IEEE P802.11
Wireless LANs

|  |
| --- |
| Minutes 802.11 be PHY ad hoc Telephone Conferences, Mar 2021 - May 2021 |
| Date: 2021-03-18 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Tianyu Wu | Apple |  |  | tianyu@apple.com |

Abstract

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

* Mar 17, 2021
* Mar 18, 2021

**Wednesday Mar 17th, 2021 10:00 – 12:00 ET**

**Introduction**

1. The Chair (Sigurd Schelstraete, Quantenna/ON Semiconductor) calls the meeting to order at 10:00 PM ET.
2. The Chair follows the agenda in 11-21/385r8.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. Nobody speaks up.
4. The Chair goes through the Copyright policy.
5. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Tianyu Wu (Apple) or the Chair himself if unable to record attendance via IMAT system.
6. Announcements:
7. Discussions on the agenda.

Technical Submissions: **Comment Resolutions**

* + [350r2](https://mentor.ieee.org/802.11/dcn/21/11-21-0350-02-00be-eht-sig-cr-d03-annex-z.doc) EHT-SIG-CR-d03-annex z Ross Jian Yu [2 CIDs]
	+ [371r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0371-00-00be-cr-on-ppdu-encoding.docx) CR on PPDU Encoding Youhan Kim [6 CIDs]
	+ [354r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0354-01-00be-u-sig-comment-resolution-part-3.docx) U-SIG Comment Resolution Part 3 Alice Chen [54 CIDs]
	+ [384r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0384-00-00be-comment-resolutions-for-clause-36-3-13-packet-extension.docx) CRs for clause 36.3.13 Packet extension Yan Zhang [1 CID]
	+ [360r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0360-02-00be-crs-on-cids-related-to-clause-36-1-1.docx) CRs on CIDs related to Clause 36.1.1 Kanke Wu [26 CIDs]
	+ [331r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0331-00-00be-d03-cr-on-eht-phy-introduction.docx) D03 CR on EHT PHY Introduction Bin Tian [27 CIDs]
	+ [310r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0310-00-00be-cr-for-36-3-2-4-and-36-3-12-9-pilot-subcarriers.docx) cr-for-36-3-2-4-and-36-3-12-9-pilot subcarriers Jinyoung Chun [5 CIDs]
	+ [312r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0312-00-00be-cr-for-clause-36-3-11-8-2.docx) CR for clause 36.3.11.8.2 Dongguk Lim [31 CIDs]
	+ [415r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0415-00-00be-comment-resolutions-for-clause-36-3-11-10-eht-ltf.doc) CRs for Clause 36.3.11.10 EHT LTF Chenchen LIU [19 CIDs]
	+ [416r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0416-00-00be-comment-resolutions-for-clause-36-3-12-2-scrambler.doc) CRs for Clause 36.3.12.2 Scrambler Chenchen LIU [11 CIDs]
	+ [424r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0424-01-00be-cr-for-36-3-22-and-annex-e.doc) cr for 36.3.22 and Annex E Ruchen Duan [2 CIDs]
	+ [417r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0417-00-00be-cr-for-clause-36-3-2-3-subcarriers-and-resource-allocation-for-multiple-rus.doc) CR for 36.3.2.3 Subcarriers and resource allocation for multiple RUs Myeongjin Kim [40 CIDs]
	+ [443r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0443-00-00be-segment-parser-cr-on-p802-11be-d0-3-part1.doc) Segment Parser CR on P802.11be D0.3-part1 Bo Gong [10 CIDs]
	+ [464r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0464-00-00be-eht-sig-cr-d03-part-6.doc) EHT-SIG-CR-d03-part-6 Ross Jian Yu [4 CIDs]
	+ [477r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0477-00-00be-comment-resolution-for-non-ht-duplicate-transmission.docx) comment-resolution-for-non-ht-dup-transmission Rui Cao [6 CIDs]
	+ [482r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0482-00-00be-comment-resolution-for-ofdm-modulation.docx) comment-resolution-for-ofdm-modulation Rui Cao [1 CID]
	+ [401r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0401-00-00be-cr-for-cid-1253-and-1306.docx) CR for CID 1253 and 1306 Eunsung Park [2 CIDs]

Technical Submissions: **Proposed Draft Text (PDTs) for fixings TBDs**

* + [468r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0468-00-00be-pdt-supported-eht-mcs-and-nss-set-field.docx) PDT Supported EHT MCS and Nss Set Field Steve Shellhammer
	+ [470r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0470-00-00be-pdt-additional-eht-phy-capability-signaling.docx) PDT Additional PHY Capability Signaling Steve Shellhammer

Technical Submissions:

* + [392r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0392-00-00be-pe-for-4k-qam.pptx) PE for 4K QAM Ron Porat

**Attendance**

The following people recorded their attendance for this call:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbe (PHY) | 3/17 | Anwyl, Gary | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Au, Kwok Shum | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/17 | B, Hari Ram | NXP Semiconductors |
| TGbe (PHY) | 3/17 | Chen, Alice | Qualcomm Incorporated |
| TGbe (PHY) | 3/17 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbe (PHY) | 3/17 | Duan, Ruchen | SAMSUNG |
| TGbe (PHY) | 3/17 | feng, Shuling | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Ghaderipoor, Alireza | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Hart, Brian | Cisco Systems, Inc. |
| TGbe (PHY) | 3/17 | Hsieh, Hung-Tao | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Huang, Lei | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbe (PHY) | 3/17 | Jamalabdollahi, Mohsen | Cisco Systems, Inc. |
| TGbe (PHY) | 3/17 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| TGbe (PHY) | 3/17 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbe (PHY) | 3/17 | Kim, Myeong-Jin | SAMSUNG |
| TGbe (PHY) | 3/17 | Kim, Youhan | Qualcomm Incorporated |
| TGbe (PHY) | 3/17 | Lim, Dong Guk | LG ELECTRONICS |
| TGbe (PHY) | 3/17 | lim, taesung | LG ELECTRONICS |
| TGbe (PHY) | 3/17 | Ma, Li | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Memisoglu, Ebubekir | Istanbul Medipol University; Vestel |
| TGbe (PHY) | 3/17 | Montreuil, Leo | Broadcom Corporation |
| TGbe (PHY) | 3/17 | Ozbakis, Basak | VESTEL |
| TGbe (PHY) | 3/17 | Park, Eunsung | LG ELECTRONICS |
| TGbe (PHY) | 3/17 | Schelstraete, Sigurd | ON Semiconductor |
| TGbe (PHY) | 3/17 | Sethi, Ankit | NXP Semiconductors |
| TGbe (PHY) | 3/17 | Shellhammer, Stephen | Qualcomm Incorporated |
| TGbe (PHY) | 3/17 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/17 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/17 | Sun, Bo | ZTE Corporation |
| TGbe (PHY) | 3/17 | Tian, Bin | Qualcomm Incorporated |
| TGbe (PHY) | 3/17 | Wu, Kanke | Qualcomm Incorporated |
| TGbe (PHY) | 3/17 | Wu, Tianyu | Apple, Inc. |
| TGbe (PHY) | 3/17 | YANG, RUI | InterDigital, Inc. |
| TGbe (PHY) | 3/17 | Yang, Steve TS | MediaTek Inc. |
| TGbe (PHY) | 3/17 | Yoo, Homin | LG ELECTRONICS |
| TGbe (PHY) | 3/17 | Yu, Jian | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/17 | Zhang, Yan | NXP Semiconductors |

**CR contributions**

1. **11-21-350r2 – EHT-SIG-CR-d03-annex z –** Ross Jian Yu (Huawei)

**Discussions on SP:**

C: Can you also include example for 320MHz?

A: I can add later.

SP#1: Do you agree to accept the proposed CR in 11-21/350r2 for the following CIDs?

* CID 3055, 3063

 No objection to the SP.

1. **11-21-371r0 – CR on PPDU Encoding –** Youhan Kim (Qualcomm)

**Discussions on SP:**

C: 20, 40Mhz is “within a frequency subblock” or “have one frequency subblock”?

A: We didn’t mention since 20,40 only have one subblock but they also have one frequency subblock.

C: Can we change frequency subblock to frequency segment?

A: We mixed use of frequency subblock and segment in 11ax. We need to fix it. In ax, we have 160MHz is one segment but two subblocks, so I think subblock is more precise.

C: I have a number of CIDs dealing with this topic. I can handle it.

A: Ok, I can defer this to you. I will take out CID 2763 in my SP.

SP#2: Do you agree to accept the proposed CR in 11-21/371r0 for the following CIDs?

* CID 1556, 3280, ~~2763,~~ 3281, 3282, 3283
* Note: CID 2763 needs further discussion.

 No objection to the SP.

1. **11-21-354r1 – U-SIG Comment Resolution Part 3 –** Alice Chen (Qualcomm)

**Discussions on SP:**

C: When we use 320-1 and 320-2, we need to define it.

A: Agree. But it is not a right place to define them in U-SIG. It’s better in channel numbering section.

A: I will defer 2727, 3175.

C: Channelization or channel number could be better place. I will try to resolve there.

C: For 2727 and 3175, you can just refer to those sections.

C: Page 13, do we define EHT SU transmission? Maybe we should define EHT SU. We only have EHT MU PPDU and EHT NDP PPDU.

A: EHT SU transmission is widely used in the spec. Better to define the terminology for EHT SU transmission.

C: Page 19: Do we allow 1 recipient for OFDMA?

A: Depends on whether we count unallocated users. It can be an OFDMA with 106+26 allocated and RU106 unallocated. This is OFDMA transmission with 1 recipient.

C: There will be multiple user field in this case right?

A: Yes.

C: It will be clearer to say >1 use fields. Some user field can have AID 2046.

C: May need further discussion.

**Adjourn**

The meeting is adjourned at 12:00 PM ET

**Thursday Mar 18th, 2021 10:00 – 12:00 ET**

**Introduction**

1. The Chair (Sigurd Schelstraete, Quantenna/ON Semiconductor) calls the meeting to order at 10:00 PM ET.
2. The Chair follows the agenda in 11-21/385r9.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. Nobody speaks up.
4. The Chair goes through the Copyright policy.
5. The Chair reminds everyone to report their attendance by using IMAT system and by sending an e-mail to the Co-chair, Tianyu Wu (Apple) or the Chair himself if unable to record attendance via IMAT system.
6. Announcements:
7. Discussions on the agenda.

Technical Submissions: **Pending SPs**

* + [354r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0354-01-00be-u-sig-comment-resolution-part-3.docx) U-SIG Comment Resolution Part 3 Alice Chen [54 CIDs]

Technical Submissions: **Proposed Draft Text (PDTs) for fixings TBDs**

* + [468r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0468-00-00be-pdt-supported-eht-mcs-and-nss-set-field.docx) PDT Supported EHT MCS and Nss Set Field Steve Shellhammer
	+ [470r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0470-00-00be-pdt-additional-eht-phy-capability-signaling.docx) PDT Additional PHY Capability Signaling Steve Shellhammer

Technical Submissions: **Comment Resolutions**

* + [384r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0384-00-00be-comment-resolutions-for-clause-36-3-13-packet-extension.docx) CRs for clause 36.3.13 Packet extension Yan Zhang [1 CID]
	+ [360r3](https://mentor.ieee.org/802.11/dcn/21/11-21-0360-02-00be-crs-on-cids-related-to-clause-36-1-1.docx) CRs on CIDs related to Clause 36.1.1 Kanke Wu [26 CIDs]
	+ [331r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0331-00-00be-d03-cr-on-eht-phy-introduction.docx) D03 CR on EHT PHY Introduction Bin Tian [27 CIDs]
	+ [310r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0310-00-00be-cr-for-36-3-2-4-and-36-3-12-9-pilot-subcarriers.docx) cr-for-36-3-2-4-and-36-3-12-9-pilot subcarriers Jinyoung Chun [5 CIDs]
	+ [312r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0312-00-00be-cr-for-clause-36-3-11-8-2.docx) CR for clause 36.3.11.8.2 Dongguk Lim [31 CIDs]
	+ [415r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0415-00-00be-comment-resolutions-for-clause-36-3-11-10-eht-ltf.doc) CRs for Clause 36.3.11.10 EHT LTF Chenchen LIU [19 CIDs]
	+ [416r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0416-00-00be-comment-resolutions-for-clause-36-3-12-2-scrambler.doc) CRs for Clause 36.3.12.2 Scrambler Chenchen LIU [11 CIDs]
	+ [424r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0424-01-00be-cr-for-36-3-22-and-annex-e.doc) cr for 36.3.22 and Annex E Ruchen Duan [2 CIDs]
	+ [417r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0417-00-00be-cr-for-clause-36-3-2-3-subcarriers-and-resource-allocation-for-multiple-rus.doc) CR for 36.3.2.3 Subcarriers and resource allocation for multiple RUs Myeongjin Kim [40 CIDs]
	+ [443r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0443-00-00be-segment-parser-cr-on-p802-11be-d0-3-part1.doc) Segment Parser CR on P802.11be D0.3-part1 Bo Gong [10 CIDs]
	+ [464r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0464-00-00be-eht-sig-cr-d03-part-6.doc) EHT-SIG-CR-d03-part-6 Ross Jian Yu [4 CIDs]
	+ [477r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0477-00-00be-comment-resolution-for-non-ht-duplicate-transmission.docx) comment-resolution-for-non-ht-dup-transmission Rui Cao [6 CIDs]
	+ [482r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0482-00-00be-comment-resolution-for-ofdm-modulation.docx) comment-resolution-for-ofdm-modulation Rui Cao [1 CID]
	+ [401r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0401-00-00be-cr-for-cid-1253-and-1306.docx) CR for CID 1253 and 1306 Eunsung Park [2 CIDs]
	+ [489r1](https://mentor.ieee.org/802.11/dcn/21/11-21-0489-01-00be-cr-on-cid-1279.docx) CR on CID 1279 Xin Yan

Technical Submissions:

* + [392r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0392-00-00be-pe-for-4k-qam.pptx) PE for 4K QAM Ron Porat

**Attendance**

The following people recorded their attendance for this call:

|  |  |  |  |
| --- | --- | --- | --- |
| TGbe (PHY) | 3/18 | Choi, Jinsoo | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | CHUN, JINYOUNG | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | Duan, Ruchen | SAMSUNG |
| TGbe (PHY) | 3/18 | feng, Shuling | MediaTek Inc. |
| TGbe (PHY) | 3/18 | Ghaderipoor, Alireza | MediaTek Inc. |
| TGbe (PHY) | 3/18 | Handte, Thomas | Sony Corporation |
| TGbe (PHY) | 3/18 | Hsieh, Hung-Tao | MediaTek Inc. |
| TGbe (PHY) | 3/18 | Huang, Lei | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbe (PHY) | 3/18 | Jamalabdollahi, Mohsen | Cisco Systems, Inc. |
| TGbe (PHY) | 3/18 | Kamel, Mahmoud | InterDigital, Inc. |
| TGbe (PHY) | 3/18 | Kim, Myeong-Jin | SAMSUNG |
| TGbe (PHY) | 3/18 | Kim, Youhan | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Lansford, James | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Lee, Hong Won | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | Lee, Wookbong | SAMSUNG |
| TGbe (PHY) | 3/18 | Li, Jialing | Qualcomm Technologies, Inc. |
| TGbe (PHY) | 3/18 | Lim, Dong Guk | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | Lin, Zinan | InterDigital, Inc. |
| TGbe (PHY) | 3/18 | Liu, Der-Zheng | Realtek Semiconductor Corp. |
| TGbe (PHY) | 3/18 | Liu, Jianhan | MediaTek Inc. |
| TGbe (PHY) | 3/18 | Montreuil, Leo | Broadcom Corporation |
| TGbe (PHY) | 3/18 | Ozbakis, Basak | VESTEL |
| TGbe (PHY) | 3/18 | Park, Eunsung | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | Rai, Kapil | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Redlich, Oded | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | Schelstraete, Sigurd | ON Semiconductor |
| TGbe (PHY) | 3/18 | Shellhammer, Stephen | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Shilo, Shimi | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | SUH, JUNG HOON | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | Sun, Bo | ZTE Corporation |
| TGbe (PHY) | 3/18 | Tian, Bin | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Tsodik, Genadiy | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | Ungan, Tolgay | endiio GmbH |
| TGbe (PHY) | 3/18 | Verenzuela, Daniel | Sony Corporation |
| TGbe (PHY) | 3/18 | Wu, Kanke | Qualcomm Incorporated |
| TGbe (PHY) | 3/18 | Wu, Tianyu | Apple, Inc. |
| TGbe (PHY) | 3/18 | Xin, Yan | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | Yang, Steve TS | MediaTek Inc. |
| TGbe (PHY) | 3/18 | yi, yongjiang | Futurewei Technologies |
| TGbe (PHY) | 3/18 | Yoo, Homin | LG ELECTRONICS |
| TGbe (PHY) | 3/18 | Yu, Jian | Huawei Technologies Co., Ltd |
| TGbe (PHY) | 3/18 | Zhang, Yan | NXP Semiconductors |

**Pending SPs**

1. **11-21-354r2 – U-SIG Comment Resolution Part 3 –** Alice Chen (Qualcomm)

**Discussions:**

C: Change “can be” to “is” in page 11.

C: “user fields” should be “User fields” in page 17.

C: “N/A” for NDP 🡪 0 for NDP.

C: “Transmitters in UL” 🡪 “Transmitters in TB PPDU”

CR-SP#1: Do you agree to accept the proposed CR in 11-21/354r3 for the following CIDs?

* CID:

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

 No objections

**PDT contributions**

1. **11-21-468r0 – PDT Supported EHT MCS and Nss Set Field –** Steve Shellhammer (Qualcomm)

**Discussions:**

C: For text related to OM Control subfield, let’s wait until MAC have decision on it.

C: The reserved value in table 9-T2 indicates an Max Nss >8.

A: Updated the text.

SP#3: Do you agree to include the proposed text in 11-21/468r1 in the next version of the 11be draft?

 No objections

1. **11-21-470r1 – PDT Additional PHY Capability Signaling –** Steve Shellhammer (Qualcomm)

**Discussions:**

C: Change “Max Nc” to 4 bits for future use.

C: Maybe put a reserved bit next to “Max Nc” field. If change to 4 bits, then we need another table.

C: It will be consistent to use 4 bits.

SP#4: Do you agree to include the proposed text in 11-21/470r2 in the next version of the 11be draft?

 No objections

**CR contributions**

1. **11-21-384r0 – CRs for clause 36.3.13 Packet extension** **–** Yan Zhang (NXP)

**Discussions:**

C: Instead of adding in EHT PHY characteristics, should refer to the 11ax table 27-54.

CR-SP#2: Do you agree to the resolution of the following CID as proposed in 11-21/384r2?

* CID 2674

 No objections

1. **11-21-360r3 – CRs on CIDs related to Clause 36.1.1 –** Kanke Wu (Qualcomm)

**Discussions:**

Will update and bring back for SP.

1. **11-21-331r1 – D03 CR on EHT PHY Introduction –** Bin Tian (Qualcomm)

**Discussions:**

C: Fix some typo and update to r2.

C: What does punctured sounding operation mean? Does it mean the whole sounding procedure or just punctured NDP?

A: This is PHY introduction part, only have high level feature. This includes everything related to punctured sounding.

**Adjourn**

The meeting is adjourned at 12:00 PM ET