IEEE P802.11
Wireless LANs

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| Minutes 802.11 be PHY ad hoc Telephone Conferences, July - Sept 2020 |
| Date: 2020-07-13 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Tianyu Wu | Apple |  |  | tianyu@apple.com |
| Feng Jiang | Apple |  |  |  |

Abstract

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

* July 13, 2020

**Monday July 13th, 2020 19:00 – 21:00 ET**

**Introduction**

1. The Chair (Sigurd Schelstraete, Quantenna/ON Semiconductor) calls the meeting to order at 19:00 ET.
2. The Chair follows the agenda in 11-20/0927r1
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. Nobody speaks up.
4. Discussions on the agenda.
	* [960r1](https://mentor.ieee.org/802.11/dcn/20/11-20-0960-01-00be-consideration-on-240mhz.pptx) Consideration on 240MHz (Eunsung Park) [SPs]
	* [930r3](https://mentor.ieee.org/802.11/dcn/20/11-20-0930-03-00be-consideration-on-user-specific-field-in-eht-sig.pptx) Consideration on user specific field in EHT-SIG field (Dongguk Lim) [SPs]
5. The Chair reminds everyone to report their attendance by sending an e-mail to the Co-chair, Tianyu Wu (Apple) or the Chair himself.

**Attendance**

The following people recorded their attendance for this call:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbe (PHY) | 7/13 | Agrawal, abhishek | ON Semiconductor |
| TGbe (PHY) | 7/13 | Aio, Kosuke | Sony Corporation |
| TGbe (PHY) | 7/13 | Allegue Martinez, Michel | Aerial Technologies Inc. |
| TGbe (PHY) | 7/13 | An, Song-Haur | INDEPENDENT |
| TGbe (PHY) | 7/13 | Ansley, Carol | CommScope |
| TGbe (PHY) | 7/13 | Anwyl, Gary | MediaTek Inc. |
| TGbe (PHY) | 7/13 | B, Hari Ram | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Baik, Eugene | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Batra, Anuj | Apple Inc. |
| TGbe (PHY) | 7/13 | Bei, Jianwei | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Ben Arie, Yaron | toga networks(a huawei company) |
| TGbe (PHY) | 7/13 | Berger, Christian | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Boldy, David | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Cao, Rui | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Cepni, Gurkan | Apple Inc. |
| TGbe (PHY) | 7/13 | Chen, Evelyn | Ericsson AB |
| TGbe (PHY) | 7/13 | Chen, Xiaogang | Intel |
| TGbe (PHY) | 7/13 | Cho, Hangyu | LG ELECTRONICS |
| TGbe (PHY) | 7/13 | Choi, Jinsoo | LG ELECTRONICS |
| TGbe (PHY) | 7/13 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbe (PHY) | 7/13 | Costa, D.Nelson | Peraso Technologies Incorporated |
| TGbe (PHY) | 7/13 | Dash, Debashis | Apple Inc. |
| TGbe (PHY) | 7/13 | Dauphinee, Leonard | MaxLinear Inc |
| TGbe (PHY) | 7/13 | Ding, Yanyi | Panasonic Corporation |
| TGbe (PHY) | 7/13 | Duan, Ruchen | SAMSUNG |
| TGbe (PHY) | 7/13 | ElSherif, Ahmed | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Erceg, Vinko | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Feng, Xiang | Keysight Technologies |
| TGbe (PHY) | 7/13 | Furuichi, Sho | Sony Corporation |
| TGbe (PHY) | 7/13 | Gardner, James | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Grandhe, Niranjan | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Haider, Muhammad Kumail | Facebook |
| TGbe (PHY) | 7/13 | Hall, Robert | CONSULTANT |
| TGbe (PHY) | 7/13 | Hansen, Christopher | Covariant Corporation |
| TGbe (PHY) | 7/13 | Harrison, Edward | Anritsu Company |
| TGbe (PHY) | 7/13 | Hsiao, Ching-Wen | MediaTek Inc. |
| TGbe (PHY) | 7/13 | Hsieh, Hung-Tao | MediaTek Inc. |
| TGbe (PHY) | 7/13 | Hu, Mengshi | HUAWEI |
| TGbe (PHY) | 7/13 | Huang, Lei | Panasonic Asia Pacific Pte Ltd. |
| TGbe (PHY) | 7/13 | Hurtarte, Jeorge | Teradyne, Inc. |
| TGbe (PHY) | 7/13 | Ibrahim, Mostafa | SAMSUNG ELECTRONICS |
| TGbe (PHY) | 7/13 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbe (PHY) | 7/13 | Jia, Jia | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | jiang, feng | Apple Inc. |
| TGbe (PHY) | 7/13 | Kadampot, Ishaque Ashar | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbe (PHY) | 7/13 | KANG, Kyu-Min | ETRI |
| TGbe (PHY) | 7/13 | Kim, Eunhee | Electronics and Telecommunications Research Institute (ETRI) |
| TGbe (PHY) | 7/13 | Kim, Myeong-Jin | SAMSUNG |
| TGbe (PHY) | 7/13 | Kim, Youhan | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Kitazawa, Shoichi | Muroran IT |
| TGbe (PHY) | 7/13 | Lansford, James | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Lee, Wookbong | SAMSUNG |
| TGbe (PHY) | 7/13 | Levitsky, Ilya | IITP RAS |
| TGbe (PHY) | 7/13 | Li, Jialing | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Li, Qinghua | Intel Corporation |
| TGbe (PHY) | 7/14 | Liang, dandan | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Lim, Dong Guk | LG ELECTRONICS |
| TGbe (PHY) | 7/13 | LIU, CHENCHEN | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Liu, Der-Zheng | Realtek Semiconductor Corp. |
| TGbe (PHY) | 7/13 | Liu, Jianhan | MediaTek Inc. |
| TGbe (PHY) | 7/13 | Lopez, Miguel | Ericsson AB |
| TGbe (PHY) | 7/13 | Lou, Hanqing | InterDigital, Inc. |
| TGbe (PHY) | 7/13 | Lou, Hui-Ling | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Mano, Hiroshi | Koden Techno Info K.K. |
| TGbe (PHY) | 7/13 | Mehrnoush, Morteza | Facebook |
| TGbe (PHY) | 7/13 | MELZER, Ezer | Toga Networks, a Huawei company |
| TGbe (PHY) | 7/13 | Memisoglu, Ebubekir | Istanbul Medipol University; Vestel |
| TGbe (PHY) | 7/13 | Mirfakhraei, Khashayar | Cisco Systems, Inc. |
| TGbe (PHY) | 7/13 | Montreuil, Leo | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Murphy, Rick | vLogic, Inc. |
| TGbe (PHY) | 7/13 | Nakano, Takayuki | Panasonic Corporation |
| TGbe (PHY) | 7/13 | Nam, Junyoung | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | noh, yujin | Newracom Inc. |
| TGbe (PHY) | 7/13 | Oh, Hyun Seo | Electronics and Telecommunications Research Institute (ETRI) |
| TGbe (PHY) | 7/13 | Ozbakis, Basak | VESTEL |
| TGbe (PHY) | 7/13 | Pare, Thomas | MediaTek Inc. |
| TGbe (PHY) | 7/13 | Park, Eunsung | LG ELECTRONICS |
| TGbe (PHY) | 7/13 | Perahia, Eldad | Hewlett Packard Enterprise |
| TGbe (PHY) | 7/13 | Pirhonen, Riku | Self |
| TGbe (PHY) | 7/13 | porat, ron | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Prabhakaran, Dinakar | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Puducheri, Srinath | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Pulikkoonattu, Rethnakaran | Broadcom Corporation |
| TGbe (PHY) | 7/13 | QIU, WEI | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Rai, Kapil | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Ramesh, Sridhar | Maxlinear |
| TGbe (PHY) | 7/13 | Redlich, Oded | HUAWEI |
| TGbe (PHY) | 7/13 | Regev, Dror | Toga Networks (a Huawei Company) |
| TGbe (PHY) | 7/13 | REICH, MOR | Togan Networks, a Huawei Company |
| TGbe (PHY) | 7/13 | Rezk, Meriam | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Roy, Sayak | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Sato, Naotaka | Sony Corporation |
| TGbe (PHY) | 7/13 | Schelstraete, Sigurd | Quantenna Communications, Inc. |
| TGbe (PHY) | 7/13 | Sethi, Ankit | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Shellhammer, Stephen | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Shilo, Shimi | HUAWEI |
| TGbe (PHY) | 7/13 | Srinivasa, Sudhir | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Stavridis, Athanasios | Ericsson AB |
| TGbe (PHY) | 7/13 | Strauch, Paul | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | SU, HONGJIA | Huawei Technologies Co.,  Ltd |
| TGbe (PHY) | 7/13 | SUH, JUNG HOON | Huawei Technologies Co. Ltd |
| TGbe (PHY) | 7/13 | Sun, Bo | ZTE Corporation |
| TGbe (PHY) | 7/13 | Tan, Danny | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Tian, Bin | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Tian, Tao | Unisoc Comm. |
| TGbe (PHY) | 7/13 | Tsodik, Genadiy | Huawei Technologies Co. Ltd |
| TGbe (PHY) | 7/13 | Uln, Kiran | Cypress Semiconductor Corporation |
| TGbe (PHY) | 7/13 | Urabe, Yoshio | Panasonic Corporation |
| TGbe (PHY) | 7/13 | Varshney, Prabodh | Nokia |
| TGbe (PHY) | 7/13 | Vermani, Sameer | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Ward, Lisa | Rohde & Schwarz |
| TGbe (PHY) | 7/13 | Wendt, Matthias | Signify |
| TGbe (PHY) | 7/13 | Wu, Kanke | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | Wu, Tianyu | Apple Inc. |
| TGbe (PHY) | 7/13 | Xin, Yan | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Xue, Ruifeng | Cisco Systems, Inc. |
| TGbe (PHY) | 7/13 | Yan, Aiguo | Oppo |
| TGbe (PHY) | 7/13 | Yang, Lin | Qualcomm Incorporated |
| TGbe (PHY) | 7/13 | YANG, RUI | InterDigital, Inc. |
| TGbe (PHY) | 7/13 | Yang, Steve TS | MediaTek Inc. |
| TGbe (PHY) | 7/13 | Yang, Xun | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Young, Christopher | Broadcom Corporation |
| TGbe (PHY) | 7/13 | Yu, Heejung | Korea University |
| TGbe (PHY) | 7/13 | Yu, Jian | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 7/13 | Yu, Mao | NXP Semiconductors |
| TGbe (PHY) | 7/13 | ZEGRAR, Salah Eddine | Istanbul Medipol University; Vestel |
| TGbe (PHY) | 7/13 | Zeng, Ruochen | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Zhang, Hongyuan | NXP Semiconductors |
| TGbe (PHY) | 7/13 | ZHANG, JIAYIN | HUAWEI |
| TGbe (PHY) | 7/13 | Zhang, Yan | NXP Semiconductors |
| TGbe (PHY) | 7/13 | Zheng, Xiayu | NXP Semiconductors |

**Straw Polls**

1. **SPs from 960r1 – Eunsung Park (LG Electronics)**

SP#1: SP3 in 960r1

* **Which option do you agree with for the BW field?**
	+ Option 1: no 240/160+80MHz entry
	+ Option 2: one 240/160+80MHz entry
	+ Note: It is not intended for SFD

 Op1/Op2/A: 31/40/13

**Discussions on SP:**

C: Prefer option 1. 240MHz can be punctured from 320MHz. There are three different punctured cases for 240MHz. For option 2 how to indicate the punctured case for 320MHz?

A: Agree that 240MHz can be punctured from 320MHz and can be indicated by the puncturing pattern.

C: Several concerns. One is how to design signaling puncture pattern?

A: Puncture pattern field is needed and before design the puncture pattern, the BW field need to be determined.

C: Prefer Option 2. It’s dedicated for static case. In SFD, there are already some definitions related to 240MHz.

C: Prefer Option 2. People prefer Option 1 need to bring up detailed design.

C: For option 2, is 160+80 within 320MHz?

A: it includes three cases possible and the puncture pattern can be indicated.

C: 160+80MHz can be used as enhancement to 11ax, when there is no 320MHz. Do we want to have the 160+80MHz mode?

A: In 11ax we have 80+80MHz, but in 11be maybe MLO will handle it.

C: Not sure whether MLO will support 80+80MHz and need to think about it.

SP#2: SP6 in 960r1

* **Do you agree that a separate phase rotation / EHT-STF / EHT-LTF sequence is defined in each 240/160+80 MHz and 320/160+160 MHz transmission?**
	+ It is not intended for SFD

 SP result: Y/N/A: 24/47/16

C: Unless we define the 240 transmission, the separate sequence definition is not reasonable.

C: The existing 320MHz can be reused, and the 80MHz segment can be punctured.

A: The PAPR can be optimized for 240MHz, and separated sequences may have some advantage.

C: Prefer to see some results for PAPR.

1. **SPs from 930r3 – Dongguk Lim (LG Electronics)**

SP#3: SP3 in 930r3

* **Do you agree that the user field in EHT PPDU that is sent to multiple user includes the subfield that indicates the number of spatial streams for each user.**
	+ For MU-MIMO allocation
		- Spatial Configuration
			* Indicates the number of spatial streams for a user in MU-MIMO allocation
	+ For non-MU-MIMO allocation
		- NSTS

 SP result: Y/N/A: 71/1/12

SP#4: SP4 in 930r3

* **Do you agree that the Nsts subfield of user field for non-MU-MIMO allocation consist of four bits and can indicate 1 to 16 streams consists of 4bits?**

 SP result: Y/N/A: 72/0/11

SP#5: SP5 in 930r3

* **Do you agree that the spatial configuration subfield of user field for MU-MIMO allocation consists of 6bits?**

C: Have we agreed how this 6bits are encoded?

A: The details are on slides 17-19.

C: Could you please defer it and it may relate with RU allocation?

A: This table is not related with signalling of RU allocation field and would like to run it.

 SP result: Y/N/A: 59/10/11

SP#6: SP6 in 930r3

* **Do you agree that the spatial configuration subfield is defined as described in slide 17~19 of 20/0930r3?**

 SP result: Y/N/A: 46/0/30

**Adjourn**

The meeting is adjourned at 21:00 PM ET