensing, further elaborating on the details.

Q: On page 6, what are the different curves?

A: Just illustrations.

Q: How do we make it optional? By defining devices as capable?

A: Yes.

Q: Is the idea that there are more details in the feedback in Procedure B?

A: Procedure A is used to select what devices should send feedback in Procedure B. The actual feedback is sent in Procedure B.

Q: It is not clear to me why the initiator must set the threshold.

Q: The text in the SFD does not imply what is shown on slide 4. Slide 4 is just an example. I believe this may be the reason why members have problems to understand the proposed procedure. I suggest focusing on this in the next contribution.

Q: Related to what is shown on slide 6, would it not suffice to just make it binary?

A: I believe the proposed approach may be beneficial if we want to change the threshold.

Q: Related to slide 7, it is not clear to me that using different algorithms would be a real issue.

Q: What if there is a mix of STAs using different algorithms?

A: This is no problem as the transmitter knows which STA uses which algorithm.

Q: Are you assuming that the transmitter and the receiver are stationary during the session?

A: Yes.

Q: In all cases, is it assumed that the feedback is immediate and not delayed?

A: These are only examples. I don’t see this as necessary.

Q: I believe SP1 makes sense since the initiator determines other things as well.

Q: Do you assume that the threshold is independent of what feedback you expect?

A: There may be one or more thresholds.

**Straw Poll 1:** Do you agree that in the threshold-based sensing measurement and reporting procedure, the threshold compared with the CSI variation value is determined by the initiator?

**Result:** Y/N/A: 37/16/26

Straw Poll 2 is deferred.

**11-21/1071r0, “Sensing measurement operation bottom up”, Solomon Trainin (Qualcomm):** This contribution presents existing features that can be used as a reference in defining new 11bf solutions. The focus is on sub-7GHz.

Q: On slide 3, do you mean that what is in box 3 and box 4 should not be changed?

A: No, but whatever changes are made in these boxes should not require changes in box 1 or box 2.

Q: In box 1, does ND P sounding exclude opportunistic sounding?

A: No.

Q: On slide 3, are these just examples rather than a complete list?

A: It illustrates what you need to analyze if you propose a feature.

**Straw Poll 1:** Do you agree that the building blocks presented in slide 3 represent the features of existing amendments, that are most relevant to the sub 7 GHz part of the .11bf amendment?

**Results:** Y/N/A: 19/20/30

1. The Chair asks if there is any other business. No response from the group.
2. The meeting is recessed without objection at 11.02 am (ET).

**Monday, July 19, 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/21/11-21-0934-04-00bf-tgbf-meeting-agenda-2021-07-plenary.pptx>

1. Call the meeting to order
2. Patent policy and logistics
3. TGbf Timeline
4. Call for contribution
5. Teleconference Times
6. Motions (20-24)
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 50 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), “Registration for the July 802 electronic plenary session” (slide 5), “Participants have a duty to inform the IEEE” (slide 7), and “Ways to inform IEEE” (slide 8).

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 9), “Patent-related information” (slide 10), “ IEEE SA Copyright Policy” (slides 11 and 12), “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct” (slide 13), “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”(slide 14), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 15), and “Required notices” (slide 16).

The chair goes through the agenda (slide 26) and asks if there are and questions or comments on the agenda. No response from the group. The Chair explains that he intends to let Solomon finalize contribution 1071 before running the motions.

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

1. The Chair presents the TGbf Timeline, slide 27.
2. The Chair presents slide 28, Call for contributions.
3. The Chair presents the teleconference times, slide 29.
4. Presentation of submissions

**11-21/1071r0, “Sensing measurement operation bottom up”, Solomon Trainin (Qualcomm):** This is a continuation of the presentation in the previous session.

**Straw Poll 2:** Do you agree that the approach presented in slide 5 may help to craft and review new features defined to be included in the sub 7 GHz part of the .11bf amendment?

Based on some discussion in relation to what is stated in box 2, Solomon explains that he would like to defer the SP to take the comments into account.

1. **Motions:**

**Motion 20:** Move to add the following to 11bf SFD:

CSI (that is, the channel measured during the training symbols of a received PPDU) is a type of sensing measurement result for sub-7 GHz WLAN sensing.

**Move:** Claudio Da Silva

**Second:** Assaf Kasher

**Result:** Approved by unanimous consent

Note：

* Related document 21/0908r2
* SP Result: 36/0/5 (Y/ N/ A)

**Motion 21:** Move to add the following to 11bf SFD:

* To enable sub-7 GHz WLAN sensing, an RXVECTOR parameter CSI\_ESTIMATE is defined that contains the channel measured during the training symbols of the received PPDU.
* A Sensing Measurement Report frame, which allows a sensing receiver to report sensing measurements, is defined. This new frame contains at least the following two fields:
	+ Measurement report control field: Contains information necessary to interpret the measurement report field.
	+ Measurement report field: Carries CSI measurements obtained by a sensing receiver.
* The format of CSI\_ESTIMATE is the same one used in the measurement report field within the Sensing Measurement Report frame. The format of CSI\_ESTIMATE is TBD.
* Transmission of the Sensing Measurement Report frame is initiated by an MLME primitive. Both immediate and delayed reporting are acceptable.

**Move:** Claudio Da Silva

**Second:** Rajat Pushkarna

**Result:** Approved by unanimous consent

Note：

* Related document 21/0908r2
* SP Result: 22/6/8 (Y/ N/ A)

**Motion 22:** Move to add the following to 11bf SFD:

* measurement phase of sensing session, the NDP can be used for the channel measurement (e.g. CSI) between sensing transmitter and sensing receiver(s) in sub 7Ghz band.
	+ NDP format for sensing is TBD.

**Move:** Dongguk Lim

**Second:** Sang Kim

**Result:** Approved by unanimous consent

Note：

* Related document 21/1015r1
* SP Result: 26/0/8 (Y/ N/ A)

**Motion 23:** Move to add the following to 11bf SFD:

* The Sensing Session is pairwise and is identified by MAC addresses and/or associated AID/UID.
* 11bf shall define an optional negotiation process in the sensing setup phase for a sensing initiator and a sensing responder to exchange and agree on operational parameters associated with a sensing session. The initiator may maintain multiple sensing sessions.

**Move:** Solomon Trainin

**Second:** Rajat Pushkarna

**Result:** Approved by unanimous consent

Note：

* Related document 21/0644r4
* SP Result: 19/3/15 (Y/ N/ A)

**Motion 24:** Move to add the following to 11bf SFD:

* 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 be a possibility to contain both IDs

**Move:** Solomon Trainin

**Second:** Cheng Chen

**Result:** Approved by unanimous consent

Note：

* Related document 21/0644r4
* SP Result: 20/1/11 (Y/ N/ A)

**11-21/1068r0, “A framework for E/DMG monostatic radar PPDU”, Assaf Kasher (Qualcomm):** The presentation discusses a framework for a PPDU format that can be used for monostatic radar the mmWave bands (E/DMG). One of the conclusions is that there is no need to define a waveform for a E/DMG monostatic radar/sensing.

Q: Why focus on monostatic sensing? Does this not require PHY changes?

A: Not necessarily. One may have several antenna arrays allowing for concurrent TX and RX operation. Even if the direct path is strong it is still possible to identify and use reflections.

Q: I believe this is similar to what I presented a year ago. I support this.

Q: Basically, you want to allow for some freedom without breaking any legacy rules?

A: Yes.

**11-21/1116r0, “Repurposing Directional Multi-Gigabit (DMG)
Beamforming Training Measurements for WLAN Sensing”, Pu (Perry) Wang (MERL):** This presentation is a continuation of earlier presentations. It revisits DMG beamforming training (BFT) protocols at the 802.11ad & ay standards and repurpose these DMG BFT measurements for WLAN Sensing.

Q: I agree with the approach to reuse beamforming training. I believe the tricky part is to identify which one to use.

**Straw Poll 1:**

Should 802.11bf TG consider directional multi-gigabit (DMG) beamforming training (BFT) measurements at 45+ GHz as one type of sensing measurements for WLAN Sensing?

Note: Related Document (SP): 21/0407r3 (Y/N/A: 18/4/16)

Beamforming training includes Initiator TXSS, Initiator RXSS, Responder TXSS, Responder RXSS during BHI (beacon header interval) and DTI (data transmission interval).

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

1. The Chair asks if there is any other business. Claudio asks if 5 minutes can be allocated for going through the updated SFD at the next telco. The chair agrees with this request.
2. The meeting is adjourned without objection at 10.59 am (ET).