IEEE P802.11
Wireless LANs

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| IEEE 802.11bf – Teleconference Minutes September-November 2022  |
| Date: 2022-10-13 |
| Author(s): |
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| Sang Kim | LGE |  |  |  |

Abstract

This document contains minutes for the TG 802.11bf teleconferences in September-November 2022.

Rev 0: Minutes for TG 802.11bf teleconference on the 22nd of September 2022.

Rev 1: Minutes for TG 802.11bf teleconference on the 26th of September 2022 added.

Rev 2: List of Attendees added for 22nd and 26th of September.

Rev 3: Minutes for TG 802.11bf teleconference on the 27th of September 2022 added.

Rev 4: Minutes for TG 802.11bf teleconferences on the 29th of September 2022 added.

Rev 5: List of Attendees added for 27th and 29th of September.

Rev 6: Minutes for TG 802.11bf teleconference on the 10th of October 2022 added.

Rev 7: Minutes for TG 802.11bf teleconference on the 11th of October 2022 added and list of attendees for 10th and 11th of October added.

Rev 8: Minutes for TG 802.11bf teleconference on the 13th of October 2022 added.

### Thursday, September 22, 2022, 11:00 pm-01:00 am (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1644-01-00bf-tgbf-meeting-agenda-2022-09-part2.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 Han, calls the meeting to order at 11:00 pm ET (35 persons are on the call after 10 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 13), 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 any questions or comments on the agenda. Mengshi points out that SP should be added to the title of his presentations.

The Chair asks if there is any objection to approve the modified agenda. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf timeline (slides 17) and CR status (slide 18)
2. The Chair presents slide 19, Call for contributions.
3. The Chair presents the teleconference times (slide 20). It is noted that the sessions for the November f2f has been slightly updated. There is a comment that PM1 and PM2 are very inconvenient for people in US. As a response to this it is noted that this is common for other parts of the world, e.g. Asia, so this should be OK for people in the US.

Another comment relates to that we have three teleconferences every week and in addition ad-hoc meetings. It is asked whether it would be possible to have one day with more meetings not to spread things out. The response from the chair is that this situation should not last for a long time.

Would it be possible to have a one day ad-hoc before the November f2f?

It is pointed out by one member that a f2f ad-hoc would need to be decided in the previous f2f as it needs a WG motion, so this is not possible.

Comment from one member that the discussions are sometimes inefficient, and suggests that maybe some telcos can be used for more focused ad-hocs to get progress.

Chair: If PoC cannot find a slot or if there are other issues then the PoC can asks the chair to use a time slot.

1. Presentations:

**11-22/1495r2, “DMG comments resolution part five”, Solomon Trainin (Qualcomm):** This submission proposes resolutions for CIDs 338, 340

Solomon started to present this contribution in the last session of the September f2f.

CID 338: Some discussion and a few typos corrected based on feedback from the group.

The chair asks about future plans. Solomon explains he wants to update the documents based on the received feedback and then come back and run the SP.

Tony wants to run a SP to obtain a feeling for how many persons intend to attend the f2f meeting in November.

**Straw Poll:** Do you plan to attend the November Plenary in person?

**Result:** Y/N/A: 12/13/5

Tony explains that he believes we can consider discussing aggregated topics during TGbf meetings. Based on that there is no other topic in the presentation queue and that there is really a need to make progress due to that the discussion is stuck.

Tony asks the group if there is any objection to allocate the session on Monday to discuss NDPA TTT. No objection from the group.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 01:03 am ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 9/22 | Au, Oscar | Origin Wireless |
| TGbf | 9/22 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 9/22 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbf | 9/22 | Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/22 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 9/22 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 9/22 | Eitan, Alecsander | Qualcomm Technologies, Inc. |
| TGbf | 9/22 | feng, Shuling | MediaTek Inc. |
| TGbf | 9/22 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbf | 9/22 | Jang, Insun | LG ELECTRONICS |
| TGbf | 9/22 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbf | 9/22 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 9/22 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbf | 9/22 | narengerile, narengerile | Huawei Technologies Co., Ltd |
| TGbf | 9/22 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/22 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 9/22 | Sahoo, Anirudha | National Institute of Standards and Technology |
| TGbf | 9/22 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 9/22 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 9/22 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 9/22 | Wei, Dong | NXP Semiconductors |
| TGbf | 9/22 | Wilhelmsson, Leif | Ericsson AB |
| TGbf | 9/22 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |

### Monday, September 26, 2022, 10:00 am-12:00 pm (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1644-03-00bf-tgbf-meeting-agenda-2022-09-part2.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 Vice Chair, Assaf Kasher, calls the meeting to order at 10:07 am ET (37 persons are on the call after 20 minutes of the meeting). The Chair, Tony Han, has issues calling in.
10. The Vice 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 Vice Chair makes a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked.

The Vice 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 13), and “IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints” (slide 14), and “Required notices” (slide 15).

The Chair, Tony Han, takes over the meeting.

The Chair goes through the agenda (slide 17) and asks if Junghoon or Chaoming want to present, given that we have a conflict with UHR. Junghoon explains that he wants to present today.

Solmon asks to run the SP for his contribution. As a result, the agenda is modified accordingly.

The Chair asks if there is any objection to approve the modified agenda. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf timeline (slide 18) and CR status (slide 19)
2. The Chair presents slide 20, Call for contributions.
3. The Chair presents the teleconference times (slide 21). The time for the f2f has been updated. The chair asks for comments. No comments from the group, so Tony explains he will try to obtain the proposed times for the f2f.
4. Presentations:

**11-22/1495r3, “DMG comments resolution part five”, Solomon Trainin (Qualcomm):** This submission proposes resolutions for CIDs 338, 340

Solomon goes through the changes made compared to revision 2 of the document related to CID 338.

No discussion.

CID 340: No discussion.

**Straw Poll:** Do you support the CRs in this document?

**Result:** The proposed CRs are supported unanimously.

**11-22/1654r0, “Harmonized Sensing NDPA”, Junghoon Suh (Huawei):** Junghoon presents a proposes for sensing NDPA, including a set of SPs.

A relatively large number of questions and comments follow the presentation.

As a result, additional SPs, SP 1-1 and SP1-2, are added.

**Straw Poll 1-1:** Do you agree to indicate the TX Power Control TB case of the Special STA Info Field with AID 2045 of Sensing NDPA?

* R2I NDP Target RSSI subfield is reserved.

**Result:** Unanimously supported.

**Straw Poll 1-2:** How many bits do you prefer for the Measurement Set-up ID

* Option 1: 3 bits
* Option 2: 4 bits
* Option 3: 1 byte
* Abstain

**Result:** Opt.1 / Opt. 2 / Opt. 3 / Abstain: 12/7/1/7

Run out of time.

The chair explains that his intention is to finalize the SPs and then go to Chaoming’s presentation.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 12:04 pm ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 9/26 | Au, Oscar | Origin Wireless |
| TGbf | 9/26 | Aygul, Mehmet | VESTEL; IMU |
| TGbf | 9/26 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 9/26 | Dash, Debashis | Apple Inc. |
| TGbf | 9/26 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 9/26 | feng, Shuling | MediaTek Inc. |
| TGbf | 9/26 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbf | 9/26 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbf | 9/26 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 9/26 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 9/26 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbf | 9/26 | McCann, Stephen | Huawei Technologies Co., Ltd |
| TGbf | 9/26 | narengerile, narengerile | Huawei Technologies Co., Ltd |
| TGbf | 9/26 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/26 | Rafique, Saira | Istanbul Medipol University; Vestel |
| TGbf | 9/26 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 9/26 | Schweizer, Benedikt | Apple Inc. |
| TGbf | 9/26 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 9/26 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 9/26 | Turkmen, Halise | Istanbul Medipol University; Vestel |
| TGbf | 9/26 | Wei, Dong | NXP Semiconductors |
| TGbf | 9/26 | Zhang, Jiayi | Ofinno |
| TGbf | 9/26 | Zhou, Pei | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |

### Tuesday, September 27, 2022, 10:00 am-12:00 pm (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1644-04-00bf-tgbf-meeting-agenda-2022-09-part2.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 Han, calls the meeting to order at 10:01 am ET (43 persons are on the call after 50 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 13), 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 18) and asks if any question on the agenda. Rajat stated that the presentation of 1579is to postpone due to the unavailability of the presenter. The agenda is approved.

Dong Wei stated that the sensing responder-to-sensing responder (SR2SR) sounding was initially discussed and many consensus was achieved through ad hoc call, thus suggestion was made to present this Thursday call. The Chair asked to group members to place 1368 right after 1543. No objection was raised. As a result, the agenda is modified and re-approved accordingly.

1. The Chair presents the TGbf timeline (slide 19) and CR status (slide 20)
2. The Chair presents slide 21, Call for contributions.
3. The Chair presents the teleconference times (slide 22). The updated times for the November f2f meeting has been sent to WG leadership. The chair asks for comments. No comments from the group.
4. Presentations:

**11-22/1654r1, “Harmonized Sensing NDPA”, Junghoon Suh (Huawei):** Junghoon presents a harmonized proposal for sensing NDPA, including a set of SPs.

Based on the result of SP 1-2, he prepared SP1-3

A relatively large number of questions and comments follow the presentation.

Q: Measurement Set-up ID (MS ID) is also carried in Measurement Request frame in which the length is 1 byte. Is it matched?

C: We can approve 3 bits today and align later. Even though it is 1 byte, the actual length is dictated by transport of NDPA or Trigger frame. We can go back and reserve some bits based on the decision.

The length of MS ID is “TBD” is added in the straw poll text.

Q: Is this only for sub-7 GHz case? The MS ID in DMG case is 4 bits. Do we need to align?

A: Use cases are different, and we don’t need to align.

Q: With 3 bits of MS ID, we cannot support more than 8 applications. Is it 1 MS ID per one sensing responder?

A: 1 MS ID is assigned to multiple STAs in an application. For example, 20 STAs can use 1 MS ID. We use the same MS ID when a new STA joins to existing application.

Q: If 9th MS ID is needed, then what is an AP supposed to do? There seems a good chance that we have more than 9 applications.

A: If sounding parameters are similar to existing application, we can assign it to existing application. Right now, we don’t see many Wi-Fi sensing applications and 3 bits are reasonable.

**Straw Poll 1-3:** Do you agree to indicate the Measurement Set-up ID and Sensing indications in the Special STA Info Field of Sensing NDPA?

* B28 to B30 are used for the indication of Measurement Set-up ID
* B31 is used to indicate the Sensing NDPA
* AID for Special STA Info Field is 2045
* The length of MS ID is TBD.

Q: B31 is not only for AID 2045. For any AID, B31 needs to be set for sensing. This applies to every STA Info field.

A: To support EHT and non-EHT mixed mode of operation, EHT Trigger frame design places information in Common Info field.

Q: If AID 2045 is used for sensing, then do we need to set B31?

A: For non-TB case, we need NDPA. When both ranging/sensing are used and AID 2045 is also used, we still need B31 to be set.

**Result:** Unanimously supported.

**Straw Poll 3:** Which one of the followings do you prefer?

* Option 1: Disallow the Partial BW Feedback in the Sensing NDPA
	+ The Operation BW of each responder should be aligned with the BW of EHT NDP PPDU (which is 320 MHz)
	+ LTF Offset subfield of Ranging NDPA shall be set to “Reserved”
* Option 2: Allow only the same Partial BW Feedback patterns for 320 MHz of the EHT NDPA in the Sensing NDPA
	+ LTF Offset subfield of Ranging NDPA shall be repurposed for the Partial BW Feedback
	+ B11 to B16 of the STA Info Field are used for this indication

**Result:** Opt.1 / Opt. 2 / Abstain: 14/12/13

C: We don’t need it and it is very complicated.

PDT will be prepared with partial BW feedback as “TBD”.

**11-22/1385r4, “Comment resolution for sensing session”, Chaoming Luo (OPPO):** This submission resolves comments of CID 299, 308, 316, 481, 93, 141, 145, 430, 611, 774, 463, 21, 570, 912. In Rev 4, the following additions are made: A description for active/inactive state and frame exchange timer

A relatively large number of questions and comments follow the presentation.

Chaoming stated that he needs to revise the text and come back.

The Chair stated that we can go to the normal queue in the next time and even though we made a progress, we still need more offline discussion. The next presentation queue will be Junghoon (1543), Dong Wei (1368), and Rajat (1403) in that order.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 11:59 am ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 9/27 | Au, Oscar | Origin Wireless |
| TGbf | 9/27 | Aygul, Mehmet | VESTEL; IMU |
| TGbf | 9/27 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 9/27 | Carney, William | Sony Group Corporation |
| TGbf | 9/27 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbf | 9/27 | Dash, Debashis | Apple Inc. |
| TGbf | 9/27 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 9/27 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 9/27 | feng, Shuling | MediaTek Inc. |
| TGbf | 9/27 | Huang, Lei | Huawei International Pte Ltd |
| TGbf | 9/27 | Jang, Insun | LG ELECTRONICS |
| TGbf | 9/27 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbf | 9/27 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 9/27 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 9/27 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbf | 9/27 | narengerile, narengerile | Huawei Technologies Co., Ltd |
| TGbf | 9/27 | Ozbakis, Basak | Vestel Electronics Corp. |
| TGbf | 9/27 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/27 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 9/27 | Sosack, Robert | Molex Incorporated |
| TGbf | 9/27 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 9/27 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 9/27 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 9/27 | Val, Inaki | Maxlinear |
| TGbf | 9/27 | Wei, Dong | NXP Semiconductors |
| TGbf | 9/27 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbf | 9/27 | Zhang, Jiayi | Ofinno |

### Thursday, September 29, 2022, 11:00 pm-01:00 am (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1644-05-00bf-tgbf-meeting-agenda-2022-09-part2.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 Han, calls the meeting to order at 11:00 pm ET (33 persons are on the call after 30 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 13), 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 19) and asks if there are any questions or comments on the agenda.

The Chair asks if there is any objection to approve the agenda. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf timeline (slides 20) and CR status (slide 21)
2. The Chair presents slide 22, Call for contributions.
3. The Chair presents the teleconference times (slide 23). Jon has confirmed the updated times for the f2f, but Dorothy still needs to confirm.
4. Presentations:

**11-22/1543r1, “Extra Normalization Before CSI Quantization”, Junghoon Suh (Huawei):**

Q: On slide 4, why 13 bits?

A: We want the maximum to be within 12 bits.

Q: As you mentioned, this it is very much implementation related. I believe it is very hard to harmonize this.

A: On page 3, different implementations may have different Np. Therefore, we need to at least illustrate how to reach the end result. If not specified, at least I believe we need to have some examples to illustrate the issue.

Q: I believe I need to confirm the difference compared to Steve’s presentation. I need to go back and check.

Q: What is the motivation between the extra normalization?

A: Np is vendor specific, but the output of the CSI quantization must be clearly defined.

The chair asks about the next steps.

Junghoon would like to run the SP later to give the group some time to digest the presentation.

**11-22/1368r3, “On Responder-to-Responder Sensing Measurement”, Dong Wei (NXP):**

This contribution has been presented before but a new revision has been generated bases on off-line discussions. The updates are presented.

Q: On slide 4, the difference here is that you need to have two IDs?

A: Yes.

Q: I suggest emphasizing in the SPs what is new compared to what is already agreed.

Q: On page 4, are the parameters in the report?

A: They are in the Trigger frame, indicating what is needed in the report.

Q: With respect to measurement setup ID. Who sets it up?

A: In the usual way. Then every responder should tag the corresponding measurement with this so that the application can identify the measurement.

Q: With respect to SP1, I would prefer to highlight what is new.

As a consequence, SP1 is updated.

Q: Is the mode optional or mandatory.

A: I believe we have motioned this to be optional.

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

* Adding a new Sensing-Responder-to-Sensing Responder sounding phase to the TB sensing measurement instance.
* In an SR2SR sounding phase, there is one SR2SR sensing transmitter and one or more SR2SR sensing receivers. The AP shall transmit an SR2SR Sensing TF to the SR2SR sensing responders.
	+ The SR2SR Sensing TF assigns the roles of the SR2SR sensing responders.
	+ An SIFS time after receiving the TF, the SR2SR sensing transmitter shall respond with an SR2SR Sensing NDP. The SR2SR NDP is the HE Ranging NDP (i.e., an HE SU PPDU without the Data field).
	+ Upon receiving of the NDP, each SR2SR sensing receiver measures the CSI.
* During a reporting phase, the Report subvariant of the Sensing TF is transmitted by the AP to solicitate transmissions of sensing measurement report frames by the STAs whose roles are SR2SR sensing receivers in one or more of the SR2SR sounding phases.

**Result:** The SP is supported unanimously.

After some feedback from the group, Also the text of SP2 is updated.

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

* The SR2SR Sensing trigger frame (TF) is a variant of the Passive Sounding Ranging TF.
	+ The Trigger Dependent Common Info subfield has 2 bytes and one of the reserved bits (B4) is used to indicate ranging/sensing.
	+ The SR2SR sensing TF has two or more User Info fields.
	+ One of the User Info fields is addressed to the SR2SR sensing transmitter and the other User Info field(s) are addressed to the SR2SR sensing receiver(s).
	+ One reserved bit (e.g., B12) of each User Info field is used to indicate the role of the corresponding SR2SR responder.
		- If the bit is 0, the responder is assigned as the SR2SR sensing transmitter;
		- If the bit is 1, the responder is assigned as an SR2SR sensing receiver
	+ The inclusion the AID/USID of the SR2SR sensing transmitter, Measurement Setup ID, and Measurement Instance ID is TBD.

**Result:** The SP is supported unanimously.

**11-22/1403r3, “CR Document Resolving CID 907”, Rajat Pushkarna (Panasonic):**

This submission proposes resolutions of comments received from TGbf comment collection 40 (TGbf Draft 0.1).

* CID: 907 (1 CID)

The contribution has been presented before and Rajat goes through the updates.

CID 907: No discussion.

**SP:** Do you agree to the resolutions provided in the document 11-22/1403r3 for CID 907 for inclusion in the latest 11bf draft?

**Result:** Supported unanimously.

**11-22/1425r2, “CC40 Comment Resolutions for TB Instance Topic in NDPA and TF Sounding Phases”, Jiayi Zhang (Ofinno):**

This document proposes resolutions for some CC40 TB sensing measurement instance-related comments in NDPA and TF sounding phases with CID: 617, 620, 622, 623, 761, and 764.

**Straw Poll:**

1. Do you agree to the proposed resolutions for CIDs 761, 622, 623, and 764?

**Result:** The SP is supported unanimously.

**11-22/1579r2, “CR for CC40 11bf D0.1 Sensing Measurement Report”, Rojan Chitrakar (Panasonic):** This submission proposes resolutions of comments received from TGbf comment collection 40 (TGbf Draft 0.1).

* CIDs: 294, 65, 119 (3 CIDs)

Q: If the report is short, can you then combine several reports in one frame?

A: To allow for this, more work is needed. There are others working on related contributions.

1. The chair reminds that there are no teleconferences next week and asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 01:03 am ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 9/29 | Au, Oscar | Origin Wireless |
| TGbf | 9/29 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 9/29 | Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/29 | Dash, Debashis | Apple Inc. |
| TGbf | 9/29 | feng, Shuling | MediaTek Inc. |
| TGbf | 9/29 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbf | 9/29 | HAN, Xiao | Huawei Technologies Co., Ltd |
| TGbf | 9/29 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbf | 9/29 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 9/29 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 9/29 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 9/29 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 9/29 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 9/29 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 9/29 | Wei, Dong | NXP Semiconductors |
| TGbf | 9/29 | Wilhelmsson, Leif | Ericsson AB |
| TGbf | 9/29 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbf | 9/29 | Zhang, Jiayi | Ofinno |
| TGbf | 9/29 | Zhou, Pei | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |

### Monday, October 10, 2022, 10:00 am-12:00 pm (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1677-01-00bf-tgbf-meeting-agenda-2022-10.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 Han, calls the meeting to order at 10:00 am ET (40 persons are on the call after 15 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 13), 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). Rojan is not present and has asked to present tomorrow.

The Chair asks if there is any objection to approve the agenda. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf timeline (slide 17) and CR status (slide 18). Claudio stresses that we have a significant number of technical CR for sub 7 GHz.
2. The Chair presents slide 19, Call for contributions.
3. The Chair presents the teleconference times (slide 20). There are six sessions for the f2f in November.
4. Presentations:

**11-22/1543r1, “Extra Normalization Before CSI Quantization”, Junghoon Suh (Huawei):**

The contribution was presented in the last teleconference, and the intention is to discuss the newly added SP 3.

There are comments from the group that this SP should be discussed with Steve based what he has shown already. Junghoon explains that he has had some offline discussion with Steve. Steve suggests that they work offline to provide some examples.

**11-22/1621r0, “Sounding Rate Ceiling for WLAN Sensing”, Oscar Au (Origin Wireless):** The contribution is concerned with that there are applications that need more than 100 Hz sounding frequency.

Q: On slide 4, I believe one should also mention the increased overhead that follows with increased sounding frequency.

There is some discussion about the needs vs. the technical difficulties supporting a higher sounding rate.

As a result, the SPs are deferred.

**11-22/0977r9**, **“Comment resolution for SBP reporting”, Chaoming Luo (OPPO):**

The text is slightly updated based on comments from the group, so revision 10 of the document will be uploaded.

**Straw Poll:** Do you support resolutions to the following CIDs and incorporate the text changes into the latest TGbf draft: 410, 590, 598, 602, 744, 596, 597, 641 in 11-22/977r9 [8 CIDs]

**Result:** Supported unanimously.

**11-22/0905r3**, **“CC 40 CR for CIDs for 666, 672, and 734”, Mengshi Hu (Huawei):**

**Straw Poll:** Do you support the CR for CIDs 666 and 672.

**Result:** Supported unanimously.

**11-22/1386r4**, **“****CC40 CR for Topic Instance – Part 1”, Mengshi Hu (Huawei):**

**Straw Poll:** Do you support the CR for CIDs 553, 555, 556, 813

**Result:** Supported unanimously.

**11-22/1365r4**, **“CC40 CR for MLME – Part 1”, Narengerile (Huawei):** Narengerile goes though the changes made compared to the previous revision.

No discussions except for the CID 35, where some updates are suggested.

Because of the discussion related to CID 35, Narengerile decides to defer the SP and run it tomorrow.

**11-22/1697r0**, **“Proposed Resolution to CIDs 345, 407, and 411”, Claudio da Silva (Meta Platforms):**

Claudio explains that the document is still not uploaded to mentor, but starts to give an overview of the proposed resolutions.

Run out of time.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 12:01 pm ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 10/10 | Au, Oscar | Origin Wireless |
| TGbf | 10/10 | Aygul, Mehmet | VESTEL; IMU |
| TGbf | 10/10 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbf | 10/10 | Chng, Shi Baw | BAWMAN LLC |
| TGbf | 10/10 | Choi, Jinsoo | LG ELECTRONICS |
| TGbf | 10/10 | Dash, Debashis | Apple Inc. |
| TGbf | 10/10 | da Silva, Claudio | Meta Platforms; PWC, LLC |
| TGbf | 10/10 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 10/10 | feng, Shuling | MediaTek Inc. |
| TGbf | 10/10 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbf | 10/10 | Hsu, Ostrovsky | Xiaomi Inc. |
| TGbf | 10/10 | Jang, Insun | LG ELECTRONICS |
| TGbf | 10/10 | Kain, Carl | USDOT; Noblis |
| TGbf | 10/10 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 10/10 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbf | 10/10 | McCann, Stephen | Huawei Technologies Co., Ltd |
| TGbf | 10/10 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 10/10 | Rafique, Saira | Istanbul Medipol University; Vestel |
| TGbf | 10/10 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 10/10 | Schweizer, Benedikt | Apple Inc. |
| TGbf | 10/10 | Shellhammer, Stephen | Qualcomm Incorporated |
| TGbf | 10/10 | Sosack, Robert | Molex Incorporated |
| TGbf | 10/10 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 10/10 | Sun, Bo | ZTE Corporation |
| TGbf | 10/10 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 10/10 | Turkmen, Halise | Istanbul Medipol University; Vestel |
| TGbf | 10/10 | Val, Inaki | Maxlinear |
| TGbf | 10/10 | Wei, Dong | NXP Semiconductors |
| TGbf | 10/10 | Wilhelmsson, Leif | Ericsson AB |
| TGbf | 10/10 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |

### Tuesday, October 11, 2022, 10:00 am-12:00 pm (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1677-02-00bf-tgbf-meeting-agenda-2022-10.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 Han, calls the meeting to order at 10:00 am ET (40 persons are on the call after 15 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 13), 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 17).

The Chair asks if there is any objection to approve the agenda. No objection from the group so the agenda is approved.

1. The Chair presents the TGbf timeline (slide 18) and CR status (slide 19). Claudio stresses that we have a significant number of technical CR for sub 7 GHz.
2. The Chair presents slide 20, Call for contributions.
3. The Chair presents the teleconference times (slide 21).
4. Presentations:

**11-22/1697r0**, **“Proposed Resolution to CIDs 345, 407, and 411”, Claudio da Silva (Meta Platforms):**

This is a continuation of the presentation that started at the end of the last teleconference.

CIDs 407, and 411:

Q: Would it not make sense to have a new section covering sensing more generally?

A: I don’t mind, but note that it is quite a bit of work so we should really be in agreement before doing this kind of restructuring.

Q: I support this, I would like to move it out of Clause 11.

Q: I believe it should remain in Clause 11.

As a result of the discussion, Claudio will update the proposed resolution and bring it back.

CID 345: No discussion.

**11-22/1365r5**, **“CC40 CR for MLME – Part 1”, Narengerile (Huawei):** This is a continuation of the presentation from yesterday. The contribution is updated to r5.

CID 35: No discussion.

CIDs 732 and 821: No discussion

**Straw Poll:** Do you support the proposed modifications to the following CIDs and incorporate the changes into the latest TGbf draft: CID 211, 212, 213, 214, 371, 824, 731, 35, 388, 733, 468, 469, 658, 659, 826, 827, 829, 820, 822, 389, 825, 732, 821, 484

**Result:** Supported unanimously.

**11-22/1651r0**, **“Resolutions for Instance Comments”, Cheng Chen (Intel):**

This submission proposes resolutions to editorial comments submitted in CC40. The text used as reference is D0.3.

CIDs: 202 315 482 567 633 769 768

CIDs 202, 315, 482, 567, 633, 769:

A minor editorial question regarding terminology. Cheng will check.

Some additional minor comments related to making the text slightly more clear.

CID 768: No discussion.

**11-22/0989r1**, **“Comment Resolutions for CC40 11bf D0.1 SBP Resetup CIDs”, Rojan Chitrakar (Panasonic):** This submission proposes resolutions of comments received from TGbf comment collection 40 (TGbf Draft 0.1).

* CIDs: 301, 304, 321, 13 (4 CIDs)

CIDs 301, 304, 321:

Q: What happens in case of partial accepted resetup?

A: My assumption is that the STA that cannot accept the new setup will no longer be part of the sensing.

Q: Why would the setup change?

A: Could for instance be because of changed requirements from the application, like need for larger bandwidth.

Q: I believe there is quite some overhead related to this and things can work without this. Maybe one just has to accept to take down and do a new setup.

CID 13: No discussion.

**Straw Poll:** Do you agree to incorporate the changes provided in doc.: IEEE 802.11-20/1384r0 for the following CID to the next revision of 802.11bf draft: CID 13?

**Result:** Supported unanimously.

**11-22/1673r0**, **“CC40 CR for CIDs on NDP”, Mahmoud Kamel (Interdigital):** This submission proposes resolutions for 3 CIDs (172, 545, 563) in subclause 11.21.18 in P802.11bf D0.1:

CIDs 172, 545, and 563: Suggested by Claudio to add text for how to implement the proposed CRs.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 12:02 pm ET.

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 10/11 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 10/11 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbf | 10/11 | Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 10/11 | da Silva, Claudio | Meta Platforms; PWC, LLC |
| TGbf | 10/11 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 10/11 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 10/11 | Eitan, Alecsander | Qualcomm Technologies, Inc. |
| TGbf | 10/11 | feng, Shuling | MediaTek Inc. |
| TGbf | 10/11 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbf | 10/11 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 10/11 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 10/11 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbf | 10/11 | narengerile, narengerile | Huawei Technologies Co., Ltd |
| TGbf | 10/11 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 10/11 | Rafique, Saira | Istanbul Medipol University; Vestel |
| TGbf | 10/11 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 10/11 | Sand, Stephan | German Aerospace Center (DLR) |
| TGbf | 10/11 | Shellhammer, Stephen | Qualcomm Incorporated |
| TGbf | 10/11 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbf | 10/11 | Sun, Bo | ZTE Corporation |
| TGbf | 10/11 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 10/11 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 10/11 | Turkmen, Halise | Istanbul Medipol University; Vestel |
| TGbf | 10/11 | Val, Inaki | Maxlinear |
| TGbf | 10/11 | Wei, Dong | NXP Semiconductors |
| TGbf | 10/11 | Wilhelmsson, Leif | Ericsson AB |
| TGbf | 10/11 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbf | 10/11 | Zhang, Jiayi | Ofinno |
| TGbf | 10/11 | Zhou, Pei | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |

### Thursday, October 14, 2022, 11:00 pm-01:00 am (ET)

**Meeting Agenda:**

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

<https://mentor.ieee.org/802.11/dcn/22/11-22-1677-03-00bf-tgbf-meeting-agenda-2022-10.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 Han, calls the meeting to order at 11:00 pm ET (35 persons are on the call after 30 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 13), 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 18).

The Chair asks if there is any objection to approve the agenda. Rojan requests to defer his presentation. Mahmoud points out that he wants to present an updated revision of his document 1673 based on the feedback received in the last teleconference by Claudio.

No objection from the group so the updated agenda is approved.

1. The Chair presents the TGbf timeline (slide 19) and CR status (slide 20).
2. The Chair presents slide 21, Call for contributions.
3. The Chair presents the teleconference times (slide 22).
4. Presentations:

**11-22/1396r3**, **“Proposed Draft Text for SBP Setup”, Claudio da Silva (Meta Platforms):** An earlier revision was presented in the latest f2f meeting. In the new revision attempts have been made to align sub 7 GHz and 60 GHz.

Q: I believe we need some text explaining the SBP Request Response bit. Also, I don’t think the bit is needed.

A: I agree it may not be needed. It is added to align with what it looks like in 60 GHz.

Some typos are also identified. Based on this and additional feedback, Claudio will update the document before running the SP.

**11-22/1673r2**, **“CC40 CR for CIDs on NDP”, Mahmoud Kamel (Interdigital):** This submission proposes resolutions for 3 CIDs (172, 545, 563) in subclause 11.21.18 in P802.11bf D0.1:

r0 was presented in the last teleconference. Mahmoud goes through the updates that have been done in the new revision.

Based on some comments from the group, the text is slightly updated.

**11-22/1675r1**, **“CC40 CR for CIDs on Sensing Roles”, Mahmoud Kamel (Interdigital):** This submission proposes resolutions for 11 CIDs (144, 578, 676, 715, 750, 773, 778, 808, 809, 878, 879) in subclause 11.21.18 in P802.11bf D0.1:

CIDs: 144, 750, 808, 809, 878, and 879:

Q: I believe you should give CID 750 to Chaoming.

A: No, I believe you are referring to another CID.

It is agree that CID 750 should remain in this document.

CIDs 676 and 715: Resolution changed from Revised to Rejected.

CID 773: The resolution is unchanged, but a note is added.

CIDs 778, 578:

Q: I believe we don’t need this added table, and I believe things are already clear and this table will in my opinion make things more unclear.

Q: I also believe it makes things more unclear.

Q: I suggest rejecting these comments.

As a result of the discussion, Mahmoud will update the document.

1. The chair asks if there is AoB. No response from the group.
2. The meeting is adjourned without objection at 01:00 am ET.

**List of Attendees:**