IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Meeting Minutes for 11be PHY ad hoc sessions January 2020,  Irvine, CA | | | | | | Date: 2020-01-13 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Tianyu Wu | Apple |  |  | Tianyu@apple.com | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This document contains the meeting minutes of the IEEE 802.11be PHY ad-hoc sessions held during the January 2020 IEEE meeting.

**REVISION NOTES:**

**R0**: Minutes from Monday PM2 PHY ad hoc meeting.

**Session 1: Monday 13 January PM2 (16:00 – 18:00)**

**Introduction**

1. The Chair calls the meeting to order at 16:00. The agenda is found in 11-20-0139r1.
2. The Chair reviews attendance and recaps the procedures.
3. The Chair goes through the patent guidelines and asks if there is somebody that is aware of potentially essential patents. Nobody speaks up.
4. The Chair reviews the proposed agenda items.

## Straw Polls

First order of business is to run straw polls from selected submissions that were presented during conference calls, but for which the SPs were deferred to the F2F meeting.

C: Suggest having fruitful discussions on topics. Better finish the presentations before running SP on the topic.

C: Better to go throughput SPs but when any SP have related contributions, people can request to defer the SP after the contributions.

**Deferred Straw Polls**

1. **11-19-1868r2 - Signaling Support for Multi-RU Assignment** – Lei Huang (Panasonic)  
    **Straw poll 1:**  
   Do you agree that a user specific field of EHT-SIG in an EHT PPDU transmitted to multiple users comprises ~~one or~~ more than one user fields?

Note: each user field contains user-specific allocation information.

**Discussion:**  
C: It’s not very clear to me what is multiple users compromises more user fields? And we did not agree on basics such as how many RUs can be combined. It’s too early to decide the signaling.   
A: This SP is not related to RU combination.

C: One user field is not meaningful.

A: Change to more than one user field.

C: What you want to achieve is already in the SFD.

C: Also agree that there is already same thing in the SFD.   
A: Skip this SP.

**Result:**  
SP deferred.   
  
 **Straw poll 2:**  
Do you agree that the formats of 11be user specific fields should be optimized for improving STA’s power efficiency?

**Discussion:**  
C: Can you clarify what is this SP asking for?  
A: Explained Opt 2 in the contribution.

C: Do you asking to include it in SFD or just encouraging people to consider power saving?

A: Encouraging design EHT SIG considering power efficiency.

C: Optimized is too strong for me. There are many factors need to considered.   
  
**Result:**  
Y 21  
N 0  
A 38

1. **11-19-1869r0 - Preamble Puncturing and RU Aggregation** – Bin Tian (Qualcomm)  
     
   **Straw poll 1:**  
   **Do you support in 11be**

* CCA minimum BW resolution is 20MHz
* Preamble puncturing resolution is 20MHz

**Discussion:**

**Result:**  
Y 59  
N 0  
A 3

**Straw poll 2:**  
Do you support one PSDU per STA for single link in 11be?

**Discussion:**

**Result:**  
Y 48  
N 0  
A 5

**Straw poll 3:**  
For one PSDU, do you support in 11be to use one LDPC encoder?

* + ~~Note: Multiple modulations for one PSDU is TBD. This SP only applies to the single modulation per PSDU case.~~

**Discussion:**

C: Different channel can use different MCS?

A: One PSDU one modulation is simpler. But I would like to leave it for further discussion.

C: You can remove the note.

A: Removed.

C: What about BCC? Do you want to leave BCC TBD?

A: BCC is different since in 11n 11ac already have multiple BCC encoders for wider BW. We need to decide what is the max BW apply for BCC. BCC situation is more complicated.

**Result:**  
Y 49  
N 0  
A 4

1. **11-19-1877r1 – 16 Spatial Stream Support** – Woodbong Lee (Samsung)  
     
   **Straw poll 2:**  
   **Do you support maximum 16 spatial streams for MU-MIMO in 11be?**  
     
   **Disucssion**  
     
   **Result:**  
   Y 46  
   N 0  
   A 2  
     
     
   **Straw poll 1:**  
   **Do you support that 11be defines a maximum of 16 spatial streams for SU-MIMO?**

**Disucssion**  
C: Support 16SS could be difficult. Need to add capability.   
A: Yes, capabilities can be added as in 11ac, 11ax  
C: Suggest to make it optional

A: Change to 11be define a mode.   
  
**Result:**  
Y 37  
N 0  
A 7

1. **11-19-1890r1 -** **Phase Rotation Follow-up**– Eunsung Park (LG)  
     
   **Straw poll 2:**  
   **Which option do you prefer for the phase rotation in 320/160+160 MHz**

**Option 1: Unified phase rotation regardless of whether the preamble puncturing is applied or not**

**Option 2: Different phase rotation according to whether the preamble puncturing is applied or not**

**Option 1/Option 2/A: //**

**Disucssion**

C: Can you add the sentence saying this SP not affect SFD?  
A: Ok.  
  
  
**Result:**  
Opt 1: 11  
Opt 2: 13  
A : 22

**Straw poll 1:**  
**Do you agree that preamble puncturing can be considered in order to design phase rotation for 320/160+160 MHz?**

**Disucssion**

Author: This will not affect SFD as well.

**Result:**  
Y: 9  
N: 0  
A: 31

**Other SPs deferred.**

1. **11-19-1907r1 – Multiple RU Combinations for EHT** – Jianhan Liu (Mediatek)

**Straw poll 1:**  
**Do you agree that small-size RUs can only combine with small-size RUs and large-size RUs can only combine with large-size RUs?**

* + **RUs with equal to or more than 242 tones are called as large-size RUs**
  + **RUs with less than 242 tones as small-size RUs**

**Disucssion:**

C: Not against the SP but we have similar contribution. Can you defer it?

A: Ok.

C: How to handle the 242RU with a few tones across the 20MHz boundary? It’s no longer 242+484.   
A: There are many methods to handle it.

**Result:**  
Deferred for later this week.

**Straw poll 2:**  
**Do you agree that combination of small-size RUs shall not cross 20MHz channel boundary?**

**Disucssion:**

C: We have similar contributions. Ask for a defer. May have different opinion.   
A: I still prefer to run.

C: Can we ask note that not for SFD?

A: No, this is for SFD update.

**Result:**  
Y: 34  
N: 1  
A: 22

**Straw poll 3:**  
**Do you agree that only allowed small-RU combinations are RU106+RU26 and RU52+RU26?**

**Disucssion:**

C: We have similar contributions. Ask for a defer. We have different opinion.  
A: Prefer to run it now.

C: Ask for defer. We againt ”only” part.

A: Will you agree if we remove ”only”?

C: We need to keep ”Only”.

A: Ok, I will defer this one.

**Result:**  
Deferred.

**Straw poll 4:**  
**Do you agree that for 20 and 40 MHz PPDU, within 20MHz boundary, any contiguous RU26 and RU106 can be combined?**

**Disucssion:**

**Result:**  
Deferred.

**SP 5 – SP 9 are deferred.**

1. **11-19-1908r2 – Multi-RU Support** – Ron Porat (Broadcom)

**Straw poll 1:**  
**Do you support the conditional mandatory (conditional on supporting puncturing) large RU combinations for 80MHz non-OFDMA as described below:**

* **484+242 supports contiguous 60MHz and non-contiguous 60MHz**
  + **Puncturing one 20MHz anywhere in the 80MHz channel**
* **For 242+242 we only support the case where both 242 RUs are the outer ones in the 80MHz (a [1001] configuration)**
* **Note: several tones at the edge may be punctured**

|  |  |
| --- | --- |
| **RU size** | **Agg. BW** |
| 242+242 | 40 MHz |
| 484+242 | 60 MHz |

**Disucssion:**

C: Slide 5 have so many information. Suggest to break into several steps. First on BW then on combinations.

A: I can copy the points in slide 5 to the SP. It’s clear to me.

C: More modes such as1010, 0110 etc should be allowed  
A: We donot like too many modes. For 0110 we can do 1100 as 40MHz.

C: This is for SU case right? What does the conditional mandatory means? At least transmission is opitional.

A: Add conditional on supporting puncturing.

C: What is the meaning of ”several tones at the dege may be punctured”.

A: This is for the case where a few tones across the 20MHz channel boundary.

**Result:**  
Y: 18  
N: 16  
A: 19

**Straw poll 2:**  
**Do you support the large RU combinations for 80MHz OFDMA as described below?**

|  |  |
| --- | --- |
| **RU size** | **Agg. BW** |
| 484+242 | 60 MHz |

**Disucssion:**

C: Can you copy the text to the SP?

A: Ok.

C: Conditional mandatory meaning? There is not necessary a puncturing mode for OFDMA case.

C: Suggest to remove the conditional mandatory.

A: If puncture not supported, may not support this mode in OFDMA as well.

C: Remove the condition for now.

**Result:**  
Y: 29  
N: 0  
A: 14

**Straw poll 3:**  
**Do you support the large RU combinations for 160MHz non-OFDMA as described as described below?**

* + **CM – conditional mandatory on supporting puncturing**
  + **O- optional**

|  |  |  |  |
| --- | --- | --- | --- |
| **80MHz**  **RU size** | **80MHz**  **RU size** | **Agg. BW** | **Notes** |
| 484 | 996 | 120 MHz | CM |
| 484+242 | 484+242 | 120 MHz | O |
| 484+242 | 996 | 140 MHz | CM |

**Disucssion:**

C: Same comment on the conditional mandatory.

C: I did not see much value on the 60MHz puncturing case.

A: It’s ok to remove this mode from SP.

C: Also questioning on 242+242+996 case.

A: Remove these 2 modes from the SP.

C: Can you defer this SP?

A: Ok.

C: For each size, there are still multiple modes of combination. Suggest to further limit the modes. We donot need to support all combinations for each size.

A: Ok, we can have further discusssion.

**Result:**  
SP deferred.

**Straw poll 4:**  
**Do you support the large RU combinations for 160MHz OFDMA as described in slide 8?**

* **() means within 80MHz**

|  |  |
| --- | --- |
| **RU size** | **Agg. BW** |
| (484+242) | 60 MHz |
| 484+(484+242) | 100 MHz |
| 484+996 | 120 MHz |

**Disucssion:**

C: We have some different views and request a defer of the SP.

A: Do you want more combinations or less?

C: Less combinations.

**Result:**  
Deferred.

**Recess.**