IEEE P802.11
Wireless LANs

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| Minutes 802.11 be PHY ad hoc Telephone Conferences, September - November 2020 |
| Date: 2020-09-14 |
| Author(s): |
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Abstract

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

* Sept 14, 2020

**Monday Sept 14th, 2020 19:00 – 21:00 ET**

**Introduction**

1. The Chair (Tianyu Wu, Apple) calls the meeting to order at 19:00 ET.
2. The Chair follows the agenda in 11-20/1269r3
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. Nobody speaks up.
4. The Chair reminds everyone to report their attendance by sending an e-mail to the Co-chair, Sigurd Schelstraete (ON Semiconductor) or the Chair himself.
5. Announcements: None
6. PDT Status for R1 PHY features:
* PDT Status for R1 PHY features:

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| --- | --- | --- | --- |
| **Not Uploaded** | **Uploaded** | **And Presented** | **And Passed StrawPoll** |
| Xiaogang (T-Block)Sameer (U-SIG)Dandan (EHT LTF)Chenchen (Scrambler)Sameer (EHT sound. NDP)Xiaogang (T-mask & S-flat)Bin (CCA sens)Xiaogang (TX procedure)Xiaogang (RX procedure) | 1307, 1338, 1339, 1337, 1319, 1351, 1403, 1404, 1340, 1447, 1448 | 1276, 1315, 1290, 1371. | [1293r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1293-01-00be-pdt-phy-scope-and-eht-phy-functions.docx), [1295r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1295-01-00be-pdt-phy-overview-of-the-ppdu-enconding-process.docx), [1160r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1160-04-00be-pdt-phy-mu-mimo.docx), [1327r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1327-01-00be-pdt-eht-ppdu-format.docx), [1153r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1153-03-00be-pdt-phy-timing-related-parameters.docx), [1260r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1260-04-00be-pdt-phy-eht-stf.docx), [1349r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1349-03-00be-pdt-constellation-mapping.docx), [1231r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1231-03-00be-pdt-phy-beamforming.docx), [1252r2](https://mentor.ieee.org/802.11/dcn/20/11-20-1252-02-00be-pdt-phy-frequency-tolerance.docx), [1253r6](https://mentor.ieee.org/802.11/dcn/20/11-20-1253-06-00be-pdt-phy-modulation-accuracy.docx), [1254r6](https://mentor.ieee.org/802.11/dcn/20/11-20-1254-06-00be-pdt-phy-receive-specification-general-and-receiver-minimum-input-sensitivity-and-channel-rejection.docx), [1229r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1229-03-00be-pdt-phy-channel-numbering-and-channelization.docx), [1294r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1294-04-00be-pdt-phy-eht-plme.docx), [1329r2](https://mentor.ieee.org/802.11/dcn/20/11-20-1329-02-00be-pdt-eht-preamble-l-stf-l-ltf-l-sig-and-rl-sig.docx). |

1. Agenda:
	* **Technical Submissions: Proposed Draft Text (PDTs) [Discussions and SPs]**
		+ [1290r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1290-02-00be-pdt-phy-parameters-for-eht-mcss.docx) Parameters-for-EHT-MCSs Yujin Noh [SP]
		+ [1276r5](https://mentor.ieee.org/802.11/dcn/20/11-20-1276-02-00be-pdt-phy-eht-preamble-eht-sig.docx) EHT-preamble-EHT-SIG Ross Jian Yu [SP]
		+ [1315r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1315-01-00be-draft-text-for-support-for-large-bandwidth.docx) Support for large bandwidth Yan Xin [SP]
		+ [1371r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1371-00-00be-pdt-phy-subcarriers-and-resource-allocation-for-wideband.docx) Subcarriers-and-resource-allocation-for-wideband Yan Xin [SP]
		+ [1338r5](https://mentor.ieee.org/802.11/dcn/20/11-20-1338-04-00be-pdt-phy-eht-modulation-and-coding-eht-mcss.docx) EHT Modulation and Coding (EHT-MCSs) Rethna Pulikkoonattu
		+ [1339r4](https://mentor.ieee.org/802.11/dcn/20/11-20-1339-04-00be-pdt-phy-data-field-coding.docx) Data-field-Coding Yan Zhang
		+ [1337r2](https://mentor.ieee.org/802.11/dcn/20/11-20-1337-01-00be-pdt-phy-mathematical-description-of-signals.docx) Mathematical description of signals Yan Zhang
		+ [1340r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1340-01-00be-pdt-phy-packet-extension.docx) Packet Extension Yan Zhang
		+ [1319r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1319-01-00be-pdt-phy-preamble-puncture.docx) Preamble-Puncture Oded Redlich
		+ [1351r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1351-00-00be-pdt-phy-pilot.docx) Pilot Jinyoung Chun
		+ [1403r2](https://mentor.ieee.org/802.11/dcn/20/11-20-1403-00-00be-pdt-phy-txvector-rxvector-trigvector-config-vector.doc) TX/RXVECTOR-TRIGVECTOR-CONFIG\_VECTOR Bo Sun
		+ [1404r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1404-00-00be-pdt-phy-support-for-non-ht-ht-vht-he-format-and-regulatory.doc) Support-for-NON-HT-HT-VHT-HE-Format-and-Reg. Bo Sun
		+ [1447r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1447-01-00be-pdt-subcarriers-and-resource-allocation-for-multiple-rus.docx) Subcarriers and Resource Allocation for Multiple RUs Jianhan Liu
		+ [1448r2](https://mentor.ieee.org/802.11/dcn/20/11-20-1448-00-00be-pdt-resource-unit-interleaving-for-rus-and-multipe-rus.docx) Resource Unit-Interleaving for RUs and Multipe RUs Jianhan Liu
		+ [1452r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1452-00-00be-pdt-segment-parser.docx) Segment parser Jianhan Liu
		+ [1307r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1307-00-00be-pdt-phy-introduction-to-eht-phy.docx) PHY introduction Bin Tian
		+ [1462r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1462-00-00be-pdt-phy-tx-mask.docx) Tx Mask Xiaogang Chen
	* **Technical Submissions:**
		+ [1135r3](https://mentor.ieee.org/802.11/dcn/20/11-20-1135-03-00be-papr-issues-for-eht-er-su-ppdu.pptx) PAPR Issues for EHT ER SU PPDU Eunsung Park [3 SPs]
		+ [1161r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1161-00-00be-eht-punctured-ndp-and-partial-bandwidth-feedback.pptx) EHT Punctured NDP and Partial bandwidth feedback. Bin Tian [SPs]
		+ [1223r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1223-01-00be-subcarrier-grouping-for-eht.pptx) Subcarrier Grouping for EHT Eunsung Jeon
		+ [1159r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1159-00-00be-11be-spectral-mask.pptx) 11be spectral mask Bin Tian
		+ [1180r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1180-00-00be-spectrum-mask-requirement-for-punctured-transmission.pptx) Spectrum mask requirement for punctured Transmission Wookbong Lee
		+ [1165r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1165-00-00be-spectrum-mask-for-puncturing.pptx) Spectrum mask for puncturing Xiaogang Chen
		+ [1174r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1174-00-00be-e-sig-with-different-puncturing-patterns.pptx) E-SIG Detection with Different Puncturing Patterns Junghoon Suh
		+ [1191r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1191-00-00be-dup-mode-papr-reduction.pptx) DUP mode PAPR reduction Ron Porat
		+ [1178r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1178-00-00be-discussions-on-mu-mimo-signaling.pptx) Discussions on MU-MIMO Signaling Mengshi Hu
		+ [1206r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1206-00-00be-discussions-on-papr-reduction-methods-for-dup-mode.pptx) Discussions on PAPR Reduction Methods for DUP Mode ChenChen Liu
		+ [1238r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1238-00-00be-open-issues-on-preamble-design.pptx) Open Issues on Preamble Design Sameer Vermani
		+ [1259r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1259-00-00be-puncturing-patterns-for-ofdma.pptx) Puncturing patterns for ofdma Ron Porat
		+ [1310r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1310-00-00be-coding-bit-in-mu-mimo.pptx) Coding bit in MU-MIMO Ron Porat
		+ [1311r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1311-00-00be-2x-320mhz-ltf-design.pptx) 2x LTF 320MHz sequences Ron Porat
		+ [1317r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1317-00-00be-sig-contents-discussion-for-eht-sounding-ndp.pptx) SIG-contents-discussion-for-eht-sounding-ndp Ross Yu
		+ [1347r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1347-00-00be-lpi-ppdu-format.pptx) LPI PPDU format Junghoon Suh
		+ [1375r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1375-01-00be-eht-nltf-design.pptx) EHT NLTF Design Rui Cao
		+ [1331r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1331-00-00be-eht-pre-fec-padding-and-packet-extension.pptx) EHT pre-FEC padding and packet extension Rui Cao
		+ [1132r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1132-00-00be-thoughts-on-extended-range-preamble.pptx) Thoughts on Extended Range Preamble Bin Tian
		+ [1377r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1377-00-00be-on-tbd-mcss.pptx) On TBD MCSs Jianhan Liu
		+ [1322r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1322-00-00be-phy-signaling-methodology-for-11be-releases.pptx) PHY Signaling Methodology Rui Yang
		+ [1446r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1446-00-00be-pilot-polarities-for-small-m-rus.pptx) Pilot Polarities for Small M-RUs Ron Porat
		+ [1441r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1441-00-00be-ru-restriction-for-20mhz-operation.pptx) RU Restriction for 20MHz Operation Eunsung Park
		+ [1467r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1467-00-00be-bw320-signaling.pptx) 320MHz signaling Ron Porat
		+ [1342r0](https://mentor.ieee.org/802.11/dcn/20/11-20-1342-00-00be-eht-sounding-feedback-request-parameters.pptx) EHT Sounding feedback request parameters Genadiy Tsodik

**Attendance**

The following people recorded their attendance for this call:

* Kwok Shum Au (Huawei)
* Hari Ram (Nxp Semiconductors)
* Eugene Baik (Qualcomm Incorporated)
* Jianwei Bei (Nxp Semiconductors)
* Rui Cao (Nxp Semiconductors)
* Gurkan Cepni (Apple, Inc.)
* Xiaogang Chen (Intel)
* Jinsoo Choi (Lg Electronics)
* Seungho Choo (Senscomm Semiconductor Co., Ltd.)
* Yanyi Ding (Panasonic Corporation)
* Dung Doan (Qualcomm Incorporated)
* Ruchen Duan (Samsung)
* Ahmed Elsherif (Qualcomm Incorporated)
* Shuling Feng (Mediatek Inc.)
* James Gardner (Qualcomm Incorporated)
* Alireza Ghaderipoor (Mediatek Inc.)
* Bo Gong (Huawei Technologies Co. Ltd)
* Niranjan Grandhe (Nxp Semiconductors)
* Brian Hart (Cisco Systems, Inc.)
* Ching-Wen Hsiao (Mediatek Inc.)
* Hung-Tao Hsieh (Mediatek Inc.)
* Mengshi Hu (Huawei)
* Lei Huang (Oppo)
* Jeorge Hurtarte (Teradyne, Inc.)
* Eunsung Jeon (Samsung Electronics)
* Chenhe Ji (Huawei Technologies Co. Ltd)
* Feng Jiang (Apple Inc.)
* Jeng-Shiann Jiang (Vertexcom Technologies)
* Allan Jones (Activision)
* Jeffrum Jones (Qorvo)
* Vincent Knowles Iv Jones (Qualcomm Incorporated)
* Ishaque Ashar Kadampot (Qualcomm Incorporated)
* Mahmoud Kamel (Interdigital, Inc.)
* Sugbong Kang (Apple, Inc.)
* Kenneth Kerpez (Assia)
* Myeong-Jin Kim (Samsung)
* Youhan Kim (Qualcomm Incorporated)
* Wookbong Lee (Samsung)
* Jialing Li (Qualcomm Incorporated)
* Qinghua Li (Intel Corporation)
* Dong Guk Lim (Lg Electronics)
* Erik Lindskog (Samsung)
* Der-Zheng Liu (Realtek Semiconductor Corp.)
* Jianhan Liu (Mediatek Inc.)
* Hanqing Lou (Interdigital, Inc.)
* Li Ma (Mediatek Inc.)
* Ebubekir Memisoglu (Istanbul Medipol University; Vestel)
* Jun Minotani (Panasonic Corporation)
* Khashayar Mirfakhraei (Cisco Systems, Inc.)
* Takayuki Nakano (Panasonic Corporation)
* Junyoung Nam (Qualcomm Incorporated)
* Yujin Noh (Newracom Inc.)
* Thomas Pare (Mediatek Inc.)
* Eunsung Park (Lg Electronics)
* Richard Perkins (Qorvo)
* Riku Pirhonen (Nxp Semiconductors)
* Ron Porat (Broadcom Corporation)
* Srinath Puducheri (Broadcom Corporation)
* Rethnakaran Pulikkoonattu (Broadcom Corporation)
* Kapil Rai (Qualcomm Incorporated)
* Oded Redlich (Huawei)
* Meriam Rezk (Qualcomm Incorporated)
* Sigurd Schelstraete (Quantenna Communications, Inc.)
* Stephen Shellhammer (Qualcomm Incorporated)
* Shimi Shilo (Huawei)
* Shree Raman Srinivasan (Qualcomm Incorporated)
* Paul Strauch (Qualcomm Incorporated)
* Jung Hoon Suh (Huawei Technologies Co. Ltd)
* Bo Sun (Zte Corporation)
* Bin Tian (Qualcomm Incorporated)
* Tao Tian (Unisoc Comm.)
* Genadiy Tsodik (Huawei Technologies Co. Ltd)
* Yoshio Urabe (Panasonic Corporation)
* Prabodh Varshney (Nokia)
* Sameer Vermani (Qualcomm Incorporated)
* Yi-Hsiu Wang (Zeku)
* Kanke Wu (Qualcomm Incorporated)
* Yan Xin (Huawei Technologies Co., Ltd)
* Ruifeng Xue (Cisco Systems, Inc.)
* Aiguo Yan (Oppo)
* Rui Yang (Interdigital, Inc.)
* Steve Ts Yang (Mediatek Inc.)
* Yair Yona (Qualcomm Incorporated)
* Christopher Young (Broadcom Corporation)
* Heejung Yu (Korea University)
* Jian Yu (Huawei Technologies Co., Ltd)
* Mao Yu (Nxp Semiconductors)
* Salah Eddine Zegrar (Istanbul Medipol University; Vestel)
* Ruochen Zeng (Nxp Semiconductors)
* Yan Zhang (Nxp Semiconductors)

**Straw polls**

1290r3 Parameters-for-EHT-MCSs (Yujin Noh)

Changes are reviewed. It was decided not to decide on the numbering of DCM and DCM+DUP. They are left TBD for now.

Discussion:

Q: will tables for NSS>1 be listed?

A: this only includes tables for NSS=1.

Q: can we at least have a table listing the data rates.

A: can be added in later versions. Possible a plot can be used instead of a table.

SP#1: Do you agree to accept spec text proposed in 1209r3 in 11be draft 0.1?

No objection. Passed with unanimous consent.

1276r6 EHT-preamble-EHT-SIG (Ross Jian Yu)

Colors are used to track changes in successive versions.

Some more TBDs added. Coding part is made yellow (indicating TBD)

r7 is uploaded to correct some typos.

SP#2: Do you agree to accept text in 1267r7 for 11be draft 0.1

No objection. Passed with unanimous consent.

1315r4 Support for large bandwidth (Yan Xin)

Discussion

Q: 80 MHz can not support 2x996. MRUs have to be added.

A: MRUs are included. MRUs are changed to TBD.

Q: Should include mention of 20 MHz operating devices.

Q: please highlight all 80+80 and 160 to keep them TBD for now.

Document will be revised and reconsidered later.

1371r4 Subcarriers-and-resource-allocation-for-wideband (Yan Xin)

Additional tables for RU allocations for 160 and 320 MHz added.

Described subcarrier index related to MRU.

SP#3: Do you agree to accept text in 1371r4 for 11be draft 0.1

No objection. Passed with unanimous consent.

**New presentations**

1338r5 EHT Modulation and Coding (EHT-MCSs) (Rethna Pulikkoonattu)

Should we include all the tables? Helpful to include for specific scenarios.

A plot could be used to present the data for data rates.

Discussion

Q: Should use Nss,u instead of Nss

Q: should appendix be included.

A: no. up to editor. Will indicate explicitly.

Minor changes made - r6 is uploaded.

SP#4: Do you agree to accept text in 1338r6 for 11be draft 0.1

No objection. Passed with unanimous consent.

1339r4 Data-field-Coding (Yan Zhang)

Mostly similar to HE sections.

Some changes are made based on member’s feedback.

Q: 996-tone RU is not the correct number for DUP case. Use BW for indication DUP modes. Discussion on naming of DUP modes.

A: will indicate as TBD for now.

SP#5: Do you agree to accept text in 1339r5 for 11be draft 0.1

No objection. Passed with unanimous consent.

1337r1 Mathematical description of signals (Yan Zhang)

Midamble highlighted as TBD. Additional parts highlighted in yellow.

More discussion on channel BW use for e.g. gamma rotation.

Updated to r3.

SP#6: Do you agree to accept text in 1337r3 for 11be draft 0.1

No objection. Passed with unanimous consent.

1340r2 Packet Extension (Yan Zhang)

Similar to 11ax. Only MU description.

Non-decided parts (e.g. midamble) highlighted in yellow

SP#7: Do you agree to accept text in 1340r2 for 11be draft 0.1

No objection. Passed with unanimous consent.

**Recess**

Meeting is recessed at 9pm ET.