IEEE P802.11
Wireless LANs

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| Minutes 802.11 bn PHY ad hoc – March to May Conference calls  |
| Date: 2024-03-28 |
| 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
* April 15, 2024
* May 6, 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:

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| 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 of two can provide the 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.