IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TGbn December 2024 January 2025 Teleconferences Minutes | | | | |
| Date: 2025-01-12 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Yusuke Asai | NTT |  |  | yusuke.asai@ntt.com |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document contains the minutes for TGbn December 2024 and January 2025 teleconferences.

Revision history:

* Rev0: First version of the document.
* Rev1: Revised some editorial errors.
* Rev2: Added the links of the ad-hoc teleconferences minutes in January 2025.

Abbreviations:

* C: Comment.
* A: Answer.

# 1st Conf. Call: December 2nd, Monday (19:00-21:00 ET) - Joint

* Call the meeting to order
* IEEE 802 and 802.11 IPR policy and procedure
  + Patent Policy: Ways to inform IEEE:
  + Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
  + Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
  + Speak up now and respond to this Call for Potentially Essential Patents

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

**Nobody spoke/wrote up.**

* + Copyright Policy: Participants are advised that
  + IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
  + Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy.
  + Patent, Participation, Copyright and policy related subclause: Please refer to the agenda document([11-24/1988r](https://mentor.ieee.org/802.11/dcn/24/11-24-1988-01-00bn-nov-jan-tgbn-teleconference-agenda.docx)1).

**Copyright Policy was presented.**

* Attendance reminder
  + Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>
  + Please record your attendance during the conference call by using the IMAT system:
    - 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802 Wireless Interim/Plenary Session” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbn conference call that you are attending.
    - If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to:  
      Yusuke Asai ([yusuke.asai@ntt.com](mailto:yusuke.asai@ntt.com)) & Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))
  + Please ensure that the following information is listed correctly when joining the call:
  + "[voter status] First Name Last Name (Affiliation)"
* Agenda
  + Chair reviews proposed agenda found in [11-24/1988r](https://mentor.ieee.org/802.11/dcn/24/11-24-1988-01-00bn-nov-jan-tgbn-teleconference-agenda.docx)1.
  + Discussion:

C: [11-24/1508r0](https://mentor.ieee.org/802.11/dcn/24/11-24-1508-00-00bn-channel-protection-in-elr-scenarios.pptx) was deferred by the presenter because it was received some offline comment. The presenter will request to present when it will be ready.

C: The editor requests to go through the table of contents for the draft during the contribution of the TGbn D0.1.

* + The modified agenda approved with unanimous consent.
* Announcements
  + Motions scheduled during the next teleconference (December 19th, 2024) was announced.
  + To run during this session, a 10 days advanced notice prior to motion is needed.
  + To meet this requirement and align with the TGbn MO, the chair needed by Dec 7th, 2024
  + Members that have SPs with “super majority” positive opinion (75+%) to send me the text of that SP so that the chair can add to the motion list.
  + Members that have SPs that are queued to be ran before/during December 19th, 2024, to send me the text of that SP so that the chair can add to the motion list
  + If the SP shows “super majority” (75+%) positive opinion prior to the scheduled motion, then we keep the corresponding motion and update the note below the motion with the SP result
  + If the SP does not show “super majority” positive opinion prior to the scheduled motion or is not ran, then we will remove the corresponding motion from the motion list.
  + Note: Text changes to the motion text during this 10-day period is fine as long as it does not lead to major technical changes to the motion.
  + Per procedure, other motions are allowed to be requested as well provided that they are sent by Dec 7th, 2024, and they are approved by the WG chair.

C: What is the difference between the two bullets regarding SPs by December 7th?

A: The first one says if you had the in the past and has a 75% or more, then it just is included in the motion list. That has already happened or happens before December 7th. If these are plans to be run during the teleconference that we have during the 10-day period, we can still include them in the motion. If it is 75% or more, we can keep it. If it is not ran or it doesn’t have the super majority, then we remove it from the motion.

C: For the timeline wise, if we need to submit the motion text by December 7th effectively, today’s meeting and the December 5th meeting will be only chance to run straw poll if we wanted?

A: No. That is the part I try to accommodate. If you plan to run the straw poll on December 12th, you can send the chair the request to add the straw poll content as a motion to the agenda for the December 19th. Before December 7th, the chair sends it to the WG chair. If the straw poll will run on December 12th and obtain the super majority, then we keep it to the motion list as usual. Otherwise, we will remove it from the motion list.

C: How will it work if there is a proposed amendment to a motion?

A: We can still allow the amendments to the motion as long as it does not lead to major technical changes to the motion. If it leads to major changes to the motion from a technical perspective, then it will be postponed that motion to the January F2F meeting.

* TGbn D0.1 Status/Plan:
  + [11-24/1989r0](https://mentor.ieee.org/802.11/dcn/24/11-24-1989-00-00bn-a-guide-for-tgbn-specification-drafting.ppt): A Guide for TGbn Specification Drafting

Ross Jian Yu (Huawei Technologies)

* + - The POC shall follow the style guide to minimize the overhead.
    - TGbn Clauses Number:
    - Clause 37: UHR MAC specification
    - Clause 38: UHR PHY specification

C: In the slide 10, this is part of the style guide, but it should be updated. Historically, frame could mean a PPDU or even PSDU or MPDU. Going forward, we should only use frame to mean MPDU.

A: I agree.

C: In the right corner of the slide 15, I suggest the subfield can be removed.

A: Got it.

* + [11-24/1993r1](https://mentor.ieee.org/802.11/dcn/24/11-24-1993-01-00bn-tgbn-d0-1-spec-skeleton.docx): Tentative Table of Contents for TGbn D0.1

Ross Jian Yu (Huawei Technologies)

C: For some sections, we may not need in later. For example, UHR MIMO control and etc., I believe maybe we don’t need them in UHR. But, if we have those sections, I am afraid people may contribute to feed up. I don’t know how to proceed to prevent those kinds of things.

A: Unless we do have proposal for them, I can remove all of them.

C: You can just make some note in the beginning, if there is no text proposal, then you can at the end we will remove those sections.

A: If you think some clauses may not be needed, please let me know.

C: In the section 37.7, as basically as C-RTWT POC, I received some comments. Some people are asking for whether or not these per feature section are subclauses of multi-AP coordination framework or not. So, I kept this pending. We need to make a decision on this if 37.8 until 37.11 are under 37.7 or rather on the same level.

A: OK.

C: The 11be draft is the MLO feature is pretty well contained into one single section. So, if you want to learn about MLO, there is one section you go to and now we are hoping and assuming we do like that for MAP. I would support the idea that we have a multi-AP section, which is 37.7, then the subsections for various technologies are nearly the top level.

A: OK. Basically, we want to have a multi-AP section, and under it, we have different solutions.

C: The line numbering seems unusually unhelpful, and it messes up the headings in the lefthand side. Maybe we don’t want to do that.

A: These are from the transfer software.

(Chair asked to send an e-mail to the editor if there are further questions and comments.)

* + Chair reminded the TGbn Guidelines: see [11-24/1682r3](https://mentor.ieee.org/802.11/dcn/24/11-24-1682-03-00bn-tgbn-guidelines.docx).
    - Prepare **main skeleton (and spec text for the topic)** of the subclauses pertaining to that topic and upload the base document to the mentor website,
    - For ease of identification, all draft text documents to begin with "**PDT-**" for "Proposed Draft Text, and the topic classification (**MAC/PHY/JOINT**)" (**e.g. 11-24-9999-00bn-PDT-MAC-This-Feature**).
    - Start a thread in the TGbn reflector for that topic, which is the point of reference for having discussions and exchanging feedback with other members.
    - Again, for ease of identification, the thread should start with [**PDT-MAC/PHY/JOINT**]
  + Status/Updates/Deadlines on PDTs
    - Deadline for PDT submission requests in the queue: December 02, 2024.
    - Actual submission of the document whenever the POC indicates as ETA.
* PDT Submission: None.
* Straw Polls: None.
* Technical Submissions-Trigger + ELR + CSR:
  + [11-24/1507r2](https://mentor.ieee.org/802.11/dcn/24/11-24-1507-02-00bn-uhr-trigger-frame-design.pptx): UHR Trigger Frame Design

Mahmoud Hasabelnaby (Huawei Technologies)

C: In the Option 1-b, is the extended user info field after the last user info field, or immediately after every user info field? It is better you have a diagram just to illustrate how this works.

A: It is better for each station to have its UHR user info field.

C: Is this field size the same as the user info field?

A: Yes.

C: If I have four users, does current designs have total user info field size of eight?

A: Each user info field represents four bytes. We require two user info field per user.

C: Generally, I see the benefit of this and I had a similar contribution on this as well. Regarding the extension of common info, if the special user info is not sufficient, we can define a further follow up special use info, but you want the AID 12 for that to be different from 2007. Can you explain why it has to be different?

A: Because we want to avoid any backward compatibility with legacy devices, for instance, for EHT. It could be better to assign a new special user info field for this field.

C: I see your point. We need to check if that is indeed an issue.

----- Comments from the chat window (from here) -----

C: Extended UHR User Info field comes immediately after each User Info field.

C: I recall there is rule that there is only one User Info field with a given AID value, then how does Extended UHR User Info field can have same AID?

C: My thinking is the multi-user info with same AID12 will only be used for UHR STAs. Legacy STAS will ignore all such User Info fields so should not create any issue right (independent of whether the AID12 is same or different)?

C: Agree that this would apply for only UHR STAs AID12, but how do we know that a legacy device may not have an issue if it sees multiple user Info with same AID12 even when it is not for that legacy STA? Given the legacy rule is to have only one User Info field for a given AID12.

C: My opinion is the likelihood of that type of implementation is very unlikely, that a device checks for AID12 matching among user info fields not meant for it. But we can check further.

C: Yeah, it is better to check any potential legacy issue on this part.

----- Comments from the chat window (to here) -----

* + [11-24/1765r0](https://mentor.ieee.org/802.11/dcn/24/11-24-1765-00-00bn-consideration-on-11bn-trigger-frame-for-phy-signailng.pptx): Consideration on 11bn Trigger frame for PHY Signaling

Dongguk Lim (LG Electronics)

C: Why do you include the signaling of UEQM and CSD in the case of DRU? We already have passed motion to support UEQM is only defined in MU-PPDUs and especially for the beamformed transmission, but in TB-PPDUs, it should not be used. And especially, an AP cannot request a STA to transmit using beamformed transmission, and also for this CSD for DRU, there is also a passed motion to support that is based on the RU index. So, it is fixed.

A: The passed motion is that we apply to UEQM to the MU-PPDU. It does not limit the MU-PPDU in my thinking. We need cross check about. Regarding your second comment, we have already passed the motion about the CSD indication in the previous meeting. SO, we don’t need the CSD indication in the trigger frame.

* + [11-24/1833r2](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-02-00bn-trigger-frame-design-for-uhr.pptx): Trigger Frame Design for UHR Alice Chen (Qualcomm)

C: In the slide 7, based on this table, we largely follow the design of 11be. Back to 11bn, we didn’t enable A-PPDU, but the decided philosophy in trigger frame could be like supporting trigger frame with A-PPDU with HE and HET variant. So, if we follow this table, they could also be able to support an A-PPDU with HE and UHR variant. But now it is possible to support an A-PPDU with EHT and UHR. Is that correct?

A: Based on a single trigger frame, yes. I don’t know if there will be a rule to allow both HE and UHR. I think probably each generation you need a straw poll or motion to decide on that. But based on this design, it is either EHT or UHR.

C: It is not possible for an A-PPDU with EHT and UHR.

A: Correct. This design is just to solicit a single post-HE generation TB-PPDU.

C: Regarding 2x LDPC signaling, you have several points about the broadcast. I am trying to understand on this is a TB-PPDU and it is supported to be received by the AP, right? And why is it related to broadcast packet?

A: As described in the slide 4 and 5, 2x LDPC signaling is in general applied in both an MU-PPDU and a trigger frame. Each case has their specific use case and public requirements and how this bit is being set and being used. But this is essentially in general.

C: Do we have a signaling of the 2x LDPC for MU downlink?

A: There was a presentation on the LDPC and coding parameter table block in last September IEEE meeting. According that, that already assumes there is a 2x LDPC based on being set to ON and OFF, choosing the code word size of 3888 or not.

C: In the slide 6, can you remind me if this special user info field has PHY version one, wouldn’t non-HUR station try to proceed to the user info field? If you have a special user info field of version ID of one, does that station process this trigger frame? Will it stop here?

A: Are you talking about EHT STA should stop processing it?

C: Yes.

A: Based on the slide 7, even though there is a special user info field, and then even up to common info field and the special user info field, you only know that this bit 54 and 55. You do not need to use user info field bit 39. So, if there is a presence of the special user info field, for example, 1010, and then you still need to look into the user info field B39. It is the PS160 bit to determine whether it’s UHR variant or not because PHY version identifier is being set to one or HE variant. So, an EHT STA shall continue to process.

C: Even after encountering a special user info field with the new PHY version, the EHT STA will continue to process. Couldn’t that trigger like a false TB- PPDU?

A: Currently there is no straw poll or motion saying that you don’t allow to solicit HE and UHR at the same time. I believe maybe we will discuss that later. At this point, what I can only say is that it is not exactly like HE STA.

C: This trigger frame can schedule both EHT and UHR STAs, right? Can one trigger frame schedule the EHT and UHR devices together?

A: If the TB-PPDU type is EHT or HE, it depends on what the TB-PPDU you want to solicit.

C: Is this supposed to be EHT variant, right? Because EHT device doesn’t understand UHR user info field. So, in this case, you need to downgrade the scheduling.

A: HT variant too, I agree to you.

C: In the slide 5, in the trigger frame or in the MAC frame, we do not have description like discard or validate. So, they are generally treated as reserved for MAC frame. The medium may be a little different about the non-TB and the TB cases regarding the third separate of your first paragraph. (“The 2x LDPC subfield is set to 1 and treat as Validate if Coding is BCC (0).”)

A: OK. Your point is taken.

C: In the slide 8, you assume that we reuse the EHT variant, and just distinguishing by the PHY version. Is it right?

A: Yes.

C: We only distinguish the EHT or the UHR variant by using the special user info field. In this case, if we consider the UHR trigger frame variant is indicated by the special user info field.

I think that that common info field is the commonality of the EHT trigger frame variant. So, how the UHR STA know the information over B56 to B59? Because the common info field of UHR variant and the EHT variant is the same. Is my understanding correct?

A: Other fields are the same but only this fields are different. Originally, in the EHT variant common info field, the 7 bits from B56 to B62 are EHT reserved and they are now for UHR.

C: If the UHR STA know this information, it decodes the special user info field and back to the and back to the common info field to know this information. Is it right?

A: Correct, but even back in 11be of time, you need to understand the special user info field first and then go back to interpret the common info field as the EHT variant.

C: I think that isn’t really efficient method to go back to the common info field after the decoding the special user info field. Let me think about that.

C: We have some types of signaling for interference mitigation in the non-triggered PPDUs. Now there is no indication here whatsoever. It should be somewhat symmetric that we can trigger that. At least one bit should be there somewhere.

A: That could be in a separate proposal. In my current proposal, there are certain reserve bits here, for example, in the common info field and there is also in the special user in field. A lot of reserved bits they could be used. Nothing forbidden.

* + [11-24/1809r2](https://mentor.ieee.org/802.11/dcn/24/11-24-1809-02-00bn-evaluation-of-c-sr-types.pptx): Evaluation of C-SR Types Jun Minotani (Panasonic)

C: How do you select the MCS in each transmission in your evaluation?

A: MCS is selected in each sharing AP and shared AP and they can select MCS based and as AP transmit power

C: Is it based on the defining the SINR and assuming the perfect selection for MCSs?

A: Yes.

C: Did you consider the measurement for every transmission or for every TXOP under the optimal case? Because the optimal case has lower throughput, I am wondering it is due to the too big overhead.

A: The overhead is described in the slide 5. Beacon is transmitted every 100 ms and other signals are transmitted,

* + AoB: None.
  + Adjourned at 21:00.

# 2nd Conf. Call: December 5th, Thursday (10:00-12:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-00-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-01-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

# 3rd Conf. Call: December 9th, Monday (19:00-21:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-00-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-02-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

# 4th Conf. Call: December 12th, Thursday (10:00-12:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-01-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-04-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

# 5th Conf. Call: December 16th, Monday (19:00-21:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-01-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-05-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

# 6th Conf. Call: December 19th, Thursday (10:00-12:00 ET) - Joint

* Call the meeting to order
* IEEE 802 and 802.11 IPR policy and procedure
  + Patent Policy: Ways to inform IEEE:
  + Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
  + Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
  + Speak up now and respond to this Call for Potentially Essential Patents

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

**Nobody spoke/wrote up.**

* + Copyright Policy: Participants are advised that
  + IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
  + Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy.
  + Patent, Participation, Copyright and policy related subclause: Please refer to the agenda document([11-24/1988r](https://mentor.ieee.org/802.11/dcn/24/11-24-1988-11-00bn-nov-jan-tgbn-teleconference-agenda.docx)11).

**Copyright Policy was presented.**

* Attendance reminder
  + Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>
  + Please record your attendance during the conference call by using the IMAT system: 
    - 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802 Wireless Interim/Plenary Session” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbn conference call that you are attending.
    - If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to:  
      Yusuke Asai ([yusuke.asai@ntt.com](mailto:yusuke.asai@ntt.com)) & Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))
  + Please ensure that the following information is listed correctly when joining the call:
  + "[voter status] First Name Last Name (Affiliation)"
* Agenda
  + Chair reviews proposed agenda found in [11-24/1988r](https://mentor.ieee.org/802.11/dcn/24/11-24-1988-11-00bn-nov-jan-tgbn-teleconference-agenda.docx)11.
  + Discussion: None.
  + The agenda approved with unanimous consent.
* PDT Submissions (30’’):
  + [11-24/2028r1](https://mentor.ieee.org/802.11/dcn/24/11-24-2028-01-00bn-pdt-joint-sounding-procedure.docx): PDT Sounding Procedure You-Wei Cheng (Media Tek)

C: Could you put the note after the text? A note should be shown clearly to the editor.

A: OK.

C: Regarding joint sounding procedure, here you use UHR NDPA. I remember there was a comment about using UHR NDPA or another name.

A: My understanding is that we will have a specific NDPA format for the CBF. If we have motion to further clarification, I am OK to modify.

C: I’m just asking if people want to call it as UHR NDPA or call it as NDPA for coordinated beamforming or something like that. Regarding sequential NDP sounding, the figure should be a Visio format. In addition, there are some colors on two procedures. Do you have any specific meaning for it?

A: Currently, we only have a high-level motion to pass this full sequence and they are not specifically mentioned. I just added here means that there is not specifically mentioned that there will be in the same TXOP. I am waiting for the motion. I still discuss with a few members.

C: It is not clear to me.

A: I think this is actually truthful to the past motion. “Sequential” means that they will go at the sequence at a different time, but they are not necessarily consecutive. For example, if you are doing one sounding of the first part, and then the AP has low-latency data to transmit right now, it can transmit it whenever. After some time, you can do the second part of sounding.

There are two figures, but some comments say in the past motion in SFD seems this did not reflect. So, this is sequential but they are not consecutive. I think that is the meaning.

C: I agree the previous comment. Maybe we need a note. I think that is great just to make a note. Sounding could be in different TXOPs.

C: In the format of the NDPA, there will be other things, parameters. Do you want to add one sub-bullet saying other parameters TBDs? So that we don’t forget other parameter settings are TBD.

* + [11-24/2026r2](https://mentor.ieee.org/802.11/dcn/24/11-24-2026-02-00bn-pdt-joint-mlme-sap.docx): PDT Joint MLME SAP Yan Li (ZTE)

C: Why do we need an UHR operating mode notification SAP interface?

We have other operating mode notifications in previous PHYs, but we didn’t have a SAP interface. In addition, you said you can use this SAP to enable or disable operation modes tuff. But I could see no explicit way to cancel all the operating mode.

A: In the 11be, we have the similar notification entry for the EMLSR. The name is the EMLSR operation notification. So, in the 11bn, we have proposed the similar new UHR frame to enable, disable some new operation. You can check it.

C: We’ve had other operating mode notifications. we have them for HE and for other PHYs. I am just wondering why we need one EMLSR is a bit different. Because that needs to be configured with various parameters, but it is a special MLO. But the general operation mode notification we had in lots of PHY we didn’t have it in the SAP. So, I am confused. Other question is how do you turn it on and off? I can see no SAP to turn everything off.

C: I look at this SAP primitives in 11be and I don’t see one for operating EML operating mode notification. I agree with you there is an EML operating mode notification frame defined, but I don’t see a SAP defined for it. I agree with the previous commenter. Why do we need a SAP?

A: I found EML operation mode notification has been added in the newest 11be draft.

C: Let’s check what we had done in 11be.

A: I will initiate a thread about to talk about their details about these things.

C: Thank you for explaining why you remove the description about beacon frame. However, if it is yet to be decided, it would be better to leave it or add TBD before beacon frame. Otherwise, we might forget to put it in these.

A: Maybe this is a better way, but I will just track this modification.

C: In SCAN.request on 6.5.3.2, the description specifies the parameters. I think the parameter is not the same as the parameter. We should try and find some better wording for this.

A: We can talk it more offline, but I think the description stye is just keep consistent.

C: In ASSOCIATE.confirm on 6.5.7.3, here parameters in the UHR capable are supported by the STA, but that’s not the STA. It’s the peer STA in this one, isn’t it?

A: Yes, the peer STA.

C: In addition, it says the parameter is present if UHR option implemented is true. But that’s not true. If the peer STA isn’t a UHR AP, you won’t get this parameter.

A: I think like a copy from 11be. We are working on this description.

C: Regarding START.request, it says specifies the parameters that are supported by the station. This parameter is present if UHR parameters are optionally implemented. But I don’t think it is true that it is always present. It is a choice by the SME.

A: I will check it.

* Straw Polls (40’’):
  + **SP1 – Alice Chen - Trigger**

Do you agree to include the following to the 11bn SFD?

* + - TGbn defines the UHR variant of Trigger Frame.
      * Reuse the EHT variant of Trigger Frame format for the UHR variant of Trigger Frame, with one Special User info field immediately after the Common Info field
    - Differentiate EHT and UHR variant by the value of the PHY Version Identifier in the Special User Info field being 0 or 1
    - Reuse the EHT variant Common Info field and Special User Info field for UHR
      * B60-B62 in the UHR variant common info field are “UHR Reserved”
    - Reserved bits in the UHR variant Common Info field and Special User Info field may be used for other UHR features
    - The UHR variant of Trigger frame includes the UHR variant User Info field.
      * It has the same length as the EHT variant User Info field

*Supporting doc:* [*11-24/1833r*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*4,* [*11-24/1765r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1765-00-00bn-consideration-on-11bn-trigger-frame-for-phy-signailng.pptx)*,* [*11-24/1507r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1507-03-00bn-uhr-trigger-frame-design.pptx)*]*

* + - Discussion

C: I think this is very nice, but how do we distinguish the common info field is a EHT or UHR? Because it’s before the special user info field.

A: It is based on the combination of the bit 54 and bit 55 in a common info field, you determine whether or not there is a special user info field, and then you further look into the PHY version identifier in a special user info field. You do have to look back to determine the variant of the common info field.

C: OK. So, for the UHR variant common info field, the only different is bit 60 to bit 62 comparing to EHT variant common info field?

A: Correct.

C: To trigger the EHT and the UHR STAs together is still in the scope or it’s already out of scope. Which is correct?

A: EHT and UHR STAs could be triggered together, but is could only be based on one variant either HE variant or EHT variant. In the UHR variant, because of the PHY version identifier is set to one to indicate UHR, it’s supposed to be UHR variant. It will replace EHT variant in terms of the common info field, special user info field and the user info field.

C: What is the conclusion?

A: Currently, there is no proposal from anybody to do the UHR and EHT trigger together. If somebody want to propose it, please bring the contribution.

C: Does the current straw poll explore that option?

A: It doesn’t touch that part.

C: Does this SP exclude triggering EHT and UHR stations in the same trigger? Because you say the PHY version identifier is set to UHR or EHT.

A: You were not supposed to solicit EHT PPDU and UHR PPDU together. But you can still trigger both EHT and UHR STAs, if you use HE trigger frame or EHT variant trigger frame.

C: I understand that. But my question is in the same trigger frame, can you solicit for EHT TB-PPDU and for UHR TB-PPDU? Is that excluded in this SP, right?

A: Correct.

C: I understand there is no proposal, but at this stage, why do we exclude that? Can you keep that open?

A: I don’t fully agree with this design excluded. My point is there is always a way to add amendment to the existing design to add it. But at this point, there is no proposal about that. So, we should not consider the design for something having proposed yet.

**Result: 89Y, 21N, 43A**

* + **SP2 – Dongguk Lim - Trigger**

Do you agree to include the following to the 11bn SFD?

* + - For a UHR TB PPDU transmission, there exists a 5-bit UL UHR MCS in a User Info field for UHR variant of Trigger frame

*Supporting doc:* [*11-24/1765r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1765-00-00bn-consideration-on-11bn-trigger-frame-for-phy-signailng.pptx)*.*

* + - Discussion: None.

**Result: No objection.**

* + **SP3 – Alice Chen – Trigger**

Do you agree to include the following to the 11bn SFD?

* + - Use the following UHR variant User Info field design

A white rectangular box with red text

Description automatically generated

* + - The SS Allocation subfield design depends on RRU or DRU
      * Repurpose 1 bit in the SS Allocation subfield in the UHR variant User Info field to indicate Nss (1ss or 2ss) in the case of DRU

A white sheet with red text

Description automatically generated

*Supporting doc:* [*11-24/1833r*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*4.*

* + - Discussion:

(The figure numbers are the same and should be revised.)

**Result: No objection.**

* + **SP4 – Sameer Vermani, Qinghua Li, You Wei Chen – Sounding**

Do you agree to include the following to the 11bn SFD?

* + - NDP Announcement Variant subfield shall be set to 3 for COBF NDPA in UHR.

*Supporting doc:* [*11-24/1822r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-04-00bn-cobf-design-for-uhr.pptx)*,* [*11-24/1835r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1835-03-00bn-backward-compatible-sounding-for-cobf.pptx)*,* [*11-24/1865r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1865-03-00bn-universal-sounding-and-ndpa-signaling.pptx)

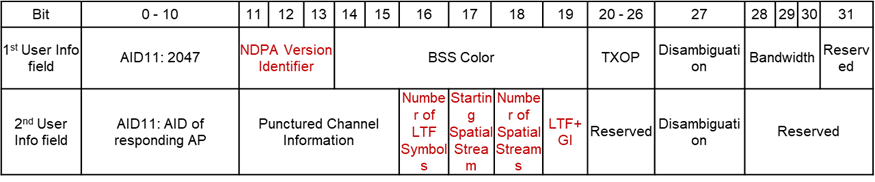
* + - Discussion: None.

**Result: No objection.**

* + **SP5 – Sameer Vermani, Qinghua Li, You Wei Chen – Sounding**

Do you agree to include the following to the 11bn SFD?

* + - When the initiating AP requests the responding AP to join the CoBF sounding, the red subfields in the first and second User Info fields of the NDPA shall be set as follows.
      * NDPA Version Identifier is set to 0 for CoBF sounding in UHR
      * Number of LTF symbols is set to 0 and 1 for 4 and 8 symbols, respectively
      * Starting Spatial Stream is set to 0 and 1 for the 1 st and 5 th streams, respectively
      * Number of spatial streams is set to 0 and 1 for the 4 and 8 streams, respectively
      * LTF+GI is set to 0 and 1 for 2x LTF+0.8us GI and 2x LTF+1.6us GI, respectively



*Supporting doc:* [*11-24/1822r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-04-00bn-cobf-design-for-uhr.pptx)*,* [*11-24/1835r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1835-03-00bn-backward-compatible-sounding-for-cobf.pptx)*,* [*11-24/1865r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1865-03-00bn-universal-sounding-and-ndpa-signaling.pptx)

* + - Discussion:

C: Regarding the blank fields, once you put the table here, that means there is a blank field is fixed. For example, if you put the AID 11 in the second user info field, this means the AID of the responding AP in this field. In the NDPA, it is validated both the AP and the STA. Once that part is finished, you can think how to design this part. So, I think the better way is to remove the table.

A: Let me wait for other comment, then we can decide how to modify.

C: Overall, I agree that the NDPA variant could be one way to move forward, but for the specific details, the still need some more time for further thinking. It would be good you could defer the SP.

C: Please defer the SP. We need more time to check the details.

A: OK. We can defer the straw poll.

**(The SP was deferred.)**

* + **SP6 – Alice Chen, Juan Fang, You-We Chen – U-SIG**

Do you agree to include the following to the 11bn SFD?

* + - CoBF is only applied in DL non-OFDMA MU MIMO transmission
    - C-SR is only applied in UHR DL SU transmission in each BSS
    - The entire U-SIG format in a UHR MU PPDU is as in the following figure

A screenshot of a computer

Description automatically generated

*Supporting doc:* [*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*,* [*11-24/1831r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1831-03-00bn-uhr-u-sig-and-uhr-sig-common-field-general-design.pptx)*,* [*11-24/1864r*](https://mentor.ieee.org/802.11/dcn/24/11-24-1864-01-00bn-map-ppdu-consideration-and-harmonized-u-sig-signaling.pptx)*1*

* + - Discussion:

C: I also suggest to defer the SP. We don’t have sufficient discussion about the coordinated spatial reuse. It is probably kind of premature right now.

C: I request to defer the second and third sub-bullet including the figure.

A: You are OK with the first bullet and ask to remove the rest of the SP. But I would like to keep them together. Passing just one bullet seems not to be very meaningful because the design is not complete. Let’s hear about other comments and then make decision whether we should defer them or break down.

C: The second sub-bullet, it says CSR but I am not sure if there is a specific protocol that is being referred here. I don’t know if we have a similar consensus regarding CSR. So, I also prefer this to be deferred. I also think we can do CSR without using UHR PPDU. SO, I don’t know what this bullet is trying to do.

C: I agree with the previous commentor. I think especially for CSR we don’t need to have such restriction so maybe let’s have more discussion to decide.

A: There are many comments for defer, so, I can defer.

**(The SP was deferred.)**

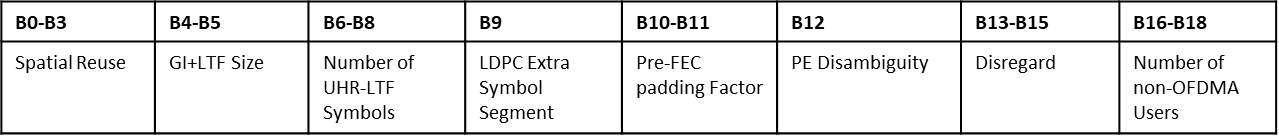
* Motions: [11-24/171r24](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-24-00bn-tgbn-motions-list-part-1.pptx): (Starting at 11:20am, ET)

(Chair edited [11-24/171r24](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-24-00bn-tgbn-motions-list-part-1.pptx) on the fly and uploaded as [11-24/171r26](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-26-00bn-tgbn-motions-list-part-1.pptx) after the teleconference.)

* + **Motion 165 (PHY)**

Move to add to the TGbn SFD the following:

* + - Keep other fields except the Disregard bits in Common field for non-OFDMA transmission in UHR-SIG to be the same as that in Common field for non-OFDMA transmission in EHT-SIG as following



Move: Juan Fang Second: You-Wei Chen

*Reference documents:[*[*12-24/1831r2*](https://mentor.ieee.org/802.11/dcn/24/11-24-1831-02-00bn-uhr-u-sig-and-uhr-sig-common-field-general-design.pptx)*,* [*11-24/1840r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1840-00-00bn-uhr-mu-ppdu-user-info-field-signaling.pptx)*]. SP result: No objection.*

* + - Discussion: None.

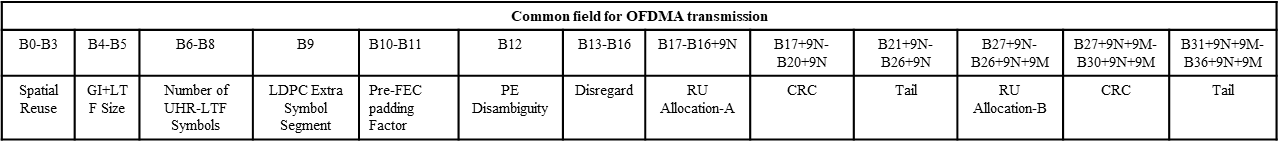
**Result: Approved with unanimous consent.**

* + **Motion 166 (PHY)**

Move to add to the TGbn SFD the following:

* + - Keep the Common field format of UHR-SIG for OFDMA transmission adheres to the Table 36-33 of 11be D7.0

Note: The entries defined for OFDMA + MU-MIMO in RU Allocation table may be updated



*Reference documents:[*[*12-24/1831r2*](https://mentor.ieee.org/802.11/dcn/24/11-24-1831-02-00bn-uhr-u-sig-and-uhr-sig-common-field-general-design.pptx)*]. SP result: No objection.*

Move: Juan Fang Second: Alice Chen

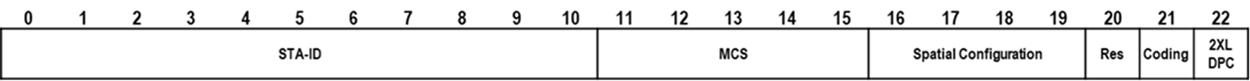
* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 167 (PHY)**

Move to add to the TGbn SFD the following:

* + - Signaling design for MU MIMO User field in UHR-SIG field as shown in the below figure.
      * Also, when Coding field indicates LDPC, then 2xLDPC indication:
        + Bit22 set to 1: TX encode LDPC using code size as 2x1944
        + Bit22 set to 0: TX encode LDPC using code size of 648, 1296, or 1944.



*Reference documents:[*[*11-24/1695r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-1695-01-00bn-11bn-signaling-design-for-extra-mcs-ueqm-2xldpc.pptx)*,* [*11-24/1840r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1840-00-00bn-uhr-mu-ppdu-user-info-field-signaling.pptx)*]. SP result: No objection.*

Move: You-Wei Chen Second: Shengquan Hu

Approved with unanimous consent.

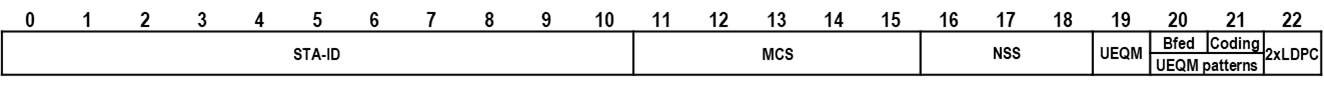
* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 168 (PHY)**

Move to add to the TGbn SFD the following:

* + - Signaling design for non-MU MIMO User field in UHR-SIG field as shown in the below figure.
      * UEQM indication
        + Bit19 set to 1: UEQM is applied, B20-21 are redefined to indicate UEQM patterns.
        + Bit19 set to 0: EQM is applied. (B20 and B21 are Bfed and Coding bits)
      * Also, when Coding field indicates LDPC, then 2xLDPC indication:
        + Bit22 set to 1: TX encode LDPC using code size as 2x1944
        + Bit22 set to 0: TX encode LDPC using code size of 648, 1296, or 1944



*Reference documents:[*[*11-24/1695r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-1695-01-00bn-11bn-signaling-design-for-extra-mcs-ueqm-2xldpc.pptx)*,* [*11-24/1840r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1840-00-00bn-uhr-mu-ppdu-user-info-field-signaling.pptx)*]. SP result: No objection.*

Move: You-Wei Chen Second: Shengquan Hu

*(Note to Editor: In the figure change “Bfed” to “BFed” and “patterns” with “Patterns”.)*

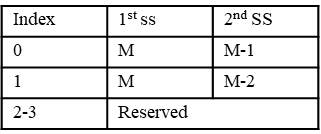
* + - Discussion: None.

**Result: Approved with unanimous consent.**

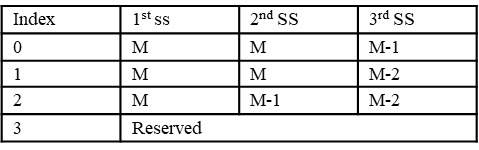
* + **Motion 169 (PHY)**

Move to add to the TGbn SFD the following:

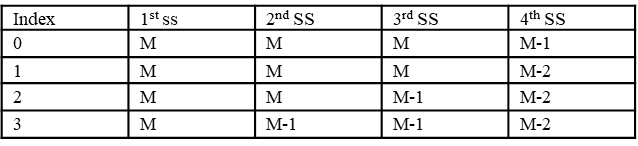
* + - The UEQM patterns indication for NSS=2, 3 and 4 are as follows:
      * NSS=2:



* + - * NSS=3:



* + - * NSS=4:



* + - Note: Reserved entries will be further categorized as Validate or Disregard, following principles in IEEE 802.11be

*Reference documents: [*[*11-24/1772r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1772-00-00bn-signaling-for-uhr-ppdu-follow-up.pptx)*]. SP result: No objection.*

Move: Ross J. Yu Second: Jianhan Liu

*(Note to Editor: Capitalize “ss” in the tables.)*

**Preliminary result: 95Y, 5N, 45A (preliminary passed.)**

**Result: 89Y, 4N, 43A (passed.)**

* + **Motion 170 (PHY-PDT)**

Move to incorporate the proposed text changes in [11-24/1981r3](https://mentor.ieee.org/802.11/dcn/24/11-24-1981-03-00bn-pdt-elr.docx) to the latest TGbn draft

*Reference documents: [*[*11-24/1981r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1981-03-00bn-pdt-elr.docx)*]. SP result: No objection.*

Move: Lin Yang Second: Wook Bong Lee

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 171 (PHY)**

Move to add to the TGbn SFD the following:

* + - The Spatial Configuration field in User field of UHR-SIG field in PPDUs for COBF transmission re-uses the same design as in UHR DL MU-MIMO.
      * Encoding table will be same as 11ax

Move: Sameer Vermani Second: Jianhan Liu

*Reference documents: [*[*11-24/1822r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-03-00bn-cobf-design-for-uhr.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 172 (PHY)**

Move to add to the TGbn SFD the following:

* + - In a PPDU of COBF transmission, all the User fields of UHR-SIG belonging to an AP and the corresponding spatial streams are contiguous.
      * The user fields of one AP are together followed by the ones of the other AP and the same holds for spatial streams

Move: Sameer Vermani Second: Jianhan Liu

*Reference documents: [*[*11-24/1822r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-03-00bn-cobf-design-for-uhr.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 173 (PHY)**

Move to add to the TGbn SFD the following:

* + - LDPC is the only coding mode for COBF.

Move: Shengquan Hu Second: Jianhan Liu

*Reference documents: [*[*11-24/1829r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-1829-01-00bn-uhr-sig-signaling-for-cobf.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 174 (PHY)**

Move to add to the TGbn SFD the following:

* + - Add a 1-bit 2xLDPC subfield in the UHR variant User Info field in Trigger Frame, MU-MIMO and non-MU-MIMO User field formats in UHR-SIG
    - The 2xLDPC subfield is set to 1 to indicate 2xLDPC (nominal codeword size of 3888) is used, or set to 0 to indicate it’s not used, if the coding scheme is LDPC
    - In the MU-MIMO or non-MU-MIMO User field formats, the 2xLDPC subfield is set to 1 and treat as Validate if Coding is BCC (0)
    - In the UHR Variant User Info field in Trigger Frame, the 2xLDPC subfield is set to 1 and reserved if UL FEC Coding Type is BCC (0)

Move: Alice Chen Second: Rethna Pulikkoonattu

*Reference documents: [*[*11-24/1833r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*,* [*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 175 (PHY)**

Move to add to the TGbn SFD the following:

* + - The UHR TB PPDU, and UHR MU PPDU with DL OFDMA transmission, SU transmission, and DL non-OFDMA MU-MIMO use same combinations of the UL/DL subfield and PPDU Type And Compression Mode subfield values for indication as in EHT

Move: Alice Chen Second: Juan Fang

*Reference documents:[*[*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 176 (PHY)**

Move to add to the TGbn SFD the following:

* + - Reuse the U-SIG field structure in EHT TB PPDUs for the U-SIG in UHR TB PPDUs
      * PHY Version Identifier is set to 0 or 1 to differentiate EHT or UHR
      * How to set Disregard and Validate bits is TBD

Move: Alice Chen Second: Juan Fang

*Reference documents: [*[*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 177 (PHY)**

Move to add to the TGbn SFD the following:

* + - Use B13 in the Common field of UHR-SIG in non-OFDMA to indicate Interference Mitigation (IM) ON/OFF
      * Value 0 indicates IM enabled
      * Value 1 indicates IM disabled (because B13 was originally “set to 1 and Disregard at RX’)

Move: Alice Chen Second: Juan Fang

*Reference documents:[*[*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*]. SP result: No objection.*

* + - Discussion:

C: Do we have a function about interference mitigation defined somewhere in the SFD?

A: In the SFD, there is one motion for interference mitigation, “UHR will define interference mitigation.” It would define mechanisms to do interference mitigation.

C: I am not quite sure exactly what putting a bit means here. If it’s an implementation dependent issue, it may not necessary.

A: It’s not implementation specific but standardized. So, this bit would mean this technique is on or off (enable or disable).

C: That’s from the transmitter side to enable this to have interference mitigation function.

A: Yes. Even though there is no other detailed SP or motion, I am being passed but as you look into this technique, it basically changes the tone plan because inserting pilots. So, it makes sense that in non-OFDMA, you just use one bit in a common field to indicate this tone plan change.

C: That makes sense. I understand the motivation without the definition, clear specification or definition for this particular feature is made.

C: I have a contribution in the queue for a very long time, hopefully we present it soon and then we can have some details in the SFD.

**Preliminary result: 68Y, 4N, 50A (preliminary passed.)**

**Result: 64Y, 4N, 49A (passed.)**

* + Note: Motion 178 is NOT present on the motion list ([11-24/171r24](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-24-00bn-tgbn-motions-list-part-1.pptx)).
  + **Motion 179 (PHY)**

Move to add to the TGbn SFD the following:

* + - There is no UHR sounding sequence for SU TxBF or DL MU-MIMO. UHR SU TxBF and UHR DL MU-MIMO uses EHT sounding sequence.

Move: You-Wei Chen Second: Sameer Vermani

*Reference documents: [*[*11-24/1822r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-04-00bn-cobf-design-for-uhr.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 180 (PHY)**

Move to add to the TGbn SFD the following:

* + - UHR sounding sequence uses EHT NDP. I.e., there is no UHR NDP.
      * UHR COBF sounding sequence is the only UHR sounding sequence

Move: You-Wei Chen Second: Sammer Vermani

*Reference documents: [*[*11-24/1822r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-04-00bn-cobf-design-for-uhr.pptx)*,* [*11-24/1835r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1835-03-00bn-backward-compatible-sounding-for-cobf.pptx)*,* [*11-24/1865r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1865-03-00bn-universal-sounding-and-ndpa-signaling.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 181 (PHY)**

Move to add to the TGbn SFD the following:

* + - The first 16 entries of the 5 bit MCS table (MCS0 to MCS15) are identical to 11be

Move: Rethna Pulikkoonattu Second: Juan Fang

*Reference documents: [*[*24/1826r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-1826-01-00bn-5bit-mcs-table-design.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

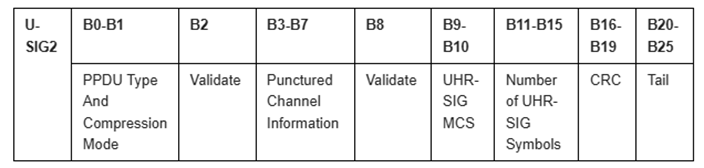
* + **Motion 182 (PHY)**

Move to add to the TGbn SFD the following:

* + - Keep all the fields in U-SIG for UHR MU PPDU to be the same as that in U-SIG for EHT MU PPDU as following, and PHY version is set to 1 for UHR, UHR-SIG MCS and Number of UHR-SIG Symbols subfields replace the EHT-SIG MCS and Number of EHT-SIG Symbols subfields

Note- The disregard and validate bits may be updated for new features.





Move: Juan Fang Second: Alice Chen

*Reference documents: [*[*11-24/1833r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*,* [*11-24/1834r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1834-04-00bn-11bn-non-elr-signaling-design-for-new-features.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 183 (PHY)**

Move to add to the TGbn SFD the following:

* + - 11bn defines an indication to identify the BSS color for COBF transmissions.

Move: Shengquan Hu Second: You-Wei Chen

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 184 (MAC)**

Move to add to the TGbn SFD the following:

* + - 11bn enhances existing mechanism(s) to improve latency for a non-AP STA communication with another non-AP STA on the base channel and off-channel, respectively, by
      * enhancing mechanism(s) to allow an AP to share a TXOP with multiple peer-to-peer (p2p) non-AP STAs(s)
      * enhancing the baseline Channel Usage procedure to provide better recommendation on channel selection for P2P by enabling coordination between APs that do not belong to the same ESS so that the channels recommended for P2P operation sent by those APs are the same.

Note 1: the coordinated channel recommendation is an optional feature. Also, the responding AP has an option to reject the request for such coordination.

Note 2:

* Base channel is the channel where the AP associated with the non-AP STA is operating.
* A channel outside its associated AP’s operating BW is an off-channel for the non-AP STA.

Move: Rubayet Shafin Second: Pascal Viger

*Reference documents: [*[*22/1528r2*](https://mentor.ieee.org/802.11/dcn/22/11-22-1528-01-0uhr-enhanced-device-connectivity-with-robust-qos-support.pptx)*,* [*23/294r1*](https://mentor.ieee.org/802.11/dcn/23/11-23-0294-01-0uhr-channel-usage-enhancements-for-p2p-in-uhr.pptx)*,* [*23/1424r0*](https://mentor.ieee.org/802.11/dcn/23/11-23-1424-00-0uhr-follow-up-on-peer-to-peer-p2p-communication-for-uhr.pptx)*,* [*23/1929r0*](https://mentor.ieee.org/802.11/dcn/23/11-23-1929-00-00bn-peer-to-peer-p2p-resource-management.pptx)*,* [*24/392r*](https://mentor.ieee.org/802.11/dcn/24/11-24-0392-01-00bn-enhancements-on-base-channel-peer-to-peer-p2p-communications.pptx)*1,* [*24/393r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-0393-03-00bn-enhancements-on-off-channel-peer-to-peer-p2p-communications.pptx)*,* [*24/0403r2*](https://mentor.ieee.org/802.11/dcn/24/11-24-0403-02-00bn-managed-on-channel-p2p-communication.pptx)*]. SP result: No objection.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 185 (MAC)**

Move to add to the TGbn SFD the following:

* + - Define a mechanism in 11bn that defines:
      * AP-to-AP frame formats to enable interoperable MAPC across APs and including MLME primitive(s) so that a pair of AP’s SMEs can orchestrate the over-the-air transmission and reception of these frames
      * MLME primitive(s) so that a pair of AP’s SMEs may send the content of the non-real-time instances of such AP-to-AP frames over-the-DS between peer AP-MLMEs (rather than over-the-air via peer AP MACs)

Move: Brian Hart Second: Steve Rodriguez

*Reference documents: [*[*24/1595r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-1595-01-00bn-scope-of-mapc-and-roaming-standardization.pptx)*,* [*24/0838r1*](https://mentor.ieee.org/802.11/dcn/24/11-24-0838-01-00bn-backhaul-design-and-channel-setting-for-multi-ap.pptx)*]. SP result: 66Y, 13N, 40A.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 186 (Joint)**

Move to add to the TGbn SFD the following:

* + - TGbn defines the UHR variant of Trigger Frame.
      * Reuse the EHT variant of Trigger Frame format for the UHR variant of Trigger Frame, with one Special User Info field immediately after the Common Info field
    - Differentiate EHT and UHR variant by the value of the PHY Version Identifier in the Special User Info field being 0 or 1
    - Differentiate EHT and UHR variant by the value of the PHY Version Identifier in the Special User Info field being 0 or 1
      * Differentiate EHT and UHR variant by the value of the PHY Version Identifier in the Special User Info field being 0 or 1
    - Reserved bits in the UHR variant Common Info field and Special User Info field may be used for other UHR features
    - The UHR variant of Trigger frame includes the UHR variant User Info field.
      * It has the same length as the EHT variant User Info field

Move: Alice Chen Second: You-Wei Chen

*Reference documents: [*[*24/1833r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*,* [*24/1765r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1765-00-00bn-consideration-on-11bn-trigger-frame-for-phy-signailng.pptx)*,* [*24/1507r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1507-03-00bn-uhr-trigger-frame-design.pptx)*]. SP result: 89Y, 21N, 43A.*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 187 (Joint)**

Move to add to the TGbn SFD the following:

* + - For a UHR TB PPDU transmission, there exists a 5-bit UL UHR MCS in a User Info field for UHR variant of Trigger frame.

Move: Dongguk Lim Second: Hongwon Lee

*Reference documents: [*[*24/1765r0*](https://mentor.ieee.org/802.11/dcn/24/11-24-1765-00-00bn-consideration-on-11bn-trigger-frame-for-phy-signailng.pptx)*]. SP result: No objection.*

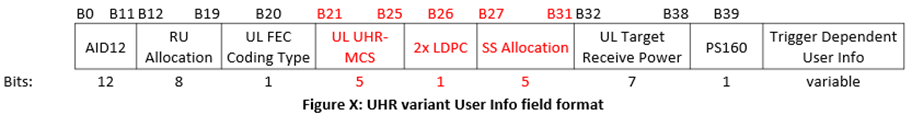
* + - Discussion: None.

**Result: Approved with unanimous consent.**

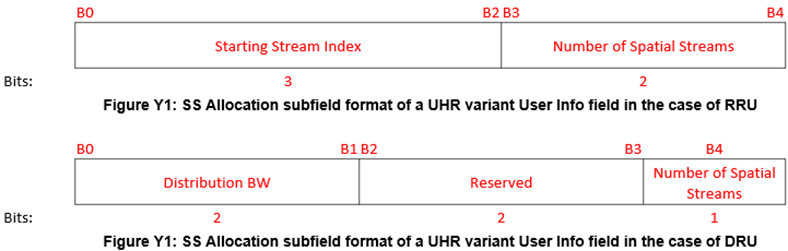
* + **Motion 188 (Joint)**

Move to add to the TGbn SFD the following:

* + - Use the following UHR variant User Info field design



* + - The SS Allocation subfield design depends on RRU or DRU
      * Repurpose 1 bit in the SS Allocation subfield in the UHR variant User Info field to indicate Nss (1ss or 2ss) in the case of DRU



*Ref. docs: [*[*11-24/1833r4*](https://mentor.ieee.org/802.11/dcn/24/11-24-1833-04-00bn-trigger-frame-design-for-uhr.pptx)*]. SP result: No objection.*

Move: Alice Chen Second: You-Wei Chen

*(Note to editor: Change “of” to “Of” in the figures and 2nd figure is Y2.)*

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* + **Motion 189 (Joint)**

Move to add to the TGbn SFD the following:

* + - NDP Announcement Variant subfield shall be set to 3 for COBF NDPA in UHR.

*Reference documents:[*[*11-24/1822r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1822-03-00bn-cobf-design-for-uhr.pptx)*,* [*11-24/1835r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1835-03-00bn-backward-compatible-sounding-for-cobf.pptx)*,* [*11-24/1865r3*](https://mentor.ieee.org/802.11/dcn/24/11-24-1865-03-00bn-universal-sounding-and-ndpa-signaling.pptx)*]. SP result: No objection.*

Move: You-Wei Chen Second: Juan Fang

* + - Discussion: None.

**Result: Approved with unanimous consent.**

* Technical Submissions

(No presentation was made due to lack of time.)

* AoB

C: We have on 9th January on Thursday, and the F2F at the next week. Could you move or reschedule or do something for that meeting? Because some of us will start around the same time as the call.

A: Thanks. Let me evaluate that part.

C: The POC of the trigger frame and NDPA were not decided yet due to no motion passed. So, currently we have some motions. When are we going to decide the POCs?

A: In general, we were going to do it in the joint call. It’s going to end up in the January F2F. But, double-check with the members that have been working on that. First, the chair gave the opportunities to members to decide on their own on the POC. If there is anything that is controversial, then we take it to the metric. So, just take a look at that part with the other member and as soon as possible that you guys can converse the best.

C: Can you move my presenting to PHY and move it to a next Monday F2F meeting?

A: I can do unless anybody has any objection.

* Adjourned at 12:00.

# 7th Conf. Call: January 6th, Monday (19:00-21:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-02-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-06-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

# 8th Conf. Call: January 9th, Thursday (10:00-12:00 ET)

* Split MAC and PHY teleconferences.
  + MAC: <https://mentor.ieee.org/802.11/dcn/24/11-24-2085-02-00bn-minutes-for-tgbn-mac-ad-hoc-teleconferences-in-november-2024-to-january-2025.docx>
  + PHY: <https://mentor.ieee.org/802.11/dcn/24/11-24-2057-06-00bn-802-11-bn-phy-ad-hoc-minutes-november-2024-january-2025.docx>

**Appendix**

* Attendee List for the 1st Conf. Call:

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn | 12/02 | Zhou, Renlong | Sanechips Technology Co., Ltd. |
| TGbn | 12/02 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn | 12/02 | Lim, Yeon Geun | Newracom Inc. |
| TGbn | 12/02 | LIU, QINGLAI | Panasonic Holdings Corporation |
| TGbn | 12/02 | Lou, Hanqing | InterDigital, Inc. |
| TGbn | 12/02 | Lu, kaiying | MediaTek Inc. |
| TGbn | 12/02 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/02 | LU, Yuxin | TCL Industries |
| TGbn | 12/02 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn | 12/02 | Luo, Sixian | SHARP CORPORATION |
| TGbn | 12/02 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Mehrnoush, Morteza | Apple Inc. |
| TGbn | 12/02 | Minotani, Jun | Panasonic Holdings Corporation |
| TGbn | 12/02 | Mizuno, Yuta | SHARP Coorporation |
| TGbn | 12/02 | Monajemi, Pooya | Apple Inc. |
| TGbn | 12/02 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn | 12/02 | Naik, Gaurang | Qualcomm Technologies, Inc |
| TGbn | 12/02 | Nogami, Toshizo | SHARP CORPORATION |
| TGbn | 12/02 | Lijun, Yu | self-funded |
| TGbn | 12/02 | Noh, Si-Chan | Newracom Inc. |
| TGbn | 12/02 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/02 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn | 12/02 | Kandala, Srinivas | Samsung |
| TGbn | 12/02 | Kim, Geon Hwan | LG ELECTRONICS |
| TGbn | 12/02 | Kim, Jeongki | Ofinno |
| TGbn | 12/02 | Kim, Jungjun | Samsung Electronics |
| TGbn | 12/02 | Kim, Sang Gook | LG ELECTRONICS |
| TGbn | 12/02 | Kim, Sanghyun | WILUS Inc. |
| TGbn | 12/02 | Kim, Youhan | Qualcomm Technologies, Inc. |
| TGbn | 12/02 | Kishida, Akira | NTT |
| TGbn | 12/02 | Klein, Arik | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | Koo, Jonghoe | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Kuo, Chih-Chun | MediaTek Inc. |
| TGbn | 12/02 | Lee, Hong Won | LG ELECTRONICS |
| TGbn | 12/02 | LEE, JOONSOO | Newracom Inc. |
| TGbn | 12/02 | Lee, Ju Hyung | Nokia |
| TGbn | 12/02 | Lee, Wookbong | Apple Inc. |
| TGbn | 12/02 | Li, Haozheng | TP-Link System Inc. |
| TGbn | 12/02 | Li, Jialing | Qualcomm Technologies, Inc |
| TGbn | 12/02 | li, yan | ZTE Corporation |
| TGbn | 12/02 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn | 12/02 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/02 | Park, Minyoung | Apple Inc. |
| TGbn | 12/02 | Talarico, Salvatore | Nokia Technologies |
| TGbn | 12/02 | Tanaka, Yusuke | Sony Corporation |
| TGbn | 12/02 | Tian, Bin | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn | 12/02 | Tsodik, Genadiy | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | Urabe, Yoshio | Panasonic Holdings Corporation |
| TGbn | 12/02 | Varshney, Prabodh | Nokia |
| TGbn | 12/02 | Wang, Lei Futurewei | Technologies |
| TGbn | 12/02 | Wang, Xiaofei | InterDigital, Inc. |
| TGbn | 12/02 | Wang, Ying | InterDigital, Inc. |
| TGbn | 12/02 | Wee, Gaius | Panasonic Holdings Corporation |
| TGbn | 12/02 | Wei, Dong | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/02 | Wullert, John | Peraton Labs |
| TGbn | 12/02 | Xia, Qing | Sony Corporation |
| TGbn | 12/02 | Xu, Yanchao | Amlogic |
| TGbn | 12/02 | Yan, Zhongjiang | Northwestern Polytechnical University |
| TGbn | 12/02 | Yang, Haorui | China Mobile |
| TGbn | 12/02 | Yang, Jay | ZTE Corporation |
| TGbn | 12/02 | Sung, Hyeonjun | WILUS Inc. |
| TGbn | 12/02 | Ouchi, Masatomo | Canon |
| TGbn | 12/02 | Sun, B | Sanechips Technology Co., Ltd. |
| TGbn | 12/02 | Singh, Aditi | Charter Communications |
| TGbn | 12/02 | Park, Sungjin | Senscomm |
| TGbn | 12/02 | Patwardhan, Gaurav | Hewlett Packard Enterprise |
| TGbn | 12/02 | Perez, Javier | Ofinno |
| TGbn | 12/02 | Petrick, Albert | InterDigital, Inc. |
| TGbn | 12/02 | Procyk, Ian | Cisco Systems |
| TGbn | 12/02 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.... |
| TGbn | 12/02 | Ratnam, Vishnu | Samsung Research America |
| TGbn | 12/02 | Rodriguez, Stephen | Cisco Systems, Inc. |
| TGbn | 12/02 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Ryu, Kiseon | NXP Semiconductors |
| TGbn | 12/02 | Sadiq, Bilal | Samsung Research America |
| TGbn | 12/02 | Sakamoto, Ryunosuke | SHARP CORPORATION |
| TGbn | 12/02 | Sato, Takuhiro | SHARP CORPORATION |
| TGbn | 12/02 | Schelstraete, Sigurd | MaxLinear |
| TGbn | 12/02 | Scott, David | Cisco Systems |
| TGbn | 12/02 | Shi, Zhenpeng | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/02 | YANG, RUI | InterDigital, Inc. |
| TGbn | 12/02 | Kalamkar, Sanket | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn | 12/02 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Chisci, Giovanni | Qualcomm Technologies, Inc |
| TGbn | 12/02 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn | 12/02 | Chen, You-Wei | MediaTek Inc. |
| TGbn | 12/02 | Chen, Junbin | TP-Link Systems Inc. |
| TGbn | 12/02 | Che, Hui | Ruijie Networks Co., Ltd |
| TGbn | 12/02 | Carney, William | Sony Group Corporation |
| TGbn | 12/02 | Cao, Rui | NXP Semiconductors |
| TGbn | 12/02 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Baykas, Tuncer | Ofinno |
| TGbn | 12/02 | Baik, Eugene | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn | 12/02 | Bai, Jiyang | TCL |
| TGbn | 12/02 | Au, Kwok Shum | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/02 | Asai, Yusuke | Nippon Telegraph and Telephone Corporation (NTT) |
| TGbn | 12/02 | Alcantara, Carlos | Cisco Systems, Inc. |
| TGbn | 12/02 | Ajami, Abdel | Karim Apple Inc |
| TGbn | 12/02 | Aio, Kosuke | Sony Corporation |
| TGbn | 12/02 | Yano, Kazuto | Advanced Telecommunications Research Institute... |
| TGbn | 12/02 | Yee, James | MediaTek Inc. |
| TGbn | 12/02 | Yoon, Yelin | LG ELECTRONICS |
| TGbn | 12/02 | Zhang, Jiayi | Ofinno |
| TGbn | 12/02 | Zhang, Lyutianyang | Huawei Technologies Co., Ltd. |
| TGbn | 12/02 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | Zhao, Xuwen | TCL |
| TGbn | 12/02 | Zhao, Yue | Huawei Technologies Co., Ltd |
| TGbn | 12/02 | Zhong, Ke | Ruijie Networks Co.,Ltd. |
| TGbn | 12/02 | Zhou, Huixuan | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/02 | Zhou, Lei | H3C Technologies Co., Limited |
| TGbn | 12/02 | Zhou, Pei | TCL |
| TGbn | 12/02 | Zimmer, Ethan | Cisco Systems, Inc. |
| TGbn | 12/02 | Choi, Jinsoo | LG ELECTRONICS |
| TGbn | 12/02 | Coffey, John | Realtek Semiconductor Corp. |
| TGbn | 12/02 | Byeon, Seongho | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Das, Subir | Peraton Labs |
| TGbn | 12/02 | Jang, Insun | LG ELECTRONICS |
| TGbn | 12/02 | Inoue, Kyosuke | SHARP CORPORATION |
| TGbn | 12/02 | Inohiza, Hirohiko | Canon |
| TGbn | 12/02 | huang, kaikai | Nokia |
| TGbn | 12/02 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn | 12/02 | Cui, Yaoshen | TP-Link Systems Inc. |
| TGbn | 12/02 | Hsu, Ostrovsky | Xiaomi Communications Co., Ltd. |
| TGbn | 12/02 | Ho, Duncan | Qualcomm Technologies, Inc |
| TGbn | 12/02 | Hedayat, Ahmadreza | Apple Inc. |
| TGbn | 12/02 | Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/02 | Hart, Brian | Cisco Systems, Inc. |
| TGbn | 12/02 | Hamilton, Mark | Ruckus |
| TGbn | 12/02 | Gupta, Binita | Cisco Systems, Inc. |
| TGbn | 12/02 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn | 12/02 | Hu, Chunyu | Spreadtrum Communications US |
| TGbn | 12/02 | Ghaderipoor, Alireza | MediaTek Inc. |
| TGbn | 12/02 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn | 12/02 | Derham, Thomas | Broadcom Corporation |
| TGbn | 12/02 | Dezfouli, Behnam | Nokia |
| TGbn | 12/02 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| TGbn | 12/02 | Doppler, Klaus | Nokia |
| TGbn | 12/02 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn | 12/02 | Erkucuk, Serhat | Ofinno |
| TGbn | 12/02 | Yang, Yunpeng | TP-Link Systems Inc. |
| TGbn | 12/02 | Fang, Juan | Intel Corporation |
| TGbn | 12/02 | Fang, Yonggang | MediaTek Inc. |
| TGbn | 12/02 | feng, Shuling | MediaTek Inc. |
| TGbn | 12/02 | Fischer, Matthew | Broadcom Corporation |
| TGbn | 12/02 | Fu, Qingwei | TP-Link Systems Inc. |
| TGbn | 12/02 | Fujimori, Yuki | Canon Research Centre France |
| TGbn | 12/02 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn | 12/02 | Asterjadhi, Alfred | Qualcomm Technologies, Inc |

* Attendee List for the 6th Conf. Call:

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbn | 12/19 | Wilhelmsson, Leif | Ericsson AB |
| TGbn | 12/19 | Zhou, Pei | TCL |
| TGbn | 12/19 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Zhang, Lyutianyang | Huawei Technologies Co., Ltd. |
| TGbn | 12/19 | Gupta, Binita | Cisco Systems, Inc. |
| TGbn | 12/19 | Wang, Ying | InterDigital, Inc. |
| TGbn | 12/19 | Lalam, Massinissa | SAGEMCOM BROADBAND SAS |
| TGbn | 12/19 | Kim, Jungjun | Samsung Electronics |
| TGbn | 12/19 | Klein, Arik | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Carney, William | Sony Group Corporation |
| TGbn | 12/19 | Wei, Dong | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/19 | VIGER, Pascal | Canon Research Centre France |
| TGbn | 12/19 | LU, Yuxin | TCL Industries |
| TGbn | 12/19 | Kakani, Naveen | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn | 12/19 | Doppler, Klaus | Nokia |
| TGbn | 12/19 | Zhou, Renlong | Sanechips Technology Co., Ltd. |
| TGbn | 12/19 | Zhang, Maolin | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Urabe, Yoshio | Panasonic Holdings Corporation |
| TGbn | 12/19 | Son, Ju-Hyung | WILUS Inc. |
| TGbn | 12/19 | Lim, Yeon Geun | Newracom Inc. |
| TGbn | 12/19 | Quan, Li | ZTE Corporation |
| TGbn | 12/19 | Kedem, Oren | Maxlinear |
| TGbn | 12/19 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn | 12/19 | Ha, Taeyoung | Samsung Electronics Co., Ltd. |
| TGbn | 12/19 | Yano, Kazuto | Advanced Telecommunications Research Institute... |
| TGbn | 12/19 | HUANG, CHIHAN | MediaTek Inc. |
| TGbn | 12/19 | Sakamoto, Ryunosuke SHARP CORPORATION | |
| TGbn | 12/19 | Genc, Eda | Nokia |
| TGbn | 12/19 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn | 12/19 | Sadiq, Bilal | Samsung Research America |
| TGbn | 12/19 | Fang, Juan | Intel Corporation |
| TGbn | 12/19 | Lee, Wookbong | Apple Inc. |
| TGbn | 12/19 | SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/19 | Yoon, Yelin | LG ELECTRONICS |
| TGbn | 12/19 | Wang, Qi | Apple Inc |
| TGbn | 12/19 | Singh, Aditi | Charter Communications |
| TGbn | 12/19 | Fu, Qingwei | TP-Link Systems Inc. |
| TGbn | 12/19 | Park, Sungjin | Senscomm |
| TGbn | 12/19 | Cui, Yaoshen | TP-Link Systems Inc. |
| TGbn | 12/19 | feng, Shuling | MediaTek Inc. |
| TGbn | 12/19 | Fischer, Matthew | Broadcom Corporation |
| TGbn | 12/19 | Aio, Kosuke | Sony Corporation |
| TGbn | 12/19 | Val, Inaki | MaxLinear, Inc. |
| TGbn | 12/19 | Chu, Liwen | NXP Semiconductors |
| TGbn | 12/19 | Zuniga, Juan Carlos | Cisco Systems, Inc. |
| TGbn | 12/19 | Scott, David | Cisco Systems, Inc. |
| TGbn | 12/19 | Max, Sebastian | Ericsson AB |
| TGbn | 12/19 | Quan, Yingqiao | Spreadtrum Communications (Shanghai) Co., Ltd.... |
| TGbn | 12/19 | Bansal, Ankur | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Lu, kaiying | MediaTek Inc. |
| TGbn | 12/19 | Yang, Haorui | China Mobile |
| TGbn | 12/19 | Kain, Carl | Noblis, Inc.; USDoT |
| TGbn | 12/19 | Cao, Rui | NXP Semiconductors |
| TGbn | 12/19 | Xin, Yan | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/19 | Roy, Rishabh | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Sahin, Alphan | Self |
| TGbn | 12/19 | Nezou, Patrice | Canon Research Centre France |
| TGbn | 12/19 | Patwardhan, Gaurav | Hewlett Packard Enterprise |
| TGbn | 12/19 | Yee, James | MediaTek Inc. |
| TGbn | 12/19 | huang, kaikai | Nokia |
| TGbn | 12/19 | baron, stephane | Canon Research Centre France |
| TGbn | 12/19 | Hart, Brian | Cisco Systems, Inc. |
| TGbn | 12/19 | Manoharan, Jegan | Cisco Systems, Inc. |
| TGbn | 12/19 | Zhang, Jiayi | Ofinno |
| TGbn | 12/19 | LEE, JOONSOO | Newracom Inc. |
| TGbn | 12/19 | Procyk, Ian | Cisco Systems |
| TGbn | 12/19 | Strobel, Rainer | Maxlinear |
| TGbn | 12/19 | Kandala, Srinivas | Samsung |
| TGbn | 12/19 | li, yan | ZTE Corporation |
| TGbn | 12/19 | Sevin, Julien | Canon Research Centre France |
| TGbn | 12/19 | Kuo, Chih-Chun | MediaTek Inc. |
| TGbn | 12/19 | Wu, Kanke | Apple Inc. |
| TGbn | 12/19 | Batra, Anuj | Apple Inc. |
| TGbn | 12/19 | Perez, Javier | Ofinno |
| TGbn | 12/19 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/19 | Ma, Yongsen | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Li, Jialing | Qualcomm Technologies, Inc |
| TGbn | 12/19 | Fang, Yonggang | MediaTek Inc. |
| TGbn | 12/19 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/19 | Patil, Abhishek | Qualcomm Incorporated |
| TGbn | 12/19 | Hasabelnaby, Mahmoud | Huawei Technologies Canada; Huawei Technologie... |
| TGbn | 12/19 | Hsu, Ostrovsky | Xiaomi Communications Co., Ltd. |
| TGbn | 12/19 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn | 12/19 | Wang, Lei | Futurewei Technologies |
| TGbn | 12/19 | Tsodik, Genadiy | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Luo, Chaoming | Beijing OPPO telecommunications corp., ltd. |
| TGbn | 12/19 | Sun, Bo | Sanechips Technology Co., Ltd. |
| TGbn | 12/19 | Byeon, Seongho | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Hu, Shengquan | MediaTek Inc. |
| TGbn | 12/19 | Zhao, Xuwen | TCL |
| TGbn | 12/19 | Lovison, Federico | Cisco Systems, Inc. |
| TGbn | 12/19 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/19 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| TGbn | 12/19 | Ryu, Kiseon | NXP Semiconductors |
| TGbn | 12/19 | Choi, JinHo | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Xia, Qing | Sony Corporation |
| TGbn | 12/19 | Minotani, Jun | Panasonic Holdings Corporation |
| TGbn | 12/19 | Smith, Luther | Cable Television Laboratories Inc. (CableLabs) |
| TGbn | 12/19 | Zhong, Ke | Ruijie Networks Co.,Ltd. |
| TGbn | 12/19 | Kim, Geon Hwan | LG ELECTRONICS |
| TGbn | 12/19 | Lou, Hanqing | InterDigital, Inc. |
| TGbn | 12/19 | Cha, Dongju | LG ELECTRONICS |
| TGbn | 12/19 | Jang, Insun | LG ELECTRONICS |
| TGbn | 12/19 | Xu, Yanchao | Amlogic |
| TGbn | 12/19 | Rodriguez, Stephen | Cisco Systems, Inc. |
| TGbn | 12/19 | RISON, Mark | Samsung Cambridge Solution Centre |
| TGbn | 12/19 | Pan, Ju Yan | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Gu, Xiangxin | Spreadtrum Communications (Shanghai) Co., Ltd. |
| TGbn | 12/19 | Hervieu, Lili | CableLabs |
| TGbn | 12/19 | Tsujimaru, Yuki | Canon |
| TGbn | 12/19 | Gu, Jaheon | Samsung Electronics Co., Ltd. |
| TGbn | 12/19 | Di Taranto, Rocco | Ericsson AB |
| TGbn | 12/19 | Chen, Junbin | TP-Link Systems Inc. |
| TGbn | 12/19 | Li, Weiyi | Spreadtrum Communication USA, Inc |
| TGbn | 12/19 | McCann, Stephen | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Fujimori, Yuki | Canon Research Centre France |
| TGbn | 12/19 | Wullert, John | Peraton Labs |
| TGbn | 12/19 | Chisci, Giovanni | Qualcomm Technologies, Inc |
| TGbn | 12/19 | Fan, Shuang | Sanechips Technology Co., Ltd. |
| TGbn | 12/19 | Erkucuk, Serhat | Ofinno |
| TGbn | 12/19 | Kang, HaoHua | MediaTek Inc. |
| TGbn | 12/19 | Jia, Boqi | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Inohiza, Hirohiko | Canon |
| TGbn | 12/19 | Ekkundi, Manasi | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/19 | Ho, Duncan | Qualcomm Technologies, Inc |
| TGbn | 12/19 | Ajami, Abdel Karim | Apple Inc |
| TGbn | 12/19 | Chen, You-Wei | MediaTek Inc. |
| TGbn | 12/19 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Talarico, Salvatore | Nokia Technologies |
| TGbn | 12/19 | Bai, Jiyang | TCL |
| TGbn | 12/19 | Mutgan, Okan | Nokia |
| TGbn | 12/19 | Chung, Chulho | SAMSUNG |
| TGbn | 12/19 | Koo, Jonghoe | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Li, Haozheng | TP-Link System Inc. |
| TGbn | 12/19 | Shi, Zhenpeng | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Tian, Bin | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn | 12/19 | Che, Hui | Ruijie Networks Co., Ltd |
| TGbn | 12/19 | Tseng, Yen Hsiung | MediaTek Inc. |
| TGbn | 12/19 | Kim, Sanghyun | WILUS Inc. |
| TGbn | 12/19 | Schelstraete, Sigurd | MaxLinear |
| TGbn | 12/19 | Zhao, Yue | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Hedayat, Ahmadreza | Apple Inc. |
| TGbn | 12/19 | Kishida, Akira | NTT |
| TGbn | 12/19 | Pettersson, Charlie | Ericsson AB |
| TGbn | 12/19 | Lee, Hong Won | LG ELECTRONICS |
| TGbn | 12/19 | Yang, Hang | Ruijie Networks Co., Ltd. |
| TGbn | 12/19 | GUIGNARD, Romain | Canon Research Centre France |
| TGbn | 12/19 | Zhou, Huixuan | Guangdong OPPO Mobile Telecommunications Corp.... |
| TGbn | 12/19 | Shafin, Rubayet | Samsung Electronics |
| TGbn | 12/19 | Redlich, Oded | Huawei Technologies Co., Ltd |
| TGbn | 12/19 | Xiao, Tong | Xiaomi Communications Co., Ltd. |
| TGbn | 12/19 | Zimmer, Ethan | Cisco Systems, Inc. |
| TGbn | 12/19 | Yan, Aiguo | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Coffey, John | Realtek Semiconductor Corp. |
| TGbn | 12/19 | Varshney, Prabodh | Nokia |
| TGbn | 12/19 | Georgiev, Zahari | Cisco Systems |
| TGbn | 12/19 | Kim, Suhwook | SAMSUNG ELECTRONICS |
| TGbn | 12/19 | Asterjadhi, Alfred | Qualcomm Technologies, Inc |