IEEE P802.11
Wireless LANs

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| Minutes 802.11 bn PHY ad hoc – March Plenary meetings  |
| Date: 2024-03-12 |
| Author(s): |
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Abstract

This document contains the PHY ad hoc meeting minutes for TGbn teleconferences held on:

* Tuesday AM2, March 12, 2024
* Tuesday PM1, March 12, 2024
* Wednesday AM1, March 13, 2024
* Wednesday AM2, March 13, 2024
* Thursday AM2, March 14, 2024

**Tuesday March 12th, 2024 10:30 – 12:30 ET**

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 10:30am ET.
2. The Chair follows the agenda in 11-24/0235r5.
3. Reminder for registration for the Interim meeting.
4. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Dongguk Lim (LGE), Sigurd Schelstraete (MaxLinear) or the Chair himself if unable to record attendance via IMAT system.
5. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
6. The Chair goes through the Copyright policy.
7. Discussions on the agenda.
	* [24/0025](https://mentor.ieee.org/802.11/dcn/24/11-24-0025-01-00bn-phy-modifications-for-high-mobility-stas.pptx) PHY modifications for high-mobility STAs Azin Neishaboori
	* [24/0180](https://mentor.ieee.org/802.11/dcn/24/11-24-0180-00-00bn-thoughts-on-the-beamforming-and-feedback.pptx) Thoughts Beamforming Xiaogang Chen
	* [24/0187](https://mentor.ieee.org/802.11/dcn/24/11-24-0187-00-00bn-clarifications-on-the-ldpc-rate-matching.pptx) Clarifications on the LDPC rate matching Xiaogang Chen
	* 24/0510 High Level Thoughts on LDPC Rate Matching for 11bn Yan Zhang
	* [24/0224](https://mentor.ieee.org/802.11/dcn/24/11-24-0224-00-00bn-discussion-on-a-ppdu-follow-up.pptx) Discussion on A-PPDU follow-up Ross Jian Yu
	* [24/0395](https://mentor.ieee.org/802.11/dcn/24/11-24-0395-00-00bn-mu-csi-fb-type-for-non-tb-sounding.pptx) MU CSI Feedback Type for Non-TB Sounding Junghoon Suh

**Technical contributions**

1. **24/0025 PHY modifications for high-mobility STAs Azin Neishaboori (General Motors)**

Discussions:

C: Do you propose only to use a higher density of pilots for just the CFO update?

A: I have used the midamble for the frequent time more frequent estimation as well as CFO.

C: which band do you consider for that?

A: We don’t limit it. It could be a 2.4, 5, or 6 GHz band. In 2.4GHz, we have a higher range but, have a limited number of channels and size of channel. In 5GHz, we have less limitation.

C: How fast is the fastest machine you will support with this?

A: We consider the downtown area. You don’t really go much faster than 50km/h.

C: Simulation results are very related to simulation assumption for example channel model.

C: Could you give some estimations on how many additional pilots you need? For example, in 20 us, you need maybe an additional 20 pilots in the tone plan.

A: Now I am not sure.

C: MAC changes also should be considered. And, we can consider the modification of 11bd that has enhanced features for high mobility.

A: This is not the same application and we should consider some enhancement that potentially could be brought into the main Wi-Fi.

C: Is downlink considered in your use case?

A: Yes, we can consider the Uplink-link streaming but, the downlink case is a lot.

Discussions on SP:

1. **24/0180 Thoughts Beamforming Xiaogang Chen (Spreadtrum)**

Discussions:

C: It is very similar to threshold based feedback report defined in 11bf. The main issue is that know how to define CSI variation or a CDF of variation. Do you have some formula to define that or may you have a matric method for this transmission now?

A: I will consider how to design it. personally, if the channel is not changed, the beamformee supporting this protocol does not feedback.

C: So, you may still want to use defined the explicit method for it.

A: let’s think about it more.

C: Slide 10, why need the subblock 2 case? The Beemformee should send the feedback when the Beamformer does the soundings sequence.

A: Actually, Beamformee and Beamfomer are not synchronized. So, beamformer does not know the beamformee’s situation. To get the feedback, the beamformer can do it.

C: This is the CSI report actually transmitted from beamformee to beamformer. This information, ie., compressed beamforming matrix and average SNR is transfer from the MAC layer to PHY layer through the TX vector?

A: MAC passes the packets to PHY. And then PHY checks it out.

C: It is an implementation issue. The computation of the compressed beamforming matrix and average SNR is the MAC layer. You can just pass lower channel data to the upper layer and the upper layer can calculate it.

C: You suggest that Beamformee only knows how long to keep the current transmission. However, the Beamformer also needs to know how long to keep the current transmission because the beamformer is scheduling the sounding sequence based on the sounding feedback.

C: This idea is good. But, it is hard to certify and implement

C: What is a moving in here?

A: It is a moving around the beamformee

C: Channel aging depends on many factors, for example, MCS, Nuser, and Nss. and, The beamformer needs to know somehow it affects packet error. If the packet error is good, really beamformer doesn't need to do the channel sounding. So, any feedback is helpful.

C: Do you consider no change of CBF feedback but just not report it?

A: Basically, I assume it

C: Slide 7, do you consider the longer time variance?

A: The variant is coefficient and the 5 tones of 242 tones are only used for correlation. we don’t need to do anything other than correlation.

1. **24/0395 MU CSI Feedback Type for Non-TB Sounding Junghoon Suh (Huawei)**

Discussions:

None.

1. **24/0187 Clarifications on the LDPC rate matching Xiaogang Chen (Spreadtrum)**

Discussions:

None

1. **24/0510 High Level Thoughts on LDPC Rate Matching for 11bn Yan Zhang (Apple)**

Discussions:

C: In reference 2, the overhead is small because the feedback is 11n and the additional bit is also small.

A: 11n only supports the 40MHz and the code bit rate is limited. but, since 11bn supports the 320MHz and high MCS, code bit variation is larger than 11n.

C: What is a prediction of a large or small packet?

A: We should look at a point of view on transmit bits.

1. **24/0224 Discussion on A-PPDU follow-up Ross Jian Yu (Huawei)**

Discussions:

None.

* **Do you agree to include the following into the 11bn SFD?**
	+ 11bn defines frequency domain aggregation of aggregated PPDUs. An aggregated PPDU consists of multiple PPDUs.
		- The PPDU format combinations include HE PPDU, other PPDUs are TBD.
		- The number of PPDUs is TBD.

Discussions on SP:

C: We need to really try to find most useful case and need more discussion for that

SP is deferred.

**Recess**

The meeting is Recessed at 12:30am ET.

**Tuesday March 12th, 2024 13:30 – 15:30 ET**

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 13:30pm ET.
2. The Chair follows the agenda in 11-24/0235r7.
3. Reminder for registration for the Interim meeting.
4. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Dongguk Lim (LGE), Sigurd Schelstraete (MaxLinear) or the Chair himself if unable to record attendance via IMAT system.
5. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
6. The Chair goes through the Copyright policy.
7. Discussions on the agenda.
	* [23/2200](https://mentor.ieee.org/802.11/dcn/23/11-23-2200-00-00bn-distribution-bandwidth-of-dru.pptx) Distribution bandwidth of DRU Ross J. Yu
	* [24/0332](https://mentor.ieee.org/802.11/dcn/24/11-24-0332-00-00bn-discussion-on-drus.pptx) Discussion on DRUs Brian Hart
	* [24/0400](https://mentor.ieee.org/802.11/dcn/24/11-24-0400-00-00bn-hybrid-ppdu-and-distribution-bandwidth-for-dru.pptx) Hybrid PPDU and Distribution Bandwidth for DRU Eunsung Park
	* [24/0401](https://mentor.ieee.org/802.11/dcn/24/11-24-0401-00-00bn-multiple-dru-follow-up.pptx) Multiple DRU Follow Up Eunsung Park
	* [24/0402](https://mentor.ieee.org/802.11/dcn/24/11-24-0402-00-00bn-20-mhz-tone-plan-and-pilot-design-for-dru.pptx) 20 MHz Tone Plan and Pilot Design for DRU Eunsung Park
	* [24/0429](https://mentor.ieee.org/802.11/dcn/24/11-24-0429-00-00bn-range-extension-with-dru.pptx) Range Extension with dRU Sigurd Schelstraete
	* [24/0468](https://mentor.ieee.org/802.11/dcn/24/11-24-0468-00-00bn-dru-tone-plan-for-11bn.pptx) DRU Tone Plan for 11bn Shengquan Hu
	* [24/0477](https://mentor.ieee.org/802.11/dcn/24/11-24-0477-01-00bn-high-level-perspective-on-dru-follow-up.pptx) High Level Perspective on DRU-Follow Up Shengquan Hu
	* [24/0476](https://mentor.ieee.org/802.11/dcn/24/11-24-0476-00-00bn-11-24-xxxx-00-tone-plan-design-principles-for-distributed-ru-v0.pptx) Tone Plan Design Principles for Distributed RU Bo Gong
	* [24/0500](https://mentor.ieee.org/802.11/dcn/24/11-24-0500-00-00bn-follow-up-on-high-level-thoughts-on-dru-design.pptx) Follow up on high level thoughts on dRU design Lin Yang
	* [24/0501](https://mentor.ieee.org/802.11/dcn/24/11-24-0501-00-00bn-pilot-design-considerations-for-dru.pptx) Pilot design considerations for dRU Lin Yang
	1. [24/0520](https://mentor.ieee.org/802.11/dcn/24/11-24-0520-00-00bn-discussion-on-dru.pptx) Discussion on DRU Mahmoud Kamel

**Technical contributions**

1. **23/2200 Distribution bandwidth of DRU Ross J. Yu (Huawei)**

Discussions on SP

C: Clarification on SP3, do you consider the new tone plan?

A: No, it just considers the preamble puncturing cases.

C: Many companies support the DRU, but each is a little bit different. So, we need further discussion.

C: Do you consider the bandwidth larger than 160MHz?

A: Yes, it can be considered.

C: The distributed bandwidth is confusing what does it mean?

A: It is the maximum bandwidth that DRU is used.

1. **24/0400 Hybrid PPDU and Distribution Bandwidth for DRU Eunsung Park( LGE)**

Discussions:

C: In hybrid mode, the use of a small frequency block may be not useful.

A: To support the 20MHz operation STA, it should be considered.

C: DUR brings significant changes to the AP side and receiver side. By considering the cost and complexity, in this generation, we should consider the 80MHz bandwidth for DRU.

A: The 80Mhz is the mandatary bandwidth, so, we can consider the hybrid mode based on the 80MHz bandwidth.

C: I support the 160MHz bandwidth but, to just make a process basically, we first to consider the 20, 40, and 80MHz that have a majority.

C: slide 5, how to deal with the 20MHz operating only STA?

A: This includes the 20MHz operating STA so, we can support the 20MHz-only STA in this

1. **24/0332 Discussion on DRUs Brian Hart (Cisco Systems)**

Discussions:

C: For the TB PPDU, non-AP STA corrects their CFO based on their AP and shares this value, I don’t know how it works.

A: leader AP and sharing AP establish the CFO, and the follower AP, which copies this, sets the CFO.

C: In UL transmission, DRU does not have any loss compared to RRU. The difference is just that it uses the mapping on the non-continuous tone.

C: Do you consider the combination of DL and triggered UL?

A: For the DL, DRU motivation is much lower. I think the triggered uplink offers opportunities.

C: Do you consider the DL transmission is also triggered-based?

A: Yes, it can be triggered and collaborated.

C: In slide 5, some restrictions for use cases not to cause an interference to the incumbent service but that depends on the regulatory rules.

1. **24/0401 Multiple DRU Follow Up Eunsung Park (LGE)**

Discussions:

C: Slides8, what is the reason why you exclude the same DRU in MDRU?

A: The reason is to make the simple signaling. And, the proposal is to just use one user info field.

C: when we consider the new combinations, we need to consider not only some limited used cases but also be careful balance of these benefits and complexity.

A: To get sufficient benefit, we should consider the implementation issue and signaling issue as well.

1. **24/0402 20 MHz Tone Plan and Pilot Design for DRU Eunsung Park(LGE)**

Discussions:

C: We need the new pilot tone for DRU for performance enhancement. In slide 6, I agree with your method 2. In OFDMA transmission with different RU sizes, if you want to optimize the pilot tone for DRU 26 tones, locally it should be considered at the large size RU.

C: in Slide 11, your pilot tone is based on the DRU tone plan. The tone plan for the first 52 DRU tone is the first 26 DRU tone + the 6th 26 DRU tone. Is it different from the regular RU tone plan, is it correct?

A: Right. I presented the mapping rule in the previous contribution

C: Silde18, you preferred option 2, but we haven’t decided yet on the tone plan for DRU.

A: We need to distribute enough to all of the pilot tones for the 26-tone DRUs, that is a point.

**Recess**

The meeting is Recessed at 15:30pm ET.

**Wednesday March 13th, 2024 08:00 – 10:00 ET**

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 08:00am ET.
2. The Chair follows the agenda in 11-24/0235r9.
3. Reminder for registration for the Interim meeting.
4. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Dongguk Lim (LGE), Sigurd Schelstraete (MaxLinear) or the Chair himself if unable to record attendance via IMAT system.
5. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
6. The Chair goes through the Copyright policy.
7. Discussions on the agenda.
	* [24/0429](https://mentor.ieee.org/802.11/dcn/24/11-24-0429-00-00bn-range-extension-with-dru.pptx) Range Extension with dRU Sigurd Schelstraete
	* [24/0468](https://mentor.ieee.org/802.11/dcn/24/11-24-0468-00-00bn-dru-tone-plan-for-11bn.pptx) DRU Tone Plan for 11bn Shengquan Hu
	* [24/0477](https://mentor.ieee.org/802.11/dcn/24/11-24-0477-01-00bn-high-level-perspective-on-dru-follow-up.pptx) High Level Perspective on DRU-Follow Up Shengquan Hu
	* [24/0476](https://mentor.ieee.org/802.11/dcn/24/11-24-0476-00-00bn-11-24-xxxx-00-tone-plan-design-principles-for-distributed-ru-v0.pptx) Tone Plan Design Principles for Distributed RU Bo Gong
	* [24/0500](https://mentor.ieee.org/802.11/dcn/24/11-24-0500-00-00bn-follow-up-on-high-level-thoughts-on-dru-design.pptx) Follow up on high level thoughts on dRU design Lin Yang
	* [24/0501](https://mentor.ieee.org/802.11/dcn/24/11-24-0501-00-00bn-pilot-design-considerations-for-dru.pptx) Pilot design considerations for dRU Lin Yang
	* [24/0520](https://mentor.ieee.org/802.11/dcn/24/11-24-0520-00-00bn-discussion-on-dru.pptx) Discussion on DRU Mahmoud Kamel

**Technical contributions**

1. **24/0429 Range Extension with dRU Sigurd Schelstraete (MaxLinear)**

Discussions:

C: The 26 tone DRU used the same power with 242 RU. How to further power boost the legacy preamble?

A: in terms of what the regulatory allows, these powers can be made the same, that’s as far as I want to go at this point.

C: for the TB PPDU, the receiver still needs to decode the sig-A correctly

A: nothing in the preamble that you need to look at but it is mostly to be able to synchronize the PPDU

C: legacy preamble cannot exceed the power that sensing in the data field

A: 3 dB is the data field related to the legacy.

1. **24/0468 DRU Tone Plan for 11bn Shengquan Hu(Mediatek)**

Discussions:

C: Slide 6, is the 20MHz tone plan for DRU used any 20MHz in the large bandwidth?

A: yes, the same tone plan for DRU is used in any 20MHz.

C: I think we don’t have to reduce the 26 DRU’s PAPR in this case

A: yes, it would be better to reduce the PAPR for large DRUs.

C: I can’t find how to allocate the pilot tone.

A: This presentation is focused on the overall tone plan including both data and pilot, too. The pilot tone can be selected or allocated based on the tone plan.

C: how to mix the 20MHz tone plan and 40MHz tone plan?

A: This two tone-plans design is not targeted for mixed distribution bandwidth. I don’t think this is necessary for mixed distribution bandwidth scheduling.

C: Do you consider the middle tone of rRU in 20MHz for the DRU tone plan?

A: Yes, we consider it

C: how the smoothing is done? How many tabs are in your filter?

A: for example, in 26-tone DRU, that has separation with eighteen. Uniform distribution is considered in each RU.

C: the smoothing gain is similar regardless of whether SNR is low or high. You should provide a detailed smoothing algorithm for your simulation.

A: the algorithm is based on each vendor implementation or design-dependent.

1. **24/0477 High Level Perspective on DRU-Follow Up Shengquan Hu(Mediatek)**

Discussions on SP:

C: After we discuss the all contributions for DRU, we can run together.

A: okay sure

1. **24/0476 Tone Plan Design Principles for Distributed RU Bo Gong (Huawei )**

Discussions:

C: We want to use unify one-tone plan for DRU. What is your preference in your contribution?

A: Now I don’t have

C: For the UL OFDMA and DRU, we don’t want to make a new allocation and indication. We want to use the same allocation and conventional signaling.

C: For the 106 tones, it has 7 tones in the 1MHz. it can’t provide the optimal power gain. You should check your tone plan described in the Excel file.

A: I will check it, later.

C: If you apply the power boosting to the pilot tone, it can cause interference to other users.

**Due to time limitations, the discussion is stopped. It will be continued next session.**

**Recess**

The meeting is Recessed at 10:00am ET.

**Wednesday March 13th, 2024 10:30 – 12:30 ET**

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 10:30am ET.
2. The Chair follows the agenda in 11-24/0235r10.
3. Reminder for registration for the Interim meeting.
4. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Dongguk Lim (LGE), Sigurd Schelstraete (MaxLinear) or the Chair himself if unable to record attendance via IMAT system.
5. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
6. The Chair goes through the Copyright policy.
7. Discussions on the agenda.
	* 24/0476 Tone Plan Design Principles for Distributed RU (Q/A) Bo Gong
	* [24/0500](https://mentor.ieee.org/802.11/dcn/24/11-24-0500-00-00bn-follow-up-on-high-level-thoughts-on-dru-design.pptx) Follow up on high level thoughts on dRU design Lin Yang
	* [24/0501](https://mentor.ieee.org/802.11/dcn/24/11-24-0501-00-00bn-pilot-design-considerations-for-dru.pptx) Pilot design considerations for dRU Lin Yang
	* [24/0520](https://mentor.ieee.org/802.11/dcn/24/11-24-0520-00-00bn-discussion-on-dru.pptx) Discussion on DRU Mahmoud Kamel
	* [24/0409](https://mentor.ieee.org/802.11/dcn/24/11-24-0409-03-00bn-hierarchical-modulation-for-802-11.pptx) Hierarchical Modulation for 802.11 Vamadevan Namboodiri
	* [24/0457](https://mentor.ieee.org/802.11/dcn/24/11-24-0457-00-00bn-hierarchical-modulation-for-802-11-initial-results.pptx)Hierarchical Modulation\_for\_802.11\_initial\_results Vamadevan Namboodiri
	* [24/0417](https://mentor.ieee.org/802.11/dcn/24/11-24-0417-00-00bn-impact-of-tx-evm-on-mimo-detection-follow-up.pptx) Impact of Tx EVM on MIMO Detection Follow Up Genadiy Tsodik
	* [24/0428](https://mentor.ieee.org/802.11/dcn/24/11-24-0428-00-00bn-uhr-preamble-design-options.pptx) UHR preamble design options Sigurd Schelstraete
	* [24/0435](https://mentor.ieee.org/802.11/dcn/24/11-24-0435-00-00bn-ideas-related-to-achieving-ultra-high-reliability.pptx) Ideas related to achieving (Ultra) High Reliability Leif Wilhelmsson
	* [24/0437](https://mentor.ieee.org/802.11/dcn/24/11-24-0437-00-00bn-interference-mitigation-for-improved-reliability-more-insights.pptx) Interference Mitigation for Improved Reliability – More Insights Shimi Shilo
	* [24/0508](https://mentor.ieee.org/802.11/dcn/24/11-24-0508-00-00bn-extended-6-ghz-channelization.pptx) Extended 6 GHz channelization Thomas Derham

**Technical contributions**

1. **Q/A for 24/0476 Tone Plan Design Principles for Distributed RU Bo Gong (Huawei )**

Discussions:

Q: Regarding mixed BW: makes it hard for AP to do dRU assignment.

A: reference embedded XLS file. Presenter clarifies how to interpret the proposed dRU indices. An example of mixed scheduling is shown with the proposed indices.

C: regular RU has more regular, hierarchical structure.

Q: proposal may not be able to get full power boost

A: We have verified that full power boost can be achieved.

Q: Proposal would also make smoothing implementation more difficult.

A: main procedure will be the same. The coefficients will be slightly different. Not a big impact.

1. **24/0500 Follow up on high level thoughts on dRU design Lin Yang(Qualcomm)**

Discussions:

No Discussion

1. **24/0501 Pilot design considerations for dRU Lin Yang(Qualcomm)**

Discussions:

C: Could you elaborate on the benefit of the perfect even distribution of the pilot?

A: In distribution transmission, the tones are separated, so designing your filtering is very tricky, if you have a relatively consistent pattern or tone spacing, it is much easier for you to design.

C: Do you check the pilot tone on the large size DRU tone? for example, in the 52 tone DRU, the tone spacing between the first pilot tone and the second pilot tone is 22 but, the tone spacing for 3rd pilot tone and 4th pilot tone is 24. Is it right?

A: We look at the global over cross whole bandwidth.

C: what is the difference between equal and near equal?

A: we haven’t decided on the tone plan. The pilot tone index is dependent on the tone plan. So, we can’t fix it here.

* **Do you agree to add the following text to the TGbn SFD?**
	+ 11bn supports hierarchical pilot structure for DRU
		- Pilot locations of a large DRU is a subset of pilot locations of small component DRUs within same PPDU BW

SP Discussion

C: The proposal does not use the 26 tone dRU in 80MHz distribution BW. In this case, how do we define the tone plan?

A: Good comment, we revise the text.

C: Do you consider the same bandwidth or a different bandwidth?

A: The underlying component RU is supposed to be in the same band

Unanimous consent with no objection

1. **24/0520 Discussion on DRU Mahmoud Kamel (Interdigital)**

Discussions:

C: We don’t need to tell the BW with DRU size. and, we don't want to create a complexity

A: This notation is good when we write the specification

C: Unless the RU tone is exactly duplicated from the smaller RU, this combining will lead to efficiency loss.

1. **SP for 24/0402 20 MHz Tone Plan and Pilot Design for DRU Eunsung Park(LGE)**
* Do you agree to add the following text to the TGbn SFD?
	+ The number of pilot tones for same size DRU and RRU (regular RU) is the same
		- The RRU means the existing RU defined in 11ax and 11be

Unanimous consent with no objection

1. **SP for 24/0477 High Level Perspective on DRU-Follow Up Shengquan Hu(MediateK)**
* Do you agree to include the following text to the 11bn SFD?
	+ 11bn supports the hybrid mode with DRUs and RRUs (regular RU) in an OFDMA transmissions if UHR TB PPDU bandwidth is larger than 80MHz
		- Minimum size of RRU in hybrid mode is TBD

Unanimous consent with no objection

1. **SP for 23/2200 Distribution bandwidth of DRU Ross J. Yu (Huawei)**
* Do you agree to include the following into the 11bn SFD?
	+ DRU is allowed in a punctured UHR TB transmission.

Unanimous consent with no objection

1. **SP for Follow Up on High Level Thoughts on DRU Design Lin Yang(Qualcomm)**
* Do you agree to add the following text to the TGbn SFD?
	+ 11bn supports DRU transmission with distribution BW of 20MHz

 **SP deferred**

**Recess**

The meeting is Recessed at 12:30pm ET.

**Thursday Jan 14th, 2024 10:30 – 12:30 ET**

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 10:30am ET.
2. The Chair follows the agenda in 11-24/0235r12.
3. Reminder for registration for the Interim meeting.
4. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Dongguk Lim (LGE), Sigurd Schelstraete (MaxLinear) or the Chair himself if unable to record attendance via IMAT system.
5. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
6. The Chair goes through the Copyright policy.
7. Discussions on the agenda
	* [24/0409](https://mentor.ieee.org/802.11/dcn/24/11-24-0409-03-00bn-hierarchical-modulation-for-802-11.pptx) Hierarchical Modulation for 802.11 Vamadevan Namboodiri
	* [24/0457](https://mentor.ieee.org/802.11/dcn/24/11-24-0457-00-00bn-hierarchical-modulation-for-802-11-initial-results.pptx)Hierarchical Modulation\_for\_802.11\_initial\_results Vamadevan Namboodiri
	* [24/0417](https://mentor.ieee.org/802.11/dcn/24/11-24-0417-00-00bn-impact-of-tx-evm-on-mimo-detection-follow-up.pptx) Impact of Tx EVM on MIMO Detection Follow Up Genadiy Tsodik
	* [24/0428](https://mentor.ieee.org/802.11/dcn/24/11-24-0428-00-00bn-uhr-preamble-design-options.pptx) UHR preamble design options Sigurd Schelstraete
	* [24/0435](https://mentor.ieee.org/802.11/dcn/24/11-24-0435-00-00bn-ideas-related-to-achieving-ultra-high-reliability.pptx) Ideas related to achieving (Ultra) High Reliability Leif Wilhelmsson
	* [24/0437](https://mentor.ieee.org/802.11/dcn/24/11-24-0437-00-00bn-interference-mitigation-for-improved-reliability-more-insights.pptx) Interference Mitigation for Improved Reliability – More Insights Shimi Shilo
	* [24/0508](https://mentor.ieee.org/802.11/dcn/24/11-24-0508-00-00bn-extended-6-ghz-channelization.pptx) Extended 6 GHz channelization Thomas Derham

**Technical contributions**

1. **24/0409 Hierarchical Modulation for 802.11 Vamadevan Namboodiri(Samsung)**

Discussions:

C: In OFDMA, we already apply unequal modulation per each allocated frequency. Why do we need it?

A: HM can be combined with OFDMA and it can provide more benefits.

C: How do you define what is a high-priority stream or low-priority stream? It is dependent on the MAC.

A: Yes

C: how do you allocate the HP and LP data to Users when the number of users is more than 2?

A: According to the number of users, Nss for each user can be limited. One user can have a maximum of 2 SS.

C: It is very difficult sometimes to make both sizes exactly match. Mapping the HP stream and LP stream in PHY requires much padding in Mac PPDU. If it does not match in the MAC, it requires a lot of padding in the PHY.

C: It always sends some interference to other STA that does not want to have that. You should consider the two cases, first, both streams go to the same station and second, they are going to different STAs.

1. **24/0457Hierarchical Modulation\_for\_802.11\_initial\_results Vamadevan Namboodiri (Samsung)**

Discussions:

No Discussion

1. **24/0417 Impact of Tx EVM on MIMO Detection Follow Up Genadiy Tsodik(Huawei)**

Discussions:

C: Was the stronger EVM applied to all stations? The legacy STA has a different requirement

A: Good point. I will check it in our simulation.

C: If we consider the SNR+EVM, what the curve will look like?

A: The X axis is SNR + OBO. SNR is a signal to terminal noise of the receiver not including any EVM.

1. **24/0428 UHR preamble design options Sigurd Schelstraete(MaxLinear)**

Discussions:

C: Using both PHY version identifier and reserved bit is more complex. The using of the current PHY version bit is more simple.

A: No, the same entry using is more conventional. The PHY version completely breaks the approach that had before been defined.

C: How do you write the draft? For example, the UHR is still called the EHT PPDU, EHT-SIG, and other things.

A: As a kind of preamble, maybe a phy specifics within the separate clause.

C: I hate option 1 because it kills all legacy STA. The option 2 is good and it is more compatible. I wanna point to out option 3 in which we have to use a simple version number. However, the reserved bit does not indicate the version number.

A: That’s a possible option. My concern is that we don’t want to drive this element. Think about it like certifications.

C: Even though we input everything into the current clause 36, we could still make it a separate clause. Right?

A: We could input it in a separate clause. And, the reference is used to specify the change corresponding to the base document.

C: We can consider the various features of UHR PHY. So, at this time, it is premature to decide it.

C: If we inherit the current EHT preamble, it is hard to define the enhanced features due to the limitation of EHT. The 22 bits of the EHT user field may not be enough.

A: I am not proposing the specifics here.

C: The different vendors may have different validate bits for the control receiver

**Adjourn**

The meeting is Adjourned at 12:30am ET.