IEEE P802.11
Wireless LANs

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| Minutes 802.11 be PHY ad hoc Telephone Conferences, April 2020 |
| Date: 2020-04-06 |
| Author(s): |
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Abstract

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

* April 06, 2020

**Monday April 06th, 2020 10:00 – 13:00 ET**

**Introduction**

1. The Chair (Sigurd Schelstraete, Quantenna/ON Semiconductor) calls the meeting to order at 10:00am ET.
2. The Chair follows the agenda in 11-20/0425r17
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 reminds everyone to report their attendance by using imat online tool <https://imat.ieee.org/802.11/attendance-log?d=04/06/2020&p=3031000005&t=47200043>
or sending an e-mail to the Co-chair, Tianyu Wu (Apple) or the Chair himself.
5. Discussions on the agenda. Planned presentation list for today:
	* [524r2](https://mentor.ieee.org/802.11/dcn/20/11-20-0524-02-00be-signaling-of-preamble-puncturing-in-su-transmission.pptx) Signaling-of-preamble-puncturing-in-su-transmission (Dongguk Lim)
	* [483r2](https://mentor.ieee.org/802.11/dcn/20/11-20-0483-02-00be-preamble-puncturing-for-ppdus-transmitted-to-multiple-stas.pptx) Preamble Puncturing for PPDUs Transmitted to Multiple STAs (Oded Redlich)
	* [545r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0545-00-00be-multi-segment-eht-sig-design-discussion.pptx) Multi-segment EHT-SIG design discussion (Ross Yu)
	* [575r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0575-00-00be-self-contained-signaling-for-e-sig.pptx) Self Contained Signaling for E-SIG (Ron Porat)
	* [578r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0578-00-00be-on-ru-allocation-singling-in-eht-sig.pptx) On RU Allocation Singling in EHT-SIG (Jianhan Liu)
	* StrawPolls on preamble, multi-RU allocation (439, 380, 285, 524, 373, 402, 483, 545, 575)
	* Remaining Straw Polls (020 etc)
	* [479r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0479-00-00be-240-mhz-channelization.pptx) 240 MHz channelization (Sigurd Schelstraete)
	* [456r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0456-00-00be-tx-evm-requirement-for-4k-qam.pptx) Tx EVM Requirement for 4k QAM (Qinghua Li)
	* [480r0](https://mentor.ieee.org/802.11/dcn/20/11-20-0480-00-00be-4096-qam-straw-polls.pptx) 4096 QAM Straw Polls (Sigurd Schelstraete)

**Attendance**

The following people recorded their attendance for this call:

Ben Arie, Yaron toga networks(a huawei company)
Cao, Rui NXP Semiconductors
Chen, Xiaogang Intel
Choi, Jinsoo LG ELECTRONICS
CHUN, JINYOUNG LG ELECTRONICS
Ciochina, Dana Sony Corporation
de Vegt, Rolf Qualcomm Incorporated
Doostnejad, Roya Intel Corporation
Duan, Ruchen SAMSUNG
ElSherif, Ahmed Qualcomm Incorporated
Erceg, Vinko Broadcom Corporation
Guo, Qiang Futurewei Technologies
Handte, Thomas Sony Corporation
Hu, Mengshi HUAWEI
Ji, Chenhe Huawei Technologies Co. Ltd
jiang, feng Intel Corporation
Jones, Vincent Knowles IV Qualcomm Incorporated
Kasher, Assaf Qualcomm Incorporated
Kedem, Oren 101 Consulting Corporation
Kim, Myeong-Jin SAMSUNG
Kim, Sanghyun WILUS Inc
Kim, Youhan Qualcomm Incorporated
Lalam, Massinissa SAGEMCOM BROADBAND SAS
Lee, Wookbong SAMSUNG
Levitsky, Ilya IITP RAS
Li, Qinghua Intel Corporation
Liang, dandan Huawei Technologies Co., Ltd
Lim, Dong Guk LG ELECTRONICS
Lin, Wei Huawei Technologies Co. Ltd
LIU, CHENCHEN Huawei Technologies Co., Ltd
Liu, Jianhan MediaTek Inc.
Lopez, Miguel Ericsson AB
Lou, Hanqing InterDigital, Inc.
Lv, Lily Huawei Technologies Co. Ltd
MELZER, Ezer Toga Networks, a Huawei company
noh, yujin Newracom Inc.
Pare, Thomas MediaTek Inc.
Park, Eunsung LG ELECTRONICS
PESIN, ANTHONY InterDigital, Inc.
Petrick, Albert InterDigital, Inc.
porat, ron Broadcom Corporation
Puducheri, Srinath Broadcom Corporation
Redlich, Oded Huawei
Schelstraete, Sigurd Quantenna Communications, Inc.
Sharma, Prashant NXP Semiconductors
Shellhammer, Stephen Qualcomm Incorporated
Shilo, Shimi HUAWEI
Son, Ju-Hyung WILUS Inc.
Srinivasa, Sudhir NXP Semiconductors
SUH, JUNG HOON Huawei Technologies Co. Ltd
Sun, Bo ZTE Corporation
Sundman, Dennis Ericsson AB
Tian, Bin Qualcomm Incorporated
Tsodik, Genadiy Huawei Technologies Co. Ltd
Uln, Kiran Cypress Semiconductor Corporation
Van Zelst, Allert Qualcomm Incorporated
Varshney, Prabodh Nokia
Vermani, Sameer Qualcomm Incorporated
Wilhelmsson, Leif Ericsson AB
Wu, Tianyu Apple, Inc.
Xin, Yan Huawei Technologies Co., Ltd
Yan, Aiguo Oppo
YANG, RUI InterDigital, Inc.
Yang, Steve TS MediaTek Inc.
Young, Christopher Broadcom Corporation
Yu, Jian Huawei Technologies Co., Ltd
Yu, Mao NXP Semiconductors
Zhang, Yan NXP Semiconductors

**New Submissions**

1. **11-20-0524r2 – Signalling of preamble puncturing in SU transmission –** Dongguk Lim (LG)

**Summary:** Proposed 3 options for signalling of preamble puncturing in SU transmission, including using BW field, BW + preamble puncturing pattern field and preamble puncturing information field.

**Discussion:**

C: Option 2 and 3 have too much overhead for preamble.

C: Signalling of preamble puncturing for SU and OFDMA case should be the same.

C: In option3, simple bitmap seems good enough.

SP deferred for discussion of other contributions on the same topic.

1. **11-20-0483r2 – Preamble Puncturing for PPDUs Transmitted to Multiple STAs –** Oded Redlich (Huawei)

**Summary:** Proposed 2 options of preamble puncturing for OFDMA case including option to cover majority of puncturing cases in an 80MHz and option to cover all possible puncturing cases.

**Discussion:**

C: This presentation reopen many area that we already have conclusion before. For example require processing of 160MHz. We already passed SP on only require to process 80MHz.

A: We believe it’s a good tradeoff to support more useful cases.

C: For slide7, we already spend a lot of time discussing the modes such as having 2 holes in 80MHz. It’s not a right balance of implementation complexity and benefit.

A: We discussed for SU PPDU but not OFDMA case. OFDMA case is totally different story. I agree with you in SU PPDU case.

C: For the 2 holes case in 80MHz, it’s ok you don’t assign any user on two channels, but you still need to keep the preamble in these channels. You are trying to increase the preamble puncturing modes for OFDMA case. The group is trying to limit the OFDMA puncturing modes which is a subset of non-OFDMA case.

A: With option 1, it’s totally aligned with passed SPs. Option 2 provide better tradeoff but we can go with option1.

A: If no allocation in a 20MHz, why need to send the preamble instead of release the channel for others.

SP deferred for discussion of other contributions on the same topic.

1. **11-20-0545r0 – Preamble Puncturing for PPDUs Transmitted to Multiple STAs –** Oded Redlich (Huawei)

**Summary:** Presented overhead analysis, application scenarios and some suggestions for multi-segment EHT-SIG.

**Discussion:**

C: Why limit SST in TWT? If MAC guys think there will be difficulty, they will limit it. PHY don’t need to add this limitation.

A: We do find some issues in MAC for STA parking on different 80MHz channels. We also mention other scenarios TBD which keep it open for MAC guys’ design.

C: I have different understanding of 11ax SST device. In 11ax, it’s not mandatory for SST devices to exit secondary channels after TWT SP. AP will not send to SST STA on primary channel even outside TWT SP.

SP deferred for discussion of other contributions on the same topic.

**Straw Polls**

1. **SPs from 380r0**

SP#1

* **Do you agree with allowing information in U-SIG to vary from one 80MHz to the next in an EHT PPDU of bandwidth >80MHz?**
	+ **Notes**
		- **Each STA still needs to decode only one 80MHz segment in U-SIG**
		- **Within each 80MHz, U-SIG is still duplicated in every non-punctured 20MHz**

**Discussion for SP1:**

C: This SP requires some STA park on different 80MHz segments?

A: No, this is general SP just talking about allowing the U-SIG content vary on different 80MHz segments.

C: If all the STAs park on the primary 80MHz, I see no reason to have different U-SIG content for different 80MHz.

A: If every STA park on primary 80, you can use same U-SIG content.

C: If one STA park on secondary 80, can it know the puncturing on other 80Mhz?

A: Yes, it can. You can convey puncturing of other 80Mhz on your 80MHz. But this is not the focus of this SP.

SP result: Y/N/A: 25/ 15/15

1. **SPs from 439r0**

SP#2

* **Do you agree that EHT-SIG may carry different content in each 80MHz?**
	+ **For PPDU BW larger than 80MHz.**
	+ **SST operation using TWT is one applicable scenario, other scenarios are TBD.**

**Discussion for SP2:**

C: Need more discussion from MAC point of view.

C: Suggest to say “may carry” and add “example SST operation”

C: I have similar SP, can you defer this SP?

A: Disagree to defer because of some design details.

SP result: Y/N/A: 35/ 15/10

SP#2-1

* **Do you agree that EHT-SIG may carry different content in each 80MHz?**
	+ **For PPDU BW larger than 80MHz.**

SP result: Y/N/A: 33/ 21/4

1. **Back to SP from 380r0**

SP#1-1

* **Do you agree with allowing information in U-SIG to vary from one 80MHz to the next in an EHT PPDU of bandwidth >80MHz?**
	+ **Notes**
		- **Each STA still needs to decode only one 80MHz segment in U-SIG**
		- **Within each 80MHz, U-SIG is still duplicated in every non-punctured 20MHz**
		- **SST operation using TWT is one potential applicable scenario, other scenarios are TBD (Needs MAC discussion).**

**Discussion for SP1-1:**

C: This should include MAC discussion.

A: Let’s change to “potential scenario”

C: I don’t like different version of “U-SIG” for SST case and other cases.

A: It’s only one version. You may have different content in some scenarios.

SP result: Y/N/A: 34/ 8/16

1. **SP from 545r0**

SP#3

* **Do you agree that the following indication shall be the same considering symbol alignment within each segment from PHY point of view, if the fields are present in U-SIG:**
	+ **Number of EHT-SIG symbols**
	+ **GI+EHT-LTF Size**
	+ **Number of EHT-LTF symbols**
	+ **PE related parameters**

**Discussion for SP3:**

C: I against to SP for the details when EHT-SIG is not defined.

C: Change to “shall be the same” if these fields present.

SP result: Y/N/A: 40/ 6/12

1. **SP from 402r0**

SP#4

* **Do you agree to have at least one EHT PPDU format that has only one EHT-SIG symbol with MCS 0?**
	+ **The EHT PPDU is intended to single user only**

**Discussion for SP4:**

C: We don’t know the content yet. Hard to determine whether it can fit into one EHT-SIG symbol.

C: It’s good to have one symbol with MCS0 but we can’t guarantee it for now.

A: I will defer this SP.

SP deferred for more discussion.

1. **SP from 524r2**

SP#5

* **Do you agree that EHT-SIG field included in EHT-PPDU sent to a single user is duplicated per 20MHz in BW?**

**Discussion for SP5:**

C: For 160MHz BW, EHT-SIG is repeated 8 times and 320MHz rep 16 times?

A: Yes.

C: Two content channels is more efficient. This SP is killing the efficiency which is opposite direction of the passed SP.

A: Two content channel carry same information for PPDU sent to a single user.

C: This is still pre-mature. Should check the design first.

SP result: Y/N/A: 12/ 29/17

1. **SP from 285r4**

SP#6

* **Do you support following in 11be?**
	+ **Preamble of primary 20MHz channel shall not be punctured in any PPDU (Except TB PPDU)**

**Discussion for SP5:**

C: TB PPDU may not have any STA send in primary channel. The SP text is not accurate.

C: Propose to add “except TB PPDU”

SP result: Y/N/A: 45/ 1/10

SP#7

* **Do you agree to have STA-ID related information in the EHT PPDU preamble sent to a single user and multiple users?** **TB PPDU is TBD.**

**Discussion for SP5:**

C: EHT PPDU include MAC header. Do you mean in PHY header?

A: Yes.

C: TB PPDU may not include STA-ID. Please add TB PPDU TBD.

SP result: Y/N/A: 42/ 2/13

**Adjourn**

The meeting is adjourned at 13:00 ET