IEEE P802.11  
Wireless LANs

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| TGbe March to May 2021 teleconference minutes | | | | |
| Date: 2021-03-24 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Dennis Sundman | Ericsson |  |  | dennis.sundman@ericsson.com |
|  |  |  |  |  |

Abstract

This document contains the draft minutes for March to May 2021 TGbe teleconferences.

Revisions:

* Rev0: Added references to minutes for the split PHY/MAC telcos the 17th to 22nd of March. Added minutes for the joint telco the 24th of March.
* Rev1: Added participant list for the joint telco the 24th of March. Added references for the split PHY/MAC telcos 24th and 25th of March. Added minutes for the joint telco the 31st of March.
* Rev2: Added participant list for the joint telco the 31st of March. Added minutes for the joint telco the 7th of April.
* Rev3: Added participant list for the joint telco the 7th of April. Added minutes for the joint telco the 14th of April.
* Rev4: Added participant list for the joint telco the 14th of April. Added minutes for the joint telco (also shared with 802.1 TSN TG) the 21st of April.

# 5th Conf. Call: March 17 (10:00–12:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 6th Conf. Call: March 18 (10:00–12:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 7th Conf. Call: March 22 (19:00–22:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 8th Conf. Call: March 24 (10:00–12:00 ET)

1. The Chair, Alfred Asterjadhi (Qualcomm), calls the meeting to order at 10:01 ET. The Chair notifies that the agenda is in [0385r13](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-13-00be-jan-mar-tgbe-teleconference-agendas.docx).
2. IEEE 802 and 802.11 IPR policy and procedure
   1. Patent Policy: Ways to inform IEEE:
      * Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
      * Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
      * Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

* 1. The Chair goes through: Copyright Policy: Participants are advised that
     + IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
     + Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
  2. The Chair goes through: Patent, Participation, Copyright and policy related subclause: Please refer to *Patent And Procedures* in [0385r13](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-13-00be-jan-mar-tgbe-teleconference-agendas.docx).

Attendance reminder.

Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>

Please record your attendance during the conference call by using the IMAT system:

1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbe <MAC/PHY/Joint> conference call that you are attending.

If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Dennis Sundman ([dennis.sundman@ericsson.com](mailto:dennis.sundman@ericsson.com)) and Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))

Please ensure that the following information is listed correctly when joining the call:

"[voter status] First Name Last Name (Affiliation)"

* + - Attendence reported in IMAT:
    - AbidRabbu, Shaima' Istanbul Medipol University; Vestel
    - Aboulmagd, Osama Huawei Technologies Co., Ltd
    - Abushattal, Abdelrahman Istanbul Medipol university ;Vestel
    - Agrawal, abhishek ON Semiconductor
    - Akhmetov, Dmitry Intel Corporation
    - An, Song-Haur INDEPENDENT
    - Asterjadhi, Alfred Qualcomm Incorporated
    - Au, Kwok Shum Huawei Technologies Co., Ltd
    - Baek, SunHee LG ELECTRONICS
    - Bankov, Dmitry IITP RAS
    - baron, stephane Canon Research Centre France
    - Boldy, David Broadcom Corporation
    - Bredewoud, Albert Broadcom Corporation
    - Cariou, Laurent Intel Corporation
    - Carney, William Sony Corporation
    - CHERIAN, GEORGE Qualcomm Incorporated
    - Chitrakar, Rojan Panasonic Asia Pacific Pte Ltd.
    - Choi, Jinsoo LG ELECTRONICS
    - Choo, Seungho Senscomm Semiconductor Co., Ltd.
    - CHUN, JINYOUNG LG ELECTRONICS
    - Chung, Chulho SAMSUNG
    - Ciochina, Dana Sony Corporation
    - Coffey, John Realtek Semiconductor Corp.
    - Das, Subir Perspecta Labs Inc
    - de Vegt, Rolf Qualcomm Incorporated
    - Dong, Xiandong Xiaomi Inc.
    - Duan, Ruchen SAMSUNG
    - Erceg, Vinko Broadcom Corporation
    - feng, Shuling MediaTek Inc.
    - Fischer, Matthew Broadcom Corporation
    - Ghaderipoor, Alireza MediaTek Inc.
    - Gong, Bo Huawei Technologies Co., Ltd
    - Gu, Xiangxin Unisoc
    - Haider, Muhammad Kumail Facebook
    - Han, Zhiqiang ZTE Corporation
    - Ho, Duncan Qualcomm Incorporated
    - Hsieh, Hung-Tao MediaTek Inc.
    - Hu, Chunyu Facebook
    - Huang, Guogang Huawei Technologies Co., Ltd
    - Huang, Lei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Huang, Po-Kai Intel Corporation
    - Jamalabdollahi, Mohsen Cisco Systems, Inc.
    - Jeon, Eunsung SAMSUNG ELECTRONICS
    - jiang, feng Apple Inc.
    - Kain, Carl USDoT; Noblis, Inc.
    - Kakani, Naveen Qualcomm Incorporated
    - Kamel, Mahmoud InterDigital, Inc.
    - Kandala, Srinivas SAMSUNG
    - Kim, Jeongki LG ELECTRONICS
    - Kim, Myeong-Jin SAMSUNG
    - kim, namyeong LG ELECTRONICS
    - Kim, Sang Gook LG ELECTRONICS
    - Kim, Sanghyun WILUS Inc
    - Klein, Arik Huawei Technologies Co., Ltd
    - Klimakov, Andrey Huawei Technologies Co., Ltd
    - Kneckt, Jarkko Apple, Inc.
    - Ko, Geonjung WILUS Inc.
    - Kondo, Yoshihisa Advanced Telecommunications Research Institute International (ATR)
    - Koundourakis, Michail Samsung Cambridge Solution Centre
    - Kwon, Young Hoon NXP Semiconductors
    - Lalam, Massinissa SAGEMCOM BROADBAND SAS
    - Lee, Hong Won LG ELECTRONICS
    - Lee, Nancy Signify
    - Lee, Wookbong SAMSUNG
    - Levitsky, Ilya IITP RAS
    - Levy, Joseph InterDigital, Inc.
    - Li, Jialing Qualcomm Technologies, Inc.
    - Li, Yiqing Huawei Technologies Co., Ltd
    - Li, Yunbo Huawei Technologies Co., Ltd
    - Lim, Dong Guk LG ELECTRONICS
    - Lin, Zinan InterDigital, Inc.
    - Liu, Der-Zheng Realtek Semiconductor Corp.
    - Liu, Jianhan MediaTek Inc.
    - Liu, Yong Apple, Inc.
    - Lorgeoux, Mikael Canon Research Centre France
    - Lou, Hanqing InterDigital, Inc.
    - Lu, kaiying MediaTek Inc.
    - Lu, Liuming Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - LU, Yuxin Huawei Technologies Co., Ltd
    - Luo, Chaoming Beijing OPPO telecommunications corp., ltd.
    - Ma, Li MediaTek Inc.
    - Max, Sebastian Ericsson AB
    - McCann, Stephen Huawei Technologies Co., Ltd
    - Mehrnoush, Morteza Facebook
    - Memisoglu, Ebubekir Istanbul Medipol University; Vestel
    - Monajemi, Pooya Cisco Systems, Inc.
    - Montemurro, Michael Huawei Technologies Co., Ltd
    - Montreuil, Leo Broadcom Corporation
    - Naik, Gaurang Qualcomm Incorporated
    - NANDAGOPALAN, SAI SHANKAR Infineon Technologies
    - Nezou, Patrice Canon Research Centre France
    - Ng, Boon Loong Samsung Research America
    - Ozbakis, Basak VESTEL
    - OZDEN ZENGIN, OZLEM Vestel
    - Pare, Thomas MediaTek Inc.
    - Park, Eunsung LG ELECTRONICS
    - Park, Minyoung Intel Corporation
    - Patil, Abhishek Qualcomm Incorporated
    - Patwardhan, Gaurav Hewlett Packard Enterprise
    - Petrick, Albert InterDigital, Inc.
    - Pushkarna, Rajat Panasonic Asia Pacific Pte Ltd.
    - Rafique, Saira Istanbul Medipol University ; VESTEL
    - Raissinia, Alireza Qualcomm Incorporated
    - RISON, Mark Samsung Cambridge Solution Centre
    - Rosdahl, Jon Qualcomm Technologies, Inc.
    - Salman, Hanadi Istanbul Medipol University; VESTEL
    - Sandhu, Shivraj Qualcomm Incorporated
    - Schelstraete, Sigurd ON Semiconductor
    - Shafin, Rubayet Samsung Research America
    - Shellhammer, Stephen Qualcomm Incorporated
    - Shilo, Shimi Huawei Technologies Co., Ltd
    - Solaija, Muhammad Sohaib Istanbul Medipol University; Vestel
    - Sosack, Robert Molex Incorporated
    - Stacey, Robert Intel Corporation
    - SUH, JUNG HOON Huawei Technologies Co., Ltd
    - Sun, Li-Hsiang Sony Corporation
    - Sundman, Dennis Ericsson AB
    - Tanaka, Yusuke Sony Corporation
    - Tian, Bin Qualcomm Incorporated
    - Torab Jahromi, Payam Facebook
    - Tsodik, Genadiy Huawei Technologies Co., Ltd
    - Tsujimaru, Yuki Canon Inc.
    - Urabe, Yoshio Panasonic Corporation
    - Van Zelst, Allert Qualcomm Incorporated
    - Varshney, Prabodh Nokia
    - VIGER, Pascal Canon Research Centre France
    - Wang, Chao Chun MediaTek Inc.
    - Wang, Huizhao Quantenna Communications, Inc.
    - Wang, Lei Futurewei Technologies
    - Wentink, Menzo Qualcomm Incorporated
    - Wu, Tianyu Apple, Inc.
    - Wullert, John Perspecta Labs
    - Xin, Yan Huawei Technologies Co., Ltd
    - Yang, Jay Nokia
    - YANG, RUI InterDigital, Inc.
    - Yano, Kazuto Advanced Telecommunications Research Institute International (ATR)
    - Yee, James MediaTek Inc.
    - yi, yongjiang Futurewei Technologies
    - Yoon, Jeonghwan LG ELECTRONICS
    - Yu, Jian Huawei Technologies Co., Ltd
    - ZEGRAR, Salah Eddine Istanbul Medipol University; Vestel
    - Zhang, Yan NXP Semiconductors
    - Zhou, Pei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Zhou, Yifan Huawei Technologies Co., Ltd

1. Announcements:
   * Draft 0.4 was released previous week.
2. Approving the agenda.
   * C: 485r1 “Clarification on the trigger frame design” can it be added to the queue?
   * A: I will put it first in the technical submissions, and check if this is fine with the group.
   * C: I would like to defer 326 to next week.
   * A: Ok.
   * The chair asks if there is any objection to approve the agenda with unanimous consent. Nobody speaks up, the agenda is approved with unanimous consent.
3. Technical Submissions: Proposed Draft Text (PDTs) for fixings TBDs
   1. [**494r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0494-00-00be-mac-pdt-320mhz-indication-for-non-ht-duplicated-frames.docx) **pdt 320MHz indication for non-HT duplicated frames Yunbo Li**

Yunbo goes through the document and updates according to comments.

* 1. [**490r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0490-00-00be-pdt-trigger-frame-update.docx) **PDT Trigger frame update Yanjun Sun**

Yanjun goes through the document. No comments during the presentation.

SP:

Do you agree to incorporate changes as innturcted in 11/21-490r0 to the TGbe draft?

Discussion: No discussion.

Result: Supported unanimously.

* 1. [**509r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0509-00-00be-pdt-bw-extension-field-in-trigger-frame-for-eht.docx) **PDT BW Extension field in trigger frame for EHT Ming Gan**

Ming goes through the document. Comment that the document may not be relevant for the STA side in R1. Some live updates to the document.

1. Technical Submissions: **Comment Resolutions**
   1. [**272r2**](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-02-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) **D0.3 CR for Spatial Stream And MIMO Enhancement Wook Bong Lee**

Wook Bong goes through his CIDs.

1. AoB: No other business.
2. Adjourn at 12:00 ET.

# 9th Conf. Call: March 25 (10:00–12:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 10th Conf. Call: March 29 (19:00–22:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 11th Conf. Call: March 31 (10:00–12:00 ET)

1. The Chair, Alfred Asterjadhi (Qualcomm), calls the meeting to order at 10:01 ET. The Chair notifies that the agenda is in [0385r1](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-16-00be-jan-mar-tgbe-teleconference-agendas.docx)6.
2. IEEE 802 and 802.11 IPR policy and procedure
   1. Patent Policy: Ways to inform IEEE:
      1. Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
      2. Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
      3. Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

* 1. The Chair goes through: Copyright Policy: Participants are advised that
     1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
     2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
  2. The Chair goes through: Patent, Participation, Copyright and policy related subclause: Please refer to *Patent And Procedures* in [0385r1](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-16-00be-jan-mar-tgbe-teleconference-agendas.docx)6.

1. Attendance reminder.

Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>

Please record your attendance during the conference call by using the IMAT system:

1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbe <MAC/PHY/Joint> conference call that you are attending.

If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Dennis Sundman ([dennis.sundman@ericsson.com](mailto:dennis.sundman@ericsson.com)) and Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))

Please ensure that the following information is listed correctly when joining the call:

"[voter status] First Name Last Name (Affiliation)"

Attendence reported in IMAT:

* + - Aboulmagd, Osama Huawei Technologies Co., Ltd
    - Abushattal, Abdelrahman Istanbul Medipol university ;Vestel
    - Adhikari, Shubhodeep Broadcom Corporation
    - Akhmetov, Dmitry Intel Corporation
    - An, Song-Haur INDEPENDENT
    - Anwyl, Gary MediaTek Inc.
    - Asterjadhi, Alfred Qualcomm Incorporated
    - Au, Kwok Shum Huawei Technologies Co., Ltd
    - B, Hari Ram NXP Semiconductors
    - Baek, SunHee LG ELECTRONICS
    - Bankov, Dmitry IITP RAS
    - baron, stephane Canon Research Centre France
    - Boldy, David Broadcom Corporation
    - Bredewoud, Albert Broadcom Corporation
    - CHAN, YEE Facebook
    - Chitrakar, Rojan Panasonic Asia Pacific Pte Ltd.
    - Choi, Jinsoo LG ELECTRONICS
    - Choo, Seungho Senscomm Semiconductor Co., Ltd.
    - CHUN, JINYOUNG LG ELECTRONICS
    - Chung, Chulho SAMSUNG
    - Das, Subir Perspecta Labs Inc
    - de Vegt, Rolf Qualcomm Incorporated
    - Ding, Yanyi Panasonic Corporation
    - Dogukan, Ali Vestel
    - Dong, Xiandong Xiaomi Inc.
    - Duan, Ruchen SAMSUNG
    - Erceg, Vinko Broadcom Corporation
    - Fang, Yonggang Self
    - feng, Shuling MediaTek Inc.
    - Fischer, Matthew Broadcom Corporation
    - Ghaderipoor, Alireza MediaTek Inc.
    - Ghosh, Chittabrata Facebook, Inc.
    - Gong, Bo Huawei Technologies Co., Ltd
    - Gu, Xiangxin Unisoc
    - Haider, Muhammad Kumail Facebook
    - Han, Jonghun SAMSUNG
    - Hervieu, Lili Cable Television Laboratories Inc. (CableLabs)
    - Ho, Duncan Qualcomm Incorporated
    - Hsieh, Hung-Tao MediaTek Inc.
    - Hu, Chunyu Facebook
    - Huang, Guogang Huawei Technologies Co., Ltd
    - Huang, Lei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Huang, Po-Kai Intel Corporation
    - Inohiza, Hirohiko Canon
    - Jamalabdollahi, Mohsen Cisco Systems, Inc.
    - Jang, Insun LG ELECTRONICS
    - Jeon, Eunsung SAMSUNG ELECTRONICS
    - Kain, Carl USDoT; Noblis, Inc.
    - Kamel, Mahmoud InterDigital, Inc.
    - Kandala, Srinivas SAMSUNG
    - Khorov, Evgeny IITP RAS
    - Kim, Jeongki LG ELECTRONICS
    - kim, namyeong LG ELECTRONICS
    - Kim, Sang Gook LG ELECTRONICS
    - Kishida, Akira Nippon Telegraph and Telephone Corporation (NTT)
    - Klimakov, Andrey Huawei Technologies Co., Ltd
    - Kneckt, Jarkko Apple, Inc.
    - Ko, Geonjung WILUS Inc.
    - Kwon, Young Hoon NXP Semiconductors
    - Lalam, Massinissa SAGEMCOM BROADBAND SAS
    - Lee, Hong Won LG ELECTRONICS
    - Lee, Nancy Signify
    - Levitsky, Ilya IITP RAS
    - Li, Jialing Qualcomm Technologies, Inc.
    - Li, Yiqing Huawei Technologies Co., Ltd
    - Li, Yunbo Huawei Technologies Co., Ltd
    - Lim, Dong Guk LG ELECTRONICS
    - lim, taesung LG ELECTRONICS
    - Lin, Zinan InterDigital, Inc.
    - Liu, Der-Zheng Realtek Semiconductor Corp.
    - Liu, Jianhan MediaTek Inc.
    - Lorgeoux, Mikael Canon Research Centre France
    - Lou, Hanqing InterDigital, Inc.
    - Lu, kaiying MediaTek Inc.
    - Lu, Liuming Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - LU, Yuxin Huawei Technologies Co., Ltd
    - Luo, Chaoming Beijing OPPO telecommunications corp., ltd.
    - Ma, Li MediaTek Inc.
    - Max, Sebastian Ericsson AB
    - McCann, Stephen Huawei Technologies Co., Ltd
    - Memisoglu, Ebubekir Istanbul Medipol University; Vestel
    - Montemurro, Michael Huawei Technologies Co., Ltd
    - Montreuil, Leo Broadcom Corporation
    - NANDAGOPALAN, SAI SHANKAR Infineon Technologies
    - Nezou, Patrice Canon Research Centre France
    - Ng, Boon Loong Samsung Research America
    - Ozbakis, Basak VESTEL
    - OZDEN ZENGIN, OZLEM Vestel
    - Palayur, Saju Maxlinear Inc
    - Park, Eunsung LG ELECTRONICS
    - Park, Minyoung Intel Corporation
    - Patil, Abhishek Qualcomm Incorporated
    - Patwardhan, Gaurav Hewlett Packard Enterprise
    - Petrick, Albert InterDigital, Inc.
    - Rafique, Saira Istanbul Medipol University ; VESTEL
    - Raissinia, Alireza Qualcomm Incorporated
    - RISON, Mark Samsung Cambridge Solution Centre
    - Rosdahl, Jon Qualcomm Technologies, Inc.
    - Schelstraete, Sigurd ON Semiconductor
    - Shafin, Rubayet Samsung Research America
    - Shellhammer, Stephen Qualcomm Incorporated
    - Solaija, Muhammad Sohaib Istanbul Medipol University; Vestel
    - Stacey, Robert Intel Corporation
    - SUH, JUNG HOON Huawei Technologies Co., Ltd
    - Sun, Bo ZTE Corporation
    - Sun, Li-Hsiang Sony Corporation
    - Sun, Yanjun Qualcomm Incorporated
    - Sundman, Dennis Ericsson AB
    - Tanaka, Yusuke Sony Corporation
    - Tian, Bin Qualcomm Incorporated
    - Torab Jahromi, Payam Facebook
    - Van Zelst, Allert Qualcomm Incorporated
    - Varshney, Prabodh Nokia
    - Verenzuela, Daniel Sony Corporation
    - Vermani, Sameer Qualcomm Incorporated
    - VIGER, Pascal Canon Research Centre France
    - Wang, Chao Chun MediaTek Inc.
    - Wang, Huizhao Quantenna Communications, Inc.
    - Wang, Lei Futurewei Technologies
    - Wang, Qi Apple, Inc.
    - Wentink, Menzo Qualcomm Incorporated
    - Wu, Kanke Qualcomm Incorporated
    - Wullert, John Perspecta Labs
    - Xin, Yan Huawei Technologies Co., Ltd
    - Yang, Jay Nokia
    - Yano, Kazuto Advanced Telecommunications Research Institute International (ATR)
    - yi, yongjiang Futurewei Technologies
    - Yoo, Homin LG ELECTRONICS
    - Yoon, Jeonghwan LG ELECTRONICS
    - Yu, Jian Huawei Technologies Co., Ltd
    - Zhang, Yan NXP Semiconductors
    - Zhou, Pei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Zhou, Yifan Huawei Technologies Co., Ltd
    - Zuo, Xin Tencent

1. Announcements:

Holiday for 2 days (TGbe off to recharge).

1. Agenda

The Chair shows the remainder of the ageanda.

Comments:

Shimi Shilo will not make it today, so 1672 will not be presented.

Agenda, as shown in the screen, approved with unanimous consent.

1. TGbe Editor Status Report / Updates:

Edward goes through his editor’s report, 19/1935r5.

1. Technical Submissions: Comment Resolutions
   1. [**272r2**](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-02-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) **D0.3 CR for SS & MIMO Enhancement Wook Bong Lee**

Wook Bong goes through the document [272r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-03-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx). Some online updates. We will try to revisit later in the call to straw poll them.

* 1. [**491r1**](https://mentor.ieee.org/802.11/dcn/21/11-21-0491-01-00be-d0-3-cr-for-cid-1599.docx) **D0.3 CR for CID 1599 Eunsung Park**

Eunsung Park goes through his CR for CID 1599. Some online updates.

SP: Do you agree to resolve the CIDs listed below as instructed in [491r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0491-01-00be-d0-3-cr-for-cid-1599.docx) and incorporate the resulting changes to the TGbe draft?

1599

Result: Yes/No/Abstain/No-answer: 60/5/36/81.

*The Chair amends the agenda to run the SP by Wook Bong Lee. Amended agenda approved with unanimous consent.*

* 1. [**272r3**](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-03-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) **D0.3 CR for SS & MIMO Enhancement Wook Bong Lee**

SP: Do you agree to resolve the CIDs listed below as instructed in [272r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-03-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) and incorporate the resulting changes to the TGbe draft?

1094, 1103, 1115, 1120, 1487, 1493, 1639, 1641, 1939, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2941, 3124, 3125, 3242

Result: Supported with no objection from the group.

* 1. [**527r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0527-00-00be-eht-cr-2661-2671.doc) **EHT-CR-2661-2671 Ross Jian Yu**

Ross Jian Yu goes through his CRs for CIDs 2661-2671.

SP: Do you agree to resolve the CIDs listed below as instructed in [527r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0527-00-00be-eht-cr-2661-2671.doc) and incorporate the resulting changes to the TGbe draft?

2661, 2671

Result: Supported with no objection from the group.

*The Chair amends the agenda by changing the order of the agenda items and run 0494r5 now. Amended agend approved with unanimous consent.*

* 1. [**494r3**](https://mentor.ieee.org/802.11/dcn/21/11-21-0494-03-00be-mac-pdt-320mhz-indication-for-non-ht-duplicated-frames.docx) **pdt 320MHz indication for non-HT duplicated frames Yunbo Li**

Yunbo Li goes through his CRs. Some online updates. No time for straw poll.

1. AoB: None.
2. Adjourned at 12:00 ET.

# 12th Conf. Call: April 7 (10:00–12:00 ET)

1. The Chair, Alfred Asterjadhi (Qualcomm), calls the meeting to order at 10:01 ET. The Chair notifies that the agenda is in [0385r18](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-18-00be-jan-mar-tgbe-teleconference-agendas.docx).
2. IEEE 802 and 802.11 IPR policy and procedure
   1. Patent Policy: Ways to inform IEEE:
      1. Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
      2. Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
      3. Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

* 1. The Chair goes through: Copyright Policy: Participants are advised that
     1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
     2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
  2. The Chair goes through: Patent, Participation, Copyright and policy related subclause: Please refer to *Patent And Procedures* in [0385r18](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-18-00be-jan-mar-tgbe-teleconference-agendas.docx).

1. Attendance reminder.

Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>

Please record your attendance during the conference call by using the IMAT system:

1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbe <MAC/PHY/Joint> conference call that you are attending.

If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Dennis Sundman ([dennis.sundman@ericsson.com](mailto:dennis.sundman@ericsson.com)) and Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))

Please ensure that the following information is listed correctly when joining the call:

"[voter status] First Name Last Name (Affiliation)"

Attendence reported in IMAT:

* + - Aboulmagd, Osama Huawei Technologies Co., Ltd
    - Adhikari, Shubhodeep Broadcom Corporation
    - Akhmetov, Dmitry Intel Corporation
    - An, Song-Haur INDEPENDENT
    - Anwyl, Gary MediaTek Inc.
    - Asterjadhi, Alfred Qualcomm Incorporated
    - Au, Kwok Shum Huawei Technologies Co., Ltd
    - B, Hari Ram NXP Semiconductors
    - Baek, SunHee LG ELECTRONICS
    - Bahn, Christy IEEE STAFF
    - Bankov, Dmitry IITP RAS
    - baron, stephane Canon Research Centre France
    - Boldy, David Broadcom Corporation
    - Bravo, Daniel Intel Corporation
    - Bredewoud, Albert Broadcom Corporation
    - Cao, Rui NXP Semiconductors
    - Carney, William Sony Group Corporation
    - CHAN, YEE Facebook
    - CHERIAN, GEORGE Qualcomm Incorporated
    - Chitrakar, Rojan Panasonic Asia Pacific Pte Ltd.
    - Choi, Jinsoo LG ELECTRONICS
    - Chu, Liwen NXP Semiconductors
    - CHUN, JINYOUNG LG ELECTRONICS
    - Chung, Chulho SAMSUNG
    - Coffey, John Realtek Semiconductor Corp.
    - Das, Subir Perspecta Labs Inc
    - de Vegt, Rolf Qualcomm Incorporated
    - Dogukan, Ali Vestel
    - Dong, Xiandong Xiaomi Inc.
    - Du, Zhenguo Huawei Technologies Co., Ltd
    - feng, Shuling MediaTek Inc.
    - Fischer, Matthew Broadcom Corporation
    - Ghaderipoor, Alireza MediaTek Inc.
    - Gong, Bo Huawei Technologies Co., Ltd
    - Gu, Xiangxin Unisoc
    - GUIGNARD, Romain Canon Research Centre France
    - Guo, Yuchen Huawei Technologies Co., Ltd
    - Han, Jonghun SAMSUNG
    - Han, Zhiqiang ZTE Corporation
    - Handte, Thomas Sony Corporation
    - Hart, Brian Cisco Systems, Inc.
    - Ho, Duncan Qualcomm Incorporated
    - Hsieh, Hung-Tao MediaTek Inc.
    - Hu, Chunyu Facebook
    - Huang, Lei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Huang, Po-Kai Intel Corporation
    - Ibrahim, Ahmed [NV] Ahmed Ibrahim, Samsung Research America
    - Jamalabdollahi, Mohsen Cisco Systems, Inc.
    - Jang, Insun LG ELECTRONICS
    - Kamel, Mahmoud InterDigital, Inc.
    - Kandala, Srinivas SAMSUNG
    - Kedem, Oren MaxLinear
    - Kim, Jeongki LG ELECTRONICS
    - Kim, Myeong-Jin SAMSUNG
    - kim, namyeong LG ELECTRONICS
    - Kim, Sang Gook LG ELECTRONICS
    - Kim, Sanghyun WILUS Inc
    - Kishida, Akira Nippon Telegraph and Telephone Corporation (NTT)
    - Klein, Arik Huawei Technologies Co., Ltd
    - Ko, Geonjung WILUS Inc.
    - Koundourakis, Michail Samsung Cambridge Solution Centre
    - Kwon, Young Hoon NXP Semiconductors
    - Lalam, Massinissa SAGEMCOM BROADBAND SAS
    - Lansford, James Qualcomm Incorporated
    - Lee, Nancy Signify
    - Lee, Richard R Lee Associates
    - Lee, Wookbong SAMSUNG
    - Leng, Shiyang Samsung Research America
    - Levy, Joseph InterDigital, Inc.
    - Li, Jialing Qualcomm Technologies, Inc.
    - Li, Jianhui Huawei Technologies Co., Ltd
    - Li, Yiqing Huawei Technologies Co., Ltd
    - Li, Yunbo Huawei Technologies Co., Ltd
    - Lim, Dong Guk LG ELECTRONICS
    - Lin, Zinan InterDigital, Inc.
    - LIU, CHENCHEN Huawei Technologies Co., Ltd
    - Lorgeoux, Mikael Canon Research Centre France
    - Lou, Hanqing InterDigital, Inc.
    - Lu, kaiying MediaTek Inc.
    - Lu, Liuming Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - LU, Yuxin Huawei Technologies Co., Ltd
    - Luo, Chaoming Beijing OPPO telecommunications corp., ltd.
    - Ma, Li MediaTek Inc.
    - Martinez Vazquez, Marcos MaxLinear Corp
    - Max, Sebastian Ericsson AB
    - McCann, Stephen Huawei Technologies Co., Ltd
    - Memisoglu, Ebubekir Istanbul Medipol University; Vestel
    - Montemurro, Michael Huawei Technologies Co., Ltd
    - Montreuil, Leo Broadcom Corporation
    - Naik, Gaurang Qualcomm Incorporated
    - NANDAGOPALAN, SAI SHANKAR Infineon Technologies
    - Nezou, Patrice Canon Research Centre France
    - Ng, Boon Loong Samsung Research America
    - noh, yujin Newracom Inc.
    - Ouchi, Masatomo Canon
    - Ozbakis, Basak VESTEL
    - OZDEN ZENGIN, OZLEM Vestel
    - Ozpoyraz, Burak Vestel
    - Park, Eunsung LG ELECTRONICS
    - Park, Minyoung Intel Corporation
    - Patil, Abhishek Qualcomm Incorporated
    - Pushkarna, Rajat Panasonic Asia Pacific Pte Ltd.
    - Ratnam, Vishnu Samsung Research America
    - Redlich, Oded Huawei Technologies Co., Ltd
    - Reshef, Ehud Intel Corporation
    - Rosdahl, Jon Qualcomm Technologies, Inc.
    - Sadeghi, Bahareh Intel Corporation
    - Salman, Hanadi Istanbul Medipol University; VESTEL
    - Schelstraete, Sigurd ON Semiconductor
    - Sedin, Jonas Ericsson AB
    - Sethi, Ankit NXP Semiconductors
    - Shafin, Rubayet Samsung Research America
    - Shellhammer, Stephen Qualcomm Incorporated
    - Shilo, Shimi Huawei Technologies Co., Ltd
    - Solaija, Muhammad Sohaib Istanbul Medipol University; Vestel
    - SUH, JUNG HOON Huawei Technologies Co., Ltd
    - Sun, Li-Hsiang Sony Corporation
    - Sun, Yanjun Qualcomm Incorporated
    - Sundman, Dennis Ericsson AB
    - Tian, Bin Qualcomm Incorporated
    - Tian, Tao Unisoc Comm.
    - Torab Jahromi, Payam Facebook
    - Tsodik, Genadiy Huawei Technologies Co., Ltd
    - Varshney, Prabodh Nokia
    - Verma, Sindhu Broadcom Corporation
    - VIGER, Pascal Canon Research Centre France
    - Wang, Chao Chun MediaTek Inc.
    - Wang, Huizhao Quantenna Communications, Inc.
    - Wang, Lei Futurewei Technologies
    - Ward, Lisa Rohde & Schwarz
    - Wentink, Menzo Qualcomm Incorporated
    - Wu, Kanke Qualcomm Incorporated
    - Wu, Tianyu Apple, Inc.
    - Wullert, John Perspecta Labs
    - Xin, Yan Huawei Technologies Co., Ltd
    - Yang, Jay Nokia
    - YANG, RUI InterDigital, Inc.
    - Yang, Steve TS MediaTek Inc.
    - Yano, Kazuto Advanced Telecommunications Research Institute International (ATR)
    - Yee, James MediaTek Inc.
    - yi, yongjiang Futurewei Technologies
    - Yoon, Jeonghwan LG ELECTRONICS
    - Young, Christopher Broadcom Corporation
    - Yu, Jian Huawei Technologies Co., Ltd
    - Zhou, Pei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Zuo, Xin Tencent

1. Announcements:
   1. TGbe Editor: Vision and RTFs of D0.4 are available in the member’s area.
2. Alfred goes through the agenda.
   1. Discussion:

C: I would like to defer the discussion on 490r1.

A: Ok.

* 1. Agenda approved with unanimous consent.

1. P802.11be Status of TBDs:
   1. [572r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0572-01-00be-remaining-tbds-in-tgbe-d0-4.docx) Remaining TBDs in TGbe D0.4 Alfred Asterjadhi [5’]

Alfred shows the document and explains what it is used for.

Discussion:

C: If there are no contributions to section 6.5, is it OK to remove by D1.0?

A: Yes, that would be fine.

C: Should we remove the section 35.15: Multi-AP sections?

A: Yes, that will be relevant again in R2.

1. Technical Submissions: Proposed Draft Text (PDTs) for fixings TBDs
   1. [494r5](https://mentor.ieee.org/802.11/dcn/21/11-21-0494-05-00be-mac-pdt-320mhz-indication-for-non-ht-duplicated-frames.docx) pdt 320MHz indication for non-HT dup. frames Yunbo Li [SP-10’]

Yunbo goes through through the document. Mostly minor updates compared to previous revision.

SP: Do you agree to incorporate the changes as instructed in [494r6](https://mentor.ieee.org/802.11/dcn/21/11-21-0494-06-00be-mac-pdt-320mhz-indication-for-non-ht-duplicated-frames.docx) to the TGbe draft?

Result: Supported with no objection from the group.

1. Technical Submissions: **Comment Resolutions**
   1. [299r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0299-03-00be-crs-for-d0-3-eht-sta-features-cids.docx) CRs for D0.3 EHT STA features CIDs Rojan Chitrakar [7 CID-20’]

Rojan goes through the CRs for his CIDs. Some discussion.

1. Technical Submissions:
   1. [485r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0485-02-00be-clarifications-on-the-trigger-frame-design.pptx) Clarifications on the trigger frame design Xiaogang Chen [20’]

Summary: The authors want to clarify some discussed features for EHT.

SP1:

Do you agree:

* The special user info field (user info field with AID=2007) shall be present in all the EHT TF variants defined in 11be R1.
  + For the EHT variant of MU-RTS, all the bits in the special user info field are reserved except the “BW Extension” subfield.

Discussion: No discussion.

Result: Supported with no objection from the group.

SP2:

Do you agree that:

* + - The CTS response to MU-RTS supports all the modes defined in 11ax and 320MHz Non-HT duplicate transmission;
    - The CTS response to MU-RTS supports transmitting on non-contiguous 20MHz subchannels;
    - The CTS response to MU-RTS shall be transmitted on the 20MHz subchannel(s) that are overlapped with the large size RU/MRU indicated by its own RU allocation subfield;
      * The 20MHz subchannel(s) that CTS is transmitted shall include the primary 20MHz channel.

Discussion:

C: We believe we may send the CTS without including the primary channel. So I have a concern with that.

C: Is the last (4th) bullet also relevant for R2?

C: The SST devices should be able to send CTS without using the primary channel. And I believe the last bullet should be clarified that it’s intended for R1.

SP deferred.

* 1. [368r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0368-01-00be-diversity-enhancement-for-dup-mode.pptx) Diversity Enhancement for DUP mode Ali T. Dogukan [30’]

Summary: The authors have developed a new diversity enhancement scheme based on known techniques in 802.11 and other standards.

Discussion:

C: I have some questions: I believe we have not defined rotated BPSK in IEEE 802.11 standard. I also think there’s a problem to just do a QPSK modulation and repeat it like this. I am not sure your calculation is correct. The N\_SD is defined before the DCM so on slide 6 there are some errors.

C: Currently the DUP mode is for BPSK, but now you want to rotate the BPSK signal. I don’t think you can get a gain there by rotating it. The gain does not come from the cyclic shift but from the repetition.

A: Yes, but it’s still BPSK.

C: I would like to see some simulation results.

A: Ok.

* 1. [409r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0409-00-00be-preferred-link-pair.pptx) Preferred Link Pair Wook Bong Lee [30’]

Summary: The authors look at self interference between links in STR radios. Based on those estimates they propose simultaneous link pairs.

Discussion:

C: How should the preferred link pairs be negotiated between AP and STA?

A: This is not mandatory to enforce anything. This is rather for information what are preferred link pairs.

1. AoB: No time.
2. Adjourn at 12:00 ET.

# 13th Conf. Call: April 08 (10:00–12:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 14th Conf. Call: April 12 (19:00–22:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 15th Conf. Call: April 14 (10:00–12:00 ET)

1. The Chair, Alfred Asterjadhi (Qualcomm), calls the meeting to order at 10:01 ET. The Chair notifies that the agenda is in [0385r22](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-22-00be-jan-mar-tgbe-teleconference-agendas.docx).
2. IEEE 802 and 802.11 IPR policy and procedure
   1. Patent Policy: Ways to inform IEEE:
      1. Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
      2. Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
      3. Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

* 1. The Chair goes through: Copyright Policy: Participants are advised that
     1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
     2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
  2. The Chair goes through: Patent, Participation, Copyright and policy related subclause: Please refer to *Patent And Procedures* in [0385r22](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-22-00be-jan-mar-tgbe-teleconference-agendas.docx).

1. Attendance reminder.

Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>

Please record your attendance during the conference call by using the IMAT system:

1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbe <MAC/PHY/Joint> conference call that you are attending.

If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Dennis Sundman ([dennis.sundman@ericsson.com](mailto:dennis.sundman@ericsson.com)) and Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))

Please ensure that the following information is listed correctly when joining the call:

"[voter status] First Name Last Name (Affiliation)"

Attendence reported in IMAT:

* + - Aboulmagd, Osama Huawei Technologies Co., Ltd
    - Abushattal, Abdelrahman Istanbul Medipol university ;Vestel
    - An, Song-Haur INDEPENDENT
    - Ansley, Carol Cox Communications Inc.
    - Anwyl, Gary MediaTek Inc.
    - Asterjadhi, Alfred Qualcomm Incorporated
    - Au, Kwok Shum Huawei Technologies Co., Ltd
    - Aygul, Mehmet Istanbul Medipol University; Vestel
    - B, Hari Ram NXP Semiconductors
    - Baek, SunHee LG ELECTRONICS
    - Bankov, Dmitry IITP RAS
    - baron, stephane Canon Research Centre France
    - Barr, David MaxLinear
    - Bims, Harry Bims Laboratories, Inc.
    - Bravo, Daniel Intel Corporation
    - Bredewoud, Albert Broadcom Corporation
    - Carney, William Sony Group Corporation
    - Cheng, Paul MediaTek Inc.
    - Chitrakar, Rojan Panasonic Asia Pacific Pte Ltd.
    - Choi, Jinsoo LG ELECTRONICS
    - CHUN, JINYOUNG LG ELECTRONICS
    - Coffey, John Realtek Semiconductor Corp.
    - Das, Subir Perspecta Labs Inc
    - de Vegt, Rolf Qualcomm Incorporated
    - Dong, Xiandong Xiaomi Inc.
    - Erceg, Vinko Broadcom Corporation
    - Fang, Yonggang Mediatek
    - Fischer, Matthew Broadcom Corporation
    - Gao, Zhigang Cisco Systems, Inc.
    - Ghaderipoor, Alireza MediaTek Inc.
    - Gong, Bo Huawei Technologies Co., Ltd
    - Gu, Xiangxin Unisoc
    - Guo, Yuchen Huawei Technologies Co., Ltd
    - Han, Zhiqiang ZTE Corporation
    - Handte, Thomas Sony Corporation
    - Hervieu, Lili Cable Television Laboratories Inc. (CableLabs)
    - Ho, Duncan Qualcomm Incorporated
    - Hsieh, Hung-Tao MediaTek Inc.
    - Hu, Chunyu Facebook
    - Huang, Lei Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - Huang, Po-Kai Intel Corporation
    - Ibrahim, Ahmed [NV] Ahmed Ibrahim, Samsung Research America
    - Jamalabdollahi, Mohsen Cisco Systems, Inc.
    - Jang, Insun LG ELECTRONICS
    - Kakani, Naveen Qualcomm Incorporated
    - Kamel, Mahmoud InterDigital, Inc.
    - Kim, Jeongki LG ELECTRONICS
    - Kim, Myeong-Jin SAMSUNG
    - kim, namyeong LG ELECTRONICS
    - Kim, Sang Gook LG ELECTRONICS
    - Kim, Sanghyun WILUS Inc
    - Kim, Youhan Qualcomm Incorporated
    - Kishida, Akira Nippon Telegraph and Telephone Corporation (NTT)
    - Klein, Arik Huawei Technologies Co., Ltd
    - Ko, Geonjung WILUS Inc.
    - Kondo, Yoshihisa Advanced Telecommunications Research Institute International (ATR)
    - Koundourakis, Michail Samsung Cambridge Solution Centre
    - Kwon, Young Hoon NXP Semiconductors
    - Lalam, Massinissa SAGEMCOM BROADBAND SAS
    - Lee, Hong Won LG ELECTRONICS
    - Lee, Wookbong SAMSUNG
    - Levitsky, Ilya IITP RAS
    - Levy, Joseph InterDigital, Inc.
    - Li, Jialing Qualcomm Technologies, Inc.
    - Li, Yiqing Huawei Technologies Co., Ltd
    - lim, taesung LG ELECTRONICS
    - Lin, Zinan InterDigital, Inc.
    - Lorgeoux, Mikael Canon Research Centre France
    - Lou, Hanqing InterDigital, Inc.
    - Lu, kaiying MediaTek Inc.
    - Lu, Liuming Guangdong OPPO Mobile Telecommunications Corp.,Ltd
    - LU, Yuxin Huawei Technologies Co., Ltd
    - Luo, Chaoming Beijing OPPO telecommunications corp., ltd.
    - Ma, Li MediaTek Inc.
    - Max, Sebastian Ericsson AB
    - McCann, Stephen Huawei Technologies Co., Ltd
    - Memisoglu, Ebubekir Istanbul Medipol University; Vestel
    - Monajemi, Pooya Cisco Systems, Inc.
    - Montemurro, Michael Huawei Technologies Co., Ltd
    - Montreuil, Leo Broadcom Corporation
    - Naik, Gaurang Qualcomm Incorporated
    - NANDAGOPALAN, SAI SHANKAR Infineon Technologies
    - Nayak, Peshal Samsung Research America
    - Nezou, Patrice Canon Research Centre France
    - Ng, Boon Loong Samsung Research America
    - noh, yujin Newracom Inc.
    - Ozbakis, Basak VESTEL
    - OZDEN ZENGIN, OZLEM Vestel
    - Palayur, Saju Maxlinear Inc
    - Park, Eunsung LG ELECTRONICS
    - Park, Minyoung Intel Corporation
    - Patil, Abhishek Qualcomm Incorporated
    - Patwardhan, Gaurav Hewlett Packard Enterprise
    - Rafique, Saira Istanbul Medipol University ; VESTEL
    - Raissinia, Alireza Qualcomm Incorporated
    - Ratnam, Vishnu Samsung Research America
    - RISON, Mark Samsung Cambridge Solution Centre
    - Rosdahl, Jon Qualcomm Technologies, Inc.
    - Salman, Hanadi Istanbul Medipol University; VESTEL
    - Schelstraete, Sigurd ON Semiconductor
    - Shafin, Rubayet Samsung Research America
    - Shellhammer, Stephen Qualcomm Incorporated
    - Stanley, Dorothy Hewlett Packard Enterprise
    - SUH, JUNG HOON Huawei Technologies Co., Ltd
    - Sun, Bo ZTE Corporation
    - Sun, Yanjun Qualcomm Incorporated
    - Sundman, Dennis Ericsson AB
    - Tian, Bin Qualcomm Incorporated
    - Urabe, Yoshio Panasonic Corporation
    - Varshney, Prabodh Nokia
    - Verenzuela, Daniel Sony Corporation
    - VIGER, Pascal Canon Research Centre France
    - Wang, Chao Chun MediaTek Inc.
    - Wang, Huizhao Quantenna Communications, Inc.
    - Wang, Lei Futurewei Technologies
    - Wu, Kanke Qualcomm Incorporated
    - Wullert, John Perspecta Labs
    - Xin, Yan Huawei Technologies Co., Ltd
    - Yang, Jay Nokia
    - Yang, Steve TS MediaTek Inc.
    - Yano, Kazuto Advanced Telecommunications Research Institute International (ATR)
    - Yee, James MediaTek Inc.
    - yi, yongjiang Futurewei Technologies
    - Yoo, Homin LG ELECTRONICS
    - Yoon, Jeonghwan LG ELECTRONICS
    - Zaman, Malia IEEE Standards Association (IEEE-SA)
    - ZEGRAR, Salah Eddine Istanbul Medipol University; Vestel
    - Zhang, Yan NXP Semiconductors
    - Zhou, Yifan Huawei Technologies Co., Ltd

1. Announcements: None.
2. Approval of agenda.
   1. Updated some revision numbers on technical submissions.
   2. Amended agenda approved with unanimous consent.
3. TGbe Editor Status Report/Updates [10’]:
   * [19/1935r1](https://mentor.ieee.org/802.11/dcn/19/11-19-1935-03-00be-tgbe-editor-s-report.ppt) TGbe Editor's Report; [997r95](https://mentor.ieee.org/802.11/dcn/20/11-20-0997-95-00be-tgbe-spec-text-volunteers-and-status.docx) Volunteers & Status; [20/1935r19](https://mentor.ieee.org/802.11/dcn/20/11-20-1935-19-00be-compendium-of-straw-polls-and-potential-changes-to-the-specification-framework-document-part-2.docx) Comp. of SPs–Part 2; [1262r23](https://mentor.ieee.org/802.11/dcn/19/11-19-1262-23-00be-specification-framework-for-tgbe.docx) TGbe SFD.
   * No significant update since the previous meeting.
4. P802.11be Status of TBDs:
   * [**572r3**](https://mentor.ieee.org/802.11/dcn/21/11-21-0572-03-00be-remaining-tbds-in-tgbe-d0-4.docx) **Remaining TBDs in TGbe D0.4 Alfred Asterjadhi [5’]**

Alfred goes through the document and makes some online updates.

1. Technical Submissions: **Q4M with updates**
   * [**272r4**](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-04-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) **D0.3 CR for Spatial Stream And MIMO Enhancement Wook Bong Lee [10’]**

Straw Poll:

Do you agree to resolve the CIDs listed below as instructed in [11/21-272r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-04-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) and incorporate the resulting changes to the TGbe draft?

* 1120

Discussion: No discussion.

Result: Supported with no objection from the group.

* + [**490r3**](https://mentor.ieee.org/802.11/dcn/21/11-21-0490-03-00be-pdt-trigger-frame-update.docx) **PDT Trigger frame update Yanjun Sun [10’]**

Yanjun goes through the document. Some live updates to the document.

Straw Poll:

Do you agree to incorporate the changes as instructed in [11/21-490r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0490-04-00be-pdt-trigger-frame-update.docx) and incorporate the resulting changes to the TGbe draft?

Discussion: No discussion.

Result: Supported with no objection from the group.

1. **Motions (concentrated within the first 60 mins of the call):** [**1982r14**](https://mentor.ieee.org/802.11/dcn/20/11-20-1982-14-00be-tgbe-motions-list-for-teleconferences-part-2.pptx)
   1. **Motion 166 (PHY-I)**

Move to approve resolutions to the CIDs:

* + - 3055, 3063 in [350r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0350-02-00be-eht-sig-cr-d03-annex-z.doc) *[2 CIDs]*
    - 1556, 3280, 3281, 3282, 3283, 2763 in [371r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0371-01-00be-cr-on-ppdu-encoding.docx) *[6 CIDs]*
    - 1357, 1358, 1359, 1361, 1362, 1364, 1365, 1366, 1367, 1368, 1562, 1613, 1614, 1615, 1620, 1621, 2176, 2177, 2178, 2399, 2400, 2401, 2402, 2628, 2629, 2630, 2631, 2750, 2793, 2795, 2797, 2802, 2803, 2932, 2933, 2948, 3001, 3002, 3003, 3046, 3048, 3176, 3177, 3179, 3180, 3181, 3182, 3187, 3287, 3288, 3290, 3291 in [354r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0353-03-00be-u-sig-comment-resolution-part-2.docx) *[52 CIDs]*
    - 2674 in [384r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0384-02-00be-comment-resolutions-for-clause-36-3-13-packet-extension.docx) *[1 CID]*
    - 1239, 2676, 1517, 1603, 1263, 1264, 3261, 1266, 1980, 3087, 2983, 3088, 3262, 1982, 1983, 3089, 3090, 3091, 1267, 3092, 3093, 3263, 3264, 3265, 3266, 2987 in [360r5](https://mentor.ieee.org/802.11/dcn/21/11-21-0360-05-00be-crs-on-cids-related-to-clause-36-1-1.docx) *[26 CIDs]*

Move: Edward Au, Second: Ross Jian Yu

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 167**

Move to approve resolutions to the CIDs:

* + - 1082,1268,1981,2254,2773,1270,1269,1518,1604,2668, 3160, 3161,1261, 1262, 1271, 1273, 1519, 2722, 2986, 2989, 1605, 2988, 1272, 2774, 2775, 2776, 2942 in [331r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0331-04-00be-d03-cr-on-eht-phy-introduction.docx) *[27 CIDs]*
    - 1251, 1590, 1591, 1996, 3042, 2606 in [310r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0310-02-00be-cr-for-36-3-2-4-and-36-3-12-9-pilot-subcarriers.docx) *[6 CIDs]*
    - 1379, 1380, 1381, 1383, 1384, 1386, 1390, 1391, 1393, 1993, 1994, 2172, 2173, 2174, 2670, 2681, 2732, 2733, 2806, 2807, 2808, 3159, 3050, 3051, 3052, 3053 in [312r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0312-03-00be-cr-for-clause-36-3-11-8-2.docx) *[226 CIDs]*
    - 1413, 1568, 1569, 1584, 1630, 1979, 1998, 1999, 2000, 2001, 2230, 2663, 2816, 2938, 3068, 3075 in [415r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0415-02-00be-comment-resolutions-for-clause-36-3-11-10-eht-ltf.doc) *[16 CIDs]*
    - 2939, 2675, 1570 in [522r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0522-01-00be-d0-3-remaining-crs-on-eht-ltf-of-tb-ppdu.doc) *[16 CIDs]*

Move: Edward Au, Second: Bin Tian

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 168 (PHY-3)**

Move to approve resolutions to the CIDs:

* + - 1571, 1572, 3070, 2666, 3407, 2659, 1971, 2026, 2412, 2664, 3069, 2665, 3071 in [416r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0416-03-00be-comment-resolutions-for-clause-36-3-12-2-scrambler.doc) *[13 CIDs*]
    - 1577, 1956 in [424r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0424-04-00be-cr-for-36-3-22-and-annex-e.doc) *[2 CIDs]*
    - 1245, 1247, 1290, 1293, 1294, 1295, 1299, 1609, 1988, 1989, 1990, 1991, 2393, 2394, 2395, 2396, 2397, 2398, 2785, 2786, 2787, 2927, 2928, 2929, 2930, 2931, 3041, 3098, 3154, 3166, 3269, 3270, 3271, 3272, 3273, 3274, 1296, 1297, 1298, 2693, 2695, 2696, 2697, 2784, 2946, 3079, 2605 in [417r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0417-03-00be-cr-for-clause-36-3-2-3-subcarriers-and-resource-allocation-for-multiple-rus.doc) *[47 CIDs]*
    - 1587, 2442, 2443, 2672, 2673, 2817, 2951, 2952, 2953, 3072 in [443r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0443-01-00be-segment-parser-cr-on-p802-11be-d0-3-part1.doc) *[10 CIDs]*
    - 1410, 3189, 3190, 3191, 2643 in [464r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0464-02-00be-eht-sig-cr-d03-part-6.doc) *[5 CIDs]*

Move: Edward Au, Second: Bin Tian

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 169 (PHY-4)**

Move to approve resolutions to the CIDs:

* + - 1573, 1574, 1575, 1576, 3074, 3118 in [477r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0477-01-00be-comment-resolution-for-non-ht-duplicate-transmission.docx) *[6 CIDs]*
    - 3117 in [482r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0482-01-00be-comment-resolution-for-ofdm-modulation.docx) *[1 CID]*
    - 1253, 1306 in [401r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0401-01-00be-cr-for-cid-1253-and-1306.docx) *[2 CIDs]*
    - 1307, 1554 in [516r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0516-01-00be-cr-for-cid-1307-1554.docx) *[2 CIDs]*

Move: Edward Au, Second: Bin Tian

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 170 (MAC-1)**

Move to approve resolutions to the CIDs:

* + - 1759, 2719, 2139, 1465, 2887, 1466, 1656, 3392, 1796, 1217 in [373r7](https://mentor.ieee.org/802.11/dcn/21/11-21-0373-07-00be-cr-mac-str-capability-signaling.docx) *[10 CIDs]*
    - 2864, 2284, 2285, 2286, 2487, 2576 in [260r6](https://mentor.ieee.org/802.11/dcn/21/11-21-0260-06-00be-cr-for-12-4.docx) *[6 CIDs]*
    - 1162, 1163, 1174, 2914, 2328, 2913, 1632, 2056, 2751, 2496, 1077, 1842, 1845, 1101 in [320r5](https://mentor.ieee.org/802.11/dcn/21/11-21-0320-05-00be-cr-for-35-3-11.docx) *[14 CIDs]*
    - 2093, 2094 in [387r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0387-02-00be-cr-for-cids-2093-and-2094.docx) *[2 CIDs]*
    - 1064, 1687, 2598, 2714, 2761, 2909, 3338, 3381, 3382 in [302r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0302-02-00be-crs-for-d0-3-multi-link-retransmission-cids.docx) *[9 CIDs]*

Move: Po-Kai Huang, Second: George Cherian

Discussion: No discussion:

Result: Approved with unanimous consent.

* 1. **Motion 171 (Joint)**

Move to approve resolutions to the CIDs:

* + - 1094, 1103, 1115, 1120, 1487, 1493, 1639, 1641, 1939, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2941, 3124, 3125, 3242 in [272r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-03-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) *[21 CIDs]*
    - 1599 in [491r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0491-01-00be-d0-3-cr-for-cid-1599.docx) *[1 CID]*
    - 2661, 2671 in [527r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0527-00-00be-eht-cr-2661-2671.doc) *[2 CIDs]*

Move: Stephen McCann, Second: Bin Tian

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 172**

Move to accept changes to the TGbe draft as specified in the following documents:

* + - Joint: [490r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0490-00-00be-pdt-trigger-frame-update.docx),
    - MAC: [233r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0233-03-00be-pdt-mld-security-considerations.docx), [257r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0257-03-00be-proposed-draft-specification-for-multi-link-group-addressed-frame-reception.docx), [349r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0349-03-00be-pdt-group-address-frame-reception-for-non-ap-mld.docx), [336r6](https://mentor.ieee.org/802.11/dcn/21/11-21-0336-06-00be-pdt-mac-mlo-single-sta-trigger.docx), [82r5](https://mentor.ieee.org/802.11/dcn/21/11-21-0082-05-00be-pdt-mac-mlo-power-save-listen-interval.docx), [397r7](https://mentor.ieee.org/802.11/dcn/21/11-21-0397-07-00be-pdt-ml-element-for-transmitting-ap.docx),
    - PHY: [468r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0468-01-00be-pdt-supported-eht-mcs-and-nss-set-field.docx), [470r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0470-02-00be-pdt-additional-eht-phy-capability-signaling.docx),

Move: Young Hoon Kwon, Second: Ming Gan

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 173**

Move to approve resolutions to the CIDs:

* + - 1120 in [272r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0272-03-00be-d0-3-cr-for-spatial-stream-and-mimo-enhancement.docx) *[1 CIDs]*

Move: Wook Bong Lee, Second: Edward Au

Discussion: No discussion.

Result: Approved with unanimous consent.

* 1. **Motion 174**

Move to accept changes to the TGbe draft as specified in the following documents:

* + - Joint: [490r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0490-04-00be-pdt-trigger-frame-update.docx),

Move: Yanjun Sun, Second: Ming Gan

Discussion: No discussion.

Result: Approved with unanimous consent.

1. Technical Submissions: **Comment Resolutions**
   * [299r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0299-04-00be-crs-for-d0-3-eht-sta-features-cids.docx) CRs for D0.3 EHT STA features CIDs Rojan Chitrakar [7 CID-SP-10’]

Rojan goes through the document. Some live updates from the group.

1. Technical Submissions:
   * [409r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0409-00-00be-preferred-link-pair.pptx) Preferred Link Pair Wook Bong Lee [15’]

Summary: The authors have looked at leakage challenges in Multi-link and propose preferred link pairs.

SP1:

* **Do you support to define preferred link pair as follows?**

Preferred link pair

* + - * One link using a channel in 5L and the other using a channel in 6L
      * One link using a channel in 5L and the other using a channel in 6U
      * One link using a channel in 5U and the other using a channel in 6U
      * One link using a channel in 2.4 GHz and the other using a channel in one of 5L, 5U, 6L, and 6U

Where

* 5L: U-NII-1 and U-NII-2A (from 5170 MHz to 5330 MHz)
* 5U: U-NII-2C, U-NII-3 and U-NII-4 (from 5470 MHz to 5895 MHz)
* 6L: U-NII-5 (5945 MHz to 6425 MHz)
* 6U: U-NII-6 to U-NII-8 (6425 MHz to 7125 MHz)

Discussion:

C: There are proposals to let the clients suggest which links to use. Does that interfere with this contribution?

A: No, we just want this information as informative.

C: Have you considered other regions of the world?

A: This is just for recommendation. So, depending on where you are you may or may not be able to use these.

C: What kind of recommendation is this, for the AP to notify, or to implement in the STAs?

A: This is purely for a note. The AP/STA etc. may do as they want.

C: The standard supports up to 16 links, in which case this information may become very complex.

A: According to our results, we can not support 16 links STR.

* + [**428r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0428-00-00be-ra-ru-indication-in-trigger-frame.pptx) **RA-RU Indication in Trigger frame Greg Geonjung Ko [30’]**

Summary: The authors have looked at two methods to indicate the RA-RUs to solicit EHT TB PPDUs.

Discussion:

C: For your method 1 you propose 1 new value. Do you really mean 2 more values?

A: Yes.

C: For method 2, is there anything to say that the HE STA will discard everything even if the User Info is larger than 4095? I don’t think so.

A: We may need an explicit description for that.

1. AoB: No other business.
2. Adjourn at 11:59.

# 16th Conf. Call: April 15 (10:00–12:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 17th Conf. Call: April 19 (19:00–22:00 ET)

This was a split call between PHY and MAC:

* MAC: <https://mentor.ieee.org/802.11/dcn/21/11-21-0492-06-00be-minutes-for-tgbe-mac-ad-hoc-teleconferences-in-march-and-may-2021.docx>
* PHY: <https://mentor.ieee.org/802.11/dcn/21/11-21-0515-05-00be-minutes-for-tgbe-phy-ad-hoc-cc-mar-2021-to-may-2021.docx>

# 18th Conf. Call: April 21 (10:00–12:00 ET)

1. The TGbe Chair, Alfred Asterjadhi (Qualcomm), calls the meeting to order at 10:01 ET. János Farkas introduces himself as the 802.1 TSN TG Chair. The Alfred notifies that the agenda is in [0385r27](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-27-00be-jan-mar-tgbe-teleconference-agendas.docx).
2. IEEE 802 and 802.11 IPR policy and procedure
   1. Patent Policy: Ways to inform IEEE:
      1. Cause an LOA to be submitted to the IEEE-SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or
      2. Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.

* 1. The Chair goes through: Copyright Policy: Participants are advised that
     1. IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
     2. Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy
  2. The Chair mentions, but for the sake of time does not goes through in detail: Patent, Participation, Copyright and policy related subclause: Please refer to *Patent And Procedures* in [0385r27](https://mentor.ieee.org/802.11/dcn/20/11-21-0385-27-00be-jan-mar-tgbe-teleconference-agendas.docx).

1. Attendance reminder.

Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>

Please record your attendance during the conference call by using the IMAT system:

1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “TGbe <MAC/PHY/Joint> conference call that you are attending.

If you are unable to record the attendance via [IMAT](https://imat.ieee.org/attendance) then please send an e-mail to Dennis Sundman ([dennis.sundman@ericsson.com](mailto:dennis.sundman@ericsson.com)) and Alfred Asterjadhi ([aasterja@qti.qualcomm.com](mailto:aasterja@qti.qualcomm.com))

Please ensure that the following information is listed correctly when joining the call:

"[voter status] First Name Last Name (Affiliation)"

Attendence reported in IMAT:

N/A at this point.

1. Announcements:
   * No announcements.
   * János mentions that the above policies applies to the 802.1 TSN TG participants as well.
2. Approval of agenda.
   * Document number 681 has been updated to r1.
   * Agenda approved with unanimous consent.
3. Technical Submissions:
   * [**628r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0628-00-00be-wireless-tsn-in-802-11-and-new-requirements-for-802-11be-and-802-1.pptx)**, “Wireless TSN in 802.11 and New Requirements for 802.11be and 802.1”, Dave Cavalcanti**

Summary: The authors compare features in TSN and 802.11 to identify missing features. In particular, they find that traffic stream classification, bounded latency, reliability and configuration management are areas that would benefit from enhancements.

Discussion:

C: 802.11aa had some interesting mechanisms, have you looked at that.

C: Good comment, but not enough.

C: Slide 9, with restricted TWT is to prioritize the traffic. Recent enhancements are closing the gaps.

C: How many streams does the TSN network manage end-to-end.

A: There is no limitation in the standard to the number of streams.

C: Is there a requirement on the number of streams to be called TSN.

A: I don’t think so.

C: Slide 7, an end device connected to the controller. So, do we need an interface between the Wi-Fi device and a CUC?

A: Not necessarily a new interface, but maybe some new parameters.

C: Slide 10, do you think we need both duplications (i.e. both in FRER and MLD)?

C: You say in the conclusion that .1CB aware of 802.11 be MLD.

A: What I want to get at is that the same principle is obtained through two different features. So .1CB should not do the replication in the case when an MLD is used.

* + [**668r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0668-00-00be-wired-wireless-tsn-configuration-and-management.pptx)**, “Wired-Wireless TSN Configuation and Management”, Malcolm Smith**

Summary: Every time a wireless bridge is used, we need to update basic parameters. For example throughput etc. The authors present 2 models for how to abstract the wireless TSN: Logical and Hybrid model. In the Hybrid model, there is a wireless bridge transferring from the wired to the wireless (WTSN) domain. They suggest the CNC to be wireless aware so that it can provide better margins for the wireless link.

Discussion:

C: Are you thinking of any new capability being advertised for the wireless TSN bridge?

A: Yes. I believe we need a WTSN bridge that advertises some information, margins etc.

C: What happens when many flows comes to a bridge?

A: We need some communication to the CNC so that you can dynamically update parameters while the system is running.

C: How dynamic is TSN? How well does it match with the variability in the wireless side?

C: In Slide 11, what if one of the bridges would be a wireless bridge? Wouldn’t that prohibit the sought functionality?

A: It would be more difficult the more wireless bridges we have, but the idea remains.

C: We do have a system where there are “less important” and “more important” reservations. If a reservation for a high priority stream comes to a bridge, which does not have enough resources for this stream. The bridge would immediately shut down lower priority streams to allow the new stream to go through. It would then notify the talkers that they have been shut down. In an environment with more dynamisms, we may need to revisit these systems.

C: If the high priority data originates from the wireless slide, would that change anything?

C: No, TSN is not about fairness but rather a guarantee of end to end transmission.

* + [**670r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0670-00-00be-further-improve-latency-performance-in11be.pptx)**, “Further Improve latency performance in11be”, Boyce Bo Yang**

Summary: The authors have some ideas on how to improve latency performance in .11be: data class features, transmitter pre-emption.

Discussion:

C: I think the information in the preamble is not enough to support this (e.g. slide 10).

A: Essentially the figure has PHY headers to each Payload.

C: Have you looked at pre-emption in the UL?

A: Not in this presentation.

C: The LS payload is it to the same user or a different user?

A: I believe the same receiver, or more complexity is needed.

C: In TSN you allocate a maximum amount of bandwidth for TSN traffic. If the situation changes, you have to reallocate.

1. AoB: No time
2. Adjourn at 12:00 ET