IEEE P802.11
Wireless LANs

|  |
| --- |
| Minutes 802.11 bn PHY ad hoc – March to May Conference calls  |
| Date: 2024-04-22 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Dongguk Lim | LG Electronics |  |  | Dongguk.lim@lge.com |

Abstract

This document contains the PHY ad hoc meeting minutes for TGbn teleconferences held between March and May 2024:

* March 28, 2024
* April 8, 2024
* April 11, 2024
* April 22, 2024

# Thursday March 28th, 2024 10:00 – 12:00 ET

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 10:00am ET.
2. The Chair follows the agenda in 11-24/0633r0.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
4. The Chair goes through the Copyright policy.
5. 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.
6. Discussions on the agenda.
	* 24/0433 Analysis on UEQM and UEQ MCS Ross Jian Yu
	* 24/0438 UEQM Benefit Analysis Rainer Strobel
	* 24/0439 UEQM evaluation and simulation results Rainer Strobel
	* 24/0474 UHR unequal modulation pattern and new MCS Rui Cao
	* 24/0498 Unequal Modulation in MIMO TxBF and New MCS for 11bn Alice Chen

**Attendance**

The following people registered their attendance through IMAT:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbn (PHY) | 3/28 | Asai, Yusuke | Nippon Telegraph and Telephone Corporation (NTT) |
| TGbn (PHY) | 3/28 | Batra, Anuj | Apple Inc. |
| TGbn (PHY) | 3/28 | Chen, You-Wei | MediaTek Inc. |
| TGbn (PHY) | 3/28 | Choi, Jinsoo | LG ELECTRONICS |
| TGbn (PHY) | 3/28 | Choo, Seungho | Senscomm Semiconductor Co., LTD |
| TGbn (PHY) | 3/28 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbn (PHY) | 3/28 | Coffey, John | Realtek Semiconductor Corp. |
| TGbn (PHY) | 3/28 | Di Taranto, Rocco | Ericsson AB |
| TGbn (PHY) | 3/28 | Fang, Juan | Intel Corporation |
| TGbn (PHY) | 3/28 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 3/28 | Hu, Shengquan | MediaTek Inc. |
| TGbn (PHY) | 3/28 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 3/28 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 3/28 | Jung, Insik | LG ELECTRONICS |
| TGbn (PHY) | 3/28 | Kabbinale, Aniruddh | Samsung Electronics |
| TGbn (PHY) | 3/28 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn (PHY) | 3/28 | Lanante, Leonardo | Ofinno |
| TGbn (PHY) | 3/28 | Li, Haozheng | TP-Link Corporation Limited |
| TGbn (PHY) | 3/28 | Li, Jialing | Qualcomm Technologies Inc. |
| TGbn (PHY) | 3/28 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 3/28 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn (PHY) | 3/28 | LIU, QINGLAI | Panasonic |
| TGbn (PHY) | 3/28 | Minotani, Jun | Panasonic Holdings Corporation |
| TGbn (PHY) | 3/28 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn (PHY) | 3/28 | Ng, Boon Loong | Samsung Research America |
| TGbn (PHY) | 3/28 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 3/28 | Ratnam, Vishnu | Samsung Research America |
| TGbn (PHY) | 3/28 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 3/28 | Singh, Aditi | Charter Communications |
| TGbn (PHY) | 3/28 | Strobel, Rainer | Maxlinear |
| TGbn (PHY) | 3/28 | SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 3/28 | Sun, Bo | Sanechips Technology Co., Ltd. |
| TGbn (PHY) | 3/28 | Wang, Ying | InterDigital, Inc. |
| TGbn (PHY) | 3/28 | Wei, Dong | NXP Semiconductors |
| TGbn (PHY) | 3/28 | Wilhelmsson, Leif | Ericsson AB |
| TGbn (PHY) | 3/28 | Wu, Kanke | Apple Inc. |
| TGbn (PHY) | 3/28 | Wu, Tianyu | Apple Inc. |
| TGbn (PHY) | 3/28 | Yamada, Ryota | SHARP CORPORATION |
| TGbn (PHY) | 3/28 | YANG, RUI | InterDigital, Inc. |
| TGbn (PHY) | 3/28 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbn (PHY) | 3/28 | Zhang, Jiayi | Ofinno |
| TGbn (PHY) | 3/28 | Zhang, Yan | Apple Inc. |
| TGbn (PHY) | 3/28 | Zhong, Ke | Ruijie Networks Co.,Ltd. |
| TGbn (PHY) | 3/28 | Zhou, Lei | H3C Technologies Co., Limited |

**Technical contributions**

1. **24/0433 Analysis on UEQM and UEQ MCS Ross Jian Yu (Huawei)**

Discussions:

C: How do you define the condition number in a simulation?

A: The largest or the smallest difference

C: It is difficult to compare the performance only using one channel condition, you need to consider more channel conditions.

C: Do you have a plan to compare the performance when 2 SS is considered

A: Now I don’t have a plan

C: UEQ MCS needs a different PSDU and it means that you need to have a new interface that all PSUDs are coming from the same TX queue. It is very challenging

A: Yes, it could be.

C: Do you allocate equal power to other cases except the unequal power cases?

A: The difference MCS case does not need it because the MCS is determined by using SNR

C: If a different MCS is applied to each RU, it requires more complexity.

A: I agree

C: The analysis in the spatial domain for UEQM and Unequal MCS may be different from the frequency domain because of interference on the frequency domain

Q: Slide 19, do you also compare the UEQM using the joint encoding?

A: No

Q: From the STA perspective, it requires more complexity(i.e. LDPC complexity). If the STA doesn’t implement it, what’s the reason for the AP to implement it?

A: we can get the 15 ~20% bps tput gains.

1. **24/0438 UEQM Benefit Analysis Rainer Strobel (MaxLinear)**

Discussions:

C: How do you define the SNR margin?

A: It is the value for the certain target bit error rate and it is the dB value.

C: In op2, what are you going to feedback?

A: The SNR feedback per spatial stream.

C: What do you mean by the decoder effects?

A: Special steams with different qualities can average out those differences by the decoder.

C: In current LA, it only includes the preferred MCS, not the SNR difference. Aspect of LA, it requires the new parameters.

A: The sounding feedback information can be used.

C: Regarding SNR margin, is it a single average value for every spatial stream?

A: Yes

1. **24/0439 UEQM evaluation and simulation results Rainer Strobel (MaxLinear)**

Discussions:

C: Have you looked into the performance of 2x2 without BF? I am not sure how much we are going to optimize for 2x2.

A: SVD provides the gain.

C: How much RvR difference can we observe when a difference is three? The Difference two can provide enough gain.

A: We don’t consider the limitation for the selection of MCS.

C: slide 17, do you expect those RVR gains to meet at the high SNR scenario?

**Adjourn**

The meeting is Adjourned at 12:00am ET.

# Monday April 8th, 2024 19:00 – 21:00 ET

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 19:00pm ET.
2. The Chair follows the agenda in 11-24/0633r2.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
4. The Chair goes through the Copyright policy.
5. 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.
6. Discussions on the agenda.
	* [24/0474](https://mentor.ieee.org/802.11/dcn/24/11-24-0474-00-00bn-uhr-unequal-modulation-pattern-and-new-mcs.pptx) UHR unequal modulation pattern and new MCS Rui Cao
	* [24/0498](https://mentor.ieee.org/802.11/dcn/24/11-24-0498-00-00bn-unequal-modulation-in-mimo-txbf-and-new-mcs-for-11bn.pptx) Unequal Modulation in MIMO TxBF and New MCS for 11bn Alice Chen
	* [24/0507](https://mentor.ieee.org/802.11/dcn/24/11-24-0507-00-00bn-ueqm-further-details.pptx) UEQM – Further details Ron Porat
	* [24/0469](https://mentor.ieee.org/802.11/dcn/24/11-24-0469-00-00bn-new-mcss-for-11bn.pptx) New MCSs for 11bn Shengquan Hu
	* [24/0437](https://mentor.ieee.org/802.11/dcn/24/11-24-0437-00-00bn-interference-mitigation-for-improved-reliability-more-insights.pptx) Interference Mitig. for Impr. Reliability – More Insights Shimi Shilo
	* 24/0440 DPWiFi for IEEE802.11bn WMAN Carlos Rios
	* 24/0460 Low Power and Long Range Preamble Follow Up Brian Hart

**Attendance**

The following people registered their attendance through IMAT:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbn (PHY) | 4/8 | Choo, Seungho | Senscomm Semiconductor Co., LTD |
| TGbn (PHY) | 4/8 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbn (PHY) | 4/8 | Fang, Juan | Intel Corporation |
| TGbn (PHY) | 4/8 | feng, Shuling | MediaTek Inc. |
| TGbn (PHY) | 4/8 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/8 | Hart, Brian | Cisco Systems, Inc. |
| TGbn (PHY) | 4/8 | Hu, Shengquan | MediaTek Inc. |
| TGbn (PHY) | 4/8 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 4/8 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn (PHY) | 4/8 | Kim, Youhan | Qualcomm Technologies, Inc. |
| TGbn (PHY) | 4/8 | Lanante, Leonardo | Ofinno |
| TGbn (PHY) | 4/8 | Lee, Wookbong | Apple Inc. |
| TGbn (PHY) | 4/8 | Li, Jialing | Qualcomm Technologies Inc. |
| TGbn (PHY) | 4/8 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/8 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn (PHY) | 4/8 | Lim, Yeon Geun | Newracom Inc. |
| TGbn (PHY) | 4/8 | MAO, ZHI | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/8 | Minotani, Jun | Panasonic Holdings Corporation |
| TGbn (PHY) | 4/8 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/8 | Ratnam, Vishnu | Samsung Research America |
| TGbn (PHY) | 4/8 | Rios, Carlos | Terabit Wireless Internet LLC |
| TGbn (PHY) | 4/8 | Sadiq, Bilal | Samsung Research America |
| TGbn (PHY) | 4/8 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/8 | Song, Hao | Intel Corporation |
| TGbn (PHY) | 4/8 | SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/8 | Sun, Bo | Sanechips Technology Co., Ltd. |
| TGbn (PHY) | 4/8 | Tian, Bin | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (PHY) | 4/8 | Tsodik, Genadiy | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/8 | Wang, Ying | InterDigital, Inc. |
| TGbn (PHY) | 4/8 | Wei, Dong | NXP Semiconductors |
| TGbn (PHY) | 4/8 | Wu, Kanke | Apple Inc. |
| TGbn (PHY) | 4/8 | Wu, Tianyu | Apple Inc. |
| TGbn (PHY) | 4/8 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbn (PHY) | 4/8 | Zhang, Jiayi | Ofinno |
| TGbn (PHY) | 4/8 | Zhang, Yan | Apple Inc. |
| TGbn (PHY) | 4/8 | Zhong, Ke | Ruijie Networks Co.,Ltd. |
| TGbn (PHY) | 4/8 | Zhou, Lei | H3C Technologies Co., Limited |

**Technical contributions**

1. **24/0474 UHR unequal modulation pattern and new MCS Rui Cao (NXP)**

Discussions:

C: Regarding the new MCSs, its gain is very limited. Adding the new MCSs is not friendly for practical systems because it requires additional link adaptation and increases the complexity.

A: In one SS, we don’t expect it as a UEQM in multi-stream. and, advanced fast link adaptation mechanisms may help that.

C: Slide 6, what coding rate is assumed?

A: At the SNR point, we chose the corresponding optimal coding rate for all spatial streams.

C: Slide 4, it is not clear what are two differences. Is it up to 2 differences or exactly two differences?

A: It is up to 2 differences.

C: It is useful to evaluate for every value of M how much it contributes and how useful it is

A: I agree but I think that it is very difficult to make a final selection because there’s a finer resolution of the choice at SNR point and each coding rate.

C: Do you consider the multiple Nosie realization averaging or is it per specific realization?

A: We averaged noise.

C: Slide 7, what is the reason you select green even though black is the same?

A: I chose the most common one among the two channels.

C: What is the mean of percentage?

A: First, the choice of each rate is based on the 4%, at least 4% higher group will get. The last column shows the percentage of the occurrence for all these scenarios.

C: What do you think about the use of the different channel decomposition methods such as GMD on the receiver side?

A: I assume in the next-generation receiver implementation they may choose the beamforming implementation based on the TX’s capability.

1. **24/0498 Unequal Modulation in MIMO TxBF and New MCS for 11bn Alice Chen (Qualcomm)**

Discussions:

C: Slide 13, if you consider the practical channel estimation and practical CSI feedback, can you get the gain?

A: That could be like one dB gain somewhere there.

C: If we agree that UFEQM is defined for 2 to 4 SS and obviously makes no sense for one SS, it seems like we don’t consider it applied to 5 to 8 SS.

A: As the first generation, we think that it’s better to focus on the most useful cases.

C: The results show three thousand or four thousand gain per symbol, if you compare the percentage of the improvement it almost doesn’t exist.

A: The percentage wise, it may be that the improvement may be small in certain SNR

C: For the lower MCS side, we don’t have many choices for the same QAM, right? Is that the reason, why you see some degradation in the lower SNR region?

A: Yes,

C: How many new MCSs do you consider?

A: 4 new MCSs are introduced.

C: In one special stream case, the gain was minimal in the previous presentation and this presentation as well.

A: No

1. **24/0507 UEQM – Further details Ron Porat (Broadcom)**

Discussions:

C: Slide 10, do you have checked why this kind of dropping and sorting out in terms of gain

A: Sometimes MCSs have big gaps such as 4dB which is why we would like to add a couple of MCSs to close the gap

**Adjourn**

The meeting is Adjourned at 21:00pm ET.

# Thursday April 11th, 2024 10:00 – 12:00 ET

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 10:00am ET.
2. The Chair follows the agenda in 11-24/0633r6.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
4. The Chair goes through the Copyright policy.
5. 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.
6. Discussions on the agenda.
	* [24/0460](https://mentor.ieee.org/802.11/dcn/24/11-24-0460-00-00bn-long-range-low-power-preamble-follow-up.pptx) Low Power and Long Range Preamble Follow Up Brian Hart
	* [24/0469](https://mentor.ieee.org/802.11/dcn/24/11-24-0469-00-00bn-new-mcss-for-11bn.pptx) New MCSs for 11bn Shengquan Hu
	* [24/0437](https://mentor.ieee.org/802.11/dcn/24/11-24-0437-00-00bn-interference-mitigation-for-improved-reliability-more-insights.pptx) Interference Mitig. for Impr. Reliability–More Insights Shimi Shilo
	* [24/0440](https://mentor.ieee.org/802.11/dcn/24/11-24-0440-01-00bn-dpwifi-for-802-11bn-wman.pptx) DPWiFi for IEEE802.11bn WMAN Carlos Rios
	* [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

**Attendance**

The following people registered their attendance through IMAT:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbn (PHY) | 4/11 | Anwyl, Gary | Mediatek Inc |
| TGbn (PHY) | 4/11 | Cao, Rui | NXP Semiconductors |
| TGbn (PHY) | 4/11 | Chen, You-Wei | MediaTek Inc. |
| TGbn (PHY) | 4/11 | Choo, Seungho | Senscomm Semiconductor Co., LTD |
| TGbn (PHY) | 4/11 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbn (PHY) | 4/11 | Coffey, John | Realtek Semiconductor Corp. |
| TGbn (PHY) | 4/11 | Di Taranto, Rocco | Ericsson AB |
| TGbn (PHY) | 4/11 | feng, Shuling | MediaTek Inc. |
| TGbn (PHY) | 4/11 | Gao, Ning | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/11 | Hart, Brian | Cisco Systems, Inc. |
| TGbn (PHY) | 4/11 | Hosseinianfar, Hamid | Ofinno |
| TGbn (PHY) | 4/11 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 4/11 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 4/11 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn (PHY) | 4/11 | Lanante, Leonardo | Ofinno |
| TGbn (PHY) | 4/11 | Lee, Wookbong | Apple Inc. |
| TGbn (PHY) | 4/11 | Li, Haozheng | TP-Link Corporation Limited |
| TGbn (PHY) | 4/11 | Li, Jialing | Qualcomm Technologies Inc. |
| TGbn (PHY) | 4/11 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/11 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn (PHY) | 4/11 | Lim, Yeon Geun | Newracom Inc. |
| TGbn (PHY) | 4/11 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn (PHY) | 4/11 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/11 | Schelstraete, Sigurd | MaxLinear |
| TGbn (PHY) | 4/11 | Singh, Aditi | Charter Communications |
| TGbn (PHY) | 4/11 | Strobel, Rainer | Maxlinear |
| TGbn (PHY) | 4/11 | SUH, JUNG HOON | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/11 | Wang, Ying | InterDigital, Inc. |
| TGbn (PHY) | 4/11 | Wei, Dong | NXP Semiconductors |
| TGbn (PHY) | 4/11 | Wilhelmsson, Leif | Ericsson AB |
| TGbn (PHY) | 4/11 | Wu, Kanke | Apple Inc. |
| TGbn (PHY) | 4/11 | Wu, Tianyu | Apple Inc. |
| TGbn (PHY) | 4/11 | Yamada, Ryota | SHARP CORPORATION |
| TGbn (PHY) | 4/11 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbn (PHY) | 4/11 | Yu, Jian | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/11 | Zhang, Yan | Apple Inc. |
| TGbn (PHY) | 4/11 | Zhong, Ke | Ruijie Networks Co.,Ltd. |
| TGbn (PHY) | 4/11 | Zhou, Lei | H3C Technologies Co., Limited |

**Technical contributions**

1. **24/0460 Low Power and Long Range Preamble Follow Up Brian Hart (Cisco Systems)**

Discussions:

C: For the long-range extension, the bottleneck could be the preamble portion. How to enable the packet detection?

A: I am not claiming the perfect idea in terms of packet detection. I agree it is an open issue.

C: how do you wake up some low power STA after sending the PPDU to regular power STA?

A: You mentioned the trigger information embedded in another PPDU ready to go for the next PPDU. This seems a little bit like cascading.

C: What’s the purpose of this extended UHR-STF

A: You can use it for the CFO

C: Does the preamble extension provide the full delay that 128us would provide for this part?

A: 128 us is one of the best values for that, and it is probably not enough to justify the effect. we are thinking about the various transition delays.

1. **24/0469 New MCSs for 11bn Shengquan Hu (Mediatek)**

Discussions:

C: The throughput is very limited in terms of SNR gain and it requires a very sensitive link adaptation algorithm. We need more discussion and consideration on adding a new MCS. So can you defer the running of the SP?

A: I can defer, but we showed the throughput gain by adding this new MCS. The new MCS can improve the 20~30% throughput gain.

C: In your simulation, you choose the ten number of symbols as a specific payload size and choose the nominal coding rate, right?

A: Yes,

C: For the new four candidate MCSs, we cannot find the interpreter number of NDPS or CBPS.

A: I don’t think there’s a kind of concern but I will take your comment to double check.

C: Slide 9, for single stream, do you only use the MMSE?

A: For a single stream, linear detection is used.

C: Even though you showed 20% or over in the narrow range, the entire SNR range is not a huge gain.

C: What is the throughput gain with the percentage you showed?

A: The percentage of gain is between the existing MCS and another with a new MCS.

1. **24/0437 Interference Mitig. for Impr. Reliability – More Insights Shimi Shilo (Huawei)**

Discussions:

C: The interference comes at a random time during the PPDU reception.

A: Yes, interference is typically not controlled.

C: How we can predict it at the receiver or transmitter? How do you choose this new PPDU rather than the regular PPDU?

A: I wouldn’t call it a PPDU. It should be depending on the scenario and implementation.

C: Slide 4, we need to accommodate a new Nsd,im in value?

A: Yes,

C: For the IM pilot, do you base on some accurate frequency feedback from the receiver to decide it

A: There are several different options. one option is not to do it every time by to do it when both the transmitter and receiver decide

C: Do you intend to apply for all cases or limited to certain BW or RU sites?

A: I don’t want to limit anything at this stage.

C: by considering the interference, we can use MRU.

A: It cannot cover both the narrow bandwidth and wide bandwidth interference in the entire BW.

**Adjourn**

The meeting is Adjourned at 12:00am ET.

# Monday April 22th, 2024 19:00 – 21:00 ET

**Introduction**

1. The Chair (Tianyu, Apple) calls the meeting to order at 19:00pm ET.
2. The Chair follows the agenda in 11-24/0633r9.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. **Nobody speaks up.**
4. The Chair goes through the Copyright policy.
5. 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.
6. Discussions on the agenda.
	* [24/0534](https://mentor.ieee.org/802.11/dcn/24/11-24-0534-00-00bn-lpi-static-preamble-puncturing.pptx) LPI Static Preamble Puncturing Pelin Salem\*
	* [24/0440](https://mentor.ieee.org/802.11/dcn/24/11-24-0440-01-00bn-dpwifi-for-802-11bn-wman.pptx) DPWiFi for IEEE802.11bn WMAN Carlos Rios
	* [24/0461](https://mentor.ieee.org/802.11/dcn/24/11-24-0461-00-00bn-vendor-specific-ppdu-options.pptx) Vendor specific PHY Options Brian Hart
	* [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
	* [24/0524](https://mentor.ieee.org/802.11/dcn/24/11-24-0524-00-00bn-multiple-ap-transmissions-using-dru.pptx) Multiple AP transmissions Using DRU Leonardo Lanante

**Attendance**

The following people registered their attendance through IMAT:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbn (PHY) | 4/22 | Asai, Yusuke | Nippon Telegraph and Telephone Corporation (NTT) |
| TGbn (PHY) | 4/22 | Cho, Hangyu | LG ELECTRONICS |
| TGbn (PHY) | 4/22 | Choi, Jinsoo | LG ELECTRONICS |
| TGbn (PHY) | 4/22 | Choo, Seungho | Senscomm Semiconductor Co., LTD |
| TGbn (PHY) | 4/22 | Chou, Tzu-Hsuan | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (PHY) | 4/22 | feng, Shuling | MediaTek Inc. |
| TGbn (PHY) | 4/22 | Hansen, Christopher | Covariant Corporation |
| TGbn (PHY) | 4/22 | Hart, Brian | Cisco Systems, Inc. |
| TGbn (PHY) | 4/22 | Hu, Shengquan | MediaTek Inc. |
| TGbn (PHY) | 4/22 | Jee, Anand | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 4/22 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbn (PHY) | 4/22 | Kamel, Mahmoud | Interdigital Inc. |
| TGbn (PHY) | 4/22 | Kim, Youhan | Qualcomm Technologies, Inc. |
| TGbn (PHY) | 4/22 | Li, Haozheng | TP-Link Corporation Limited |
| TGbn (PHY) | 4/22 | Li, Jialing | Qualcomm Technologies Inc. |
| TGbn (PHY) | 4/22 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/22 | Lim, Dong Guk | LG ELECTRONICS |
| TGbn (PHY) | 4/22 | Lim, Yeon Geun | Newracom Inc. |
| TGbn (PHY) | 4/22 | Liu, Jianhan | MediaTek Inc. |
| TGbn (PHY) | 4/22 | LIU, QINGLAI | Panasonic |
| TGbn (PHY) | 4/22 | MAO, ZHI | Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/22 | Minotani, Jun | Panasonic Holdings Corporation |
| TGbn (PHY) | 4/22 | Mohamed Hassan Salem, Nedime Pelin | Cisco Systems, Inc. |
| TGbn (PHY) | 4/22 | Motozuka, Hiroyuki | Panasonic Holdings Corporation |
| TGbn (PHY) | 4/22 | Norouzi, Sara | Huawei Technologies Canada; Huawei Technologies Co., Ltd |
| TGbn (PHY) | 4/22 | Ratnam, Vishnu | Samsung Research America |
| TGbn (PHY) | 4/22 | Rios, Carlos | Terabit Wireless Internet LLC |
| TGbn (PHY) | 4/22 | Schelstraete, Sigurd | MaxLinear |
| TGbn (PHY) | 4/22 | Singh, Aditi | Charter Communications |
| TGbn (PHY) | 4/22 | Song, Hao | Intel Corporation |
| TGbn (PHY) | 4/22 | Tian, Bin | Qualcomm Incorporated; Qualcomm Technologies, Inc |
| TGbn (PHY) | 4/22 | Wang, Ying | InterDigital, Inc. |
| TGbn (PHY) | 4/22 | Wei, Dong | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbn (PHY) | 4/22 | Wu, Kanke | Apple Inc. |
| TGbn (PHY) | 4/22 | Wu, Tianyu | Apple Inc. |
| TGbn (PHY) | 4/22 | Yamada, Ryota | SHARP CORPORATION |
| TGbn (PHY) | 4/22 | Yan, Aiguo | Ubilinx |
| TGbn (PHY) | 4/22 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbn (PHY) | 4/22 | Yu, Jian | Huawei Technologies Co., Ltd |

**Technical contributions**

1. **24/0534 LPI Static Preamble Puncturing Pelin Salem (Cisco Systems)**

Discussions:

C: Preamble puncturing cannot be used to avoid interference from the incumbent.

C: Why -42dbm is used for preamble puncturing?

A: Because noise is going to be captured, that’s why we raise it slightly by 20 dBm seems like a reasonable level.

C: Slide 7, you proposed the 42 dBm. May I know where this number comes from?

A: 20dB was selected because this is the 20dB notch required for the IEEE mask.

C: How does AP know that interference is a static interference or incumbent user?

A: It is not dynamic behavior. it is announced.

C: For LPI we don’t need to be concerned with puncturing, why are we doing this?

A: Because we are not allowed to do it, for example, when the incumbent user is located closely there’s an opportunity instead of vacating the entire.

C: Is it a Wi-Fi interference or non Wi-fi interference?

A: They are interference from the incumbent.

1. **24/0461 Vendor specific PHY Options Brian Hart (Cisco Systems)**

Discussions:

C: The device overhearing it would not be able to distinguish between the version-specific use or a later standardized use.

A: I agree with it and the vendor-specific behavior must not affect information for third-party STA

C: I agree that defining some VS is useful. We need to check to prevent confusion about BSS or AID

A: I agree with that in general.

1. **24/0524 Multiple AP transmissions Using DRU Leonardo Lanante (Ofinno)**

Discussions:

C: This is like a coordinated DL FDMA and it is a similar direction. And it requires some new requirements for AP2 because does not transmit the TB PPDU

A: We can design it such that AP can transmit the MU PPDU instead of a TB PPDU although we’ll have some alignment problems.

1. **24/0440 DPWiFi for IEEE802.11bn WMAN Carlos Rios (Terabit Wireless Internet LLC )**

Discussions:

C: It is better to convert the price or dollar amount you showed to a certain relative complexity or something.

C: What is required for the Standardization?

A: The Polarization MIMO is not a standard anywhere. So for this, we can add the capability to use MIMO on it.

**Adjourn**

The meeting is Adjourned at 21:00pm ET.