IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IEEE 802.11ba Task Group Meeting Minutes for September 2018 Meeting, Waikoloa, HI, USA | | | | |
| Date: 2018-09-14 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Leif Wilhelmsson | Ericsson AB | Mobilvägen 1, 22632 Lund, Sweden | +46-706-216956 | [leif.r.wilhelmsson@ericsson.com](mailto:leif.r.wilhelmsson@ericsson.com) |
| Yunsong Yang | Huawei Technologies | 10180 Telesis Court, STE 165, San Diego, CA 92130 | +1-858-754-3638 | [yangyunsong@huawei.com](mailto:yangyunsong@huawei.com) |

Abstract

Rev 0: Meeting Minutes for the IEEE 802.11ba TG sessions held in Waikoloa, HI, USA, September 9-14, 2018.

**Monday, September 10 2018, 10:30-12:30 am**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document:

<https://mentor.ieee.org/802.11/dcn/18/11-18-1381-01-00ba-tgba-agenda-2018-september.pptx>

* + Call meeting to order, TGba introduction
  + Call for submissions
  + Review agenda and approval
  + IEEE 802 and 802.11 IPR Policy and procedure
  + Participation in IEEE 802 Meetings
  + Summary from July 2018 meeting
  + **Motion**: July 2018 meeting (doc: IEEE 802.11-18/1355r1) and teleconference minutes (doc: IEEE 802.11-18/1443r0) approval
  + **Motion**: TGba D0.4 approval
  + Presentations, Recess

**Chair Minyoung Park (Intel) calls the meeting to order at 10.40 am.** (about50 persons in the room.)

Minyoung reminds about recording attendance and goes through slide 6 “Attendance, Voting & Document Status”.

Minyoung presents the schedule for the week (slide 7) and the logistics of the ad-hoc meetings (slide 8)

Minyoung presents the slide “Main agenda items for the week”, which is shown below.

* Approve TGba D0.4
* Review spec text documents for empty/incomplete subclauses and TBDs in TGba D0.4 to create D1.0 after this meeting – highest priority
* Approve Working Group Technical Letter Ballot
* Review TG timeline

Minyoung asks if there are any questions on the main agenda items. No questions are asked.

Based on the call for submissions, in total 31 submissions have been received. Minyoung goes through the contributions and ask if there are any comments or questions.

A comment is that 1475 should go together with 1476 and the agenda is updated accordingly.

Minyoung goes through the agenda for the week (slide 15) and asks if there are any questions. No questions or comments.

**Motion to approve the agenda**

Move: Johan Notor

Second: Yunsong Yang

Motion passed by unanimous consent.

Minyoung goes through the slides “Participants have a duty to inform the IEEE” (slide 17) and “Ways to inform IEEE” (slide 18).

Minyoung makes a Call for Potentially Essential Patents. No potentially essential patents reported and no questions asked.

Minyoung goes through “Other Guidelines for IEEE WG meetings” (slide 19) and “Patent-related information” (slide 20).

Minyoung reads through “Participation in IEEE 802 Meetings” (slide 21), and encourages people to read through the references on slides 22-24.

Minyoung goes through slide 25 “Summary from July 2018 Meeting and Teleconference Calls”

* Approved TGba D0.3
* Reviewed technical presentations
* Reviewed and approved spec text documents for generating TGba D0.4
* Discussed Draft status
* TGba/ARC joint session – TGba architecture discussion
* Reviewed and changed TG timeline
* Agenda: doc:11-18/1042r11

**Motion:** Approve TGba minutes of July 2018 meeting [doc: IEEE 802.11-18/1355r1] and teleconference calls [doc: IEEE 802.11-18/1443r0]

**Move:** Yunsong Yang

**Second:** Eunsung Park

Motion passed by unanimous consent.

**Motion:** Move to approve P802.11ba D0.4 in IEEE 802.11 WG Members Area as the latest revised draft of TGba.

**Move:** Po-Kai Huang

**Second:** Xiaofei Wang

Motion passed by unanimous consent.

**Presentations:**

**11-18/1494r0 “Overview of 802.11 ba Power Management in D0.4”, (Po-Kai Huang, Intel):**

The presentation is intended to help people not involved in 11ba discussions to understand the design. There is nothing new in this document as such.

**Question/Comment (Q):** Why do we define the negotiation status? We can negotiate whenever we can, can’t we?

**Answer (A):** This is not really what is said in the presentation. It is like you say, it can be done at anytime.

**Q:** What does it mean that the negotiated parameters are remembered, and that no negotiation can take place?

**A:** It just means that if the WUR is suspended and returns from the suspended state it remembers the parameters.

**Q:** I believe that when you in this document talk about STA, it becomes clearer if you say whether it is the PCR or the WURx.

**Q:** Thanks for this presentation. I believe this is very helpful.

**A:** Thanks. One thing we wanted to emphasize is that the states are independent which I try to illustrate on page 5.

**Q:** I believe we agree conceptually about what is happening, but I don’t necessarily agree with how this should be expressed from an architectural point of view.

**Q:** On slide 8, it says it is implementation specific, but I thought this needed some standardization. I am here thinking from the AP’s perspective rather than the STA’s.

**Q:** I believe it may be beneficial to standardize certain features.

**A:** So this statement refers to what we have in D0.4. If we agree on something more, then I will of course change to these new additions.

**11-18/1564r0 “Further Discussion on Content of BPSK”, Minyoung Park (Intel):** The presentation points out that if nothing is defined, leaving it for the vendors, then an EHT device will not be able to classify a TGba wake-up packet. If it is defined, future standard devices may be able to use this to classify a transmission as a 11ba transmission.

**Q:** I agree that we need to specify it. Among these options, Option 1 give more freedom and personally I would prefer Option 1 and also add BSS color bits.

**Q:** For Option 2, what does it mean that future spec can define a new content?

**A:** Future specs will be able to know what has been defined, but legacy version will not.

**Q:** I believe we need a lot of effort for Option 1 taking the state-machines of current implementations into account. That is, we need to evaluate false alarm etc.

# Q: I believe Option 1 may open up for a new round of discussion.

**Q:** I believe we need more discussion for Option 1, so I also prefer Option 2 or 3.

**Straw Poll 1:**

Do you agree to make BPSK Mark classifiable by future amendments?

**Y/N/A: 28/0/9**

**Straw Poll 2:**

* Which of the following options do you support for BPSK Mark?
  + Option A – Define a simple structure in TGba (Option 1 in Slide 4)
  + Option B – Reuse RL-SIG (Option 2 and Option 3 in Slide 4)

**Option A/Option B: 7/14**

**Straw Poll 4:**

* Which of the following options (as defined in slide #4) do you support for the content of BPSK Mark?
  + Option A: Flipped RL-SIG (Option 2 in slide #4)
  + Option B: L-SIG/RL-SIG with Length divisible by 3 (Option 3 in slide #4)

**Option A/Option B: 6/9**

**Straw Poll 5:**

* Do you support to define BPSK Mark as L-SIG/RL-SIG with Length divisible by 3?

**Y/N/A: 10/5/4**

**The meeting is declared to be in recess at 12.25 pm.**

**Monday, September 10 2018, 1:30-3:30 pm**

**TGba PHY ad-hoc Meeting**

Ad-hoc Group Chair: Eunsung Park (LGE)

Ad-hoc Secretary: Leif Wilhelmsson (Ericsson)

**Meeting called to order at 1.30 pm by Chair Eunsung Park (LGE).** About20 persons in the room.

Eunsung goes through the agenda, document 11-18/1605r0 and asks if there are any questions. No questions of comments on the agenda.

Eunsung reminds about taking attendance.

Eunsung makes a call for essential patents. No response

**Presentations:**

**11-18/1463r1 “WUR FDMA Padding Content” Rui Cao (Marvell):** The presentation is concerned with that a WUR receiver may erroneously get a false alarm from the padding content in case of FDMA. To reduce the probability of false alarm, different ways to perform the padding are studied.

**Q:** What is the receiver structure?

**A:** Same as is shown on slide 7.

**Q:** Why do you say that the high SNR is of no concern?

**A:** Because at high SNR, the receiver will be able to detect the end of the packet and can then abort the decoding.

**Straw Poll 1:**

* Do you agree that FDMA padding uses the following
  + Option 1: Random data padding using the same WUR-Data rate
  + Option 2: All-zero or all-one data padding using the same WUR-Data rate
  + Option 3: Repeated [0 1] or [ 1 0] padding with each bit corresponds to 2us waveform
  + Option 4: Abstain

**Option 1/Option 2/Option 3/Option 4: 0/2/6/3**

**Straw Poll 2:**

* Do you agree that FDMA padding uses the following?
  + Option 1: All-zero data padding using the same WUR-Data rate
  + Option 2: All-one data padding using the same WUR-Data rate

**The straw poll is deferred.**

**Straw Poll 3:**

* Do you agree that FDMA padding uses the following?
  + Option 1: Repeated [0 1] padding with each bit corresponds to 2us waveform, equivalent to all logical “1”s in HDR
  + Option 2: Repeated [1 0] padding with each bit corresponds to 2us waveform, equivalent to all logical “0” in HDR

**Option 1/Option 2: 9/1**

**Straw Poll 4:**

* Do you agree with the following for FDMA?
  + the LSIG Length in a WUR FDMA packet is calculated based on the longest duration among all the non-punctured 20MHz sub-channels before padding.

**Y/N/A: 11/0/0**

**11-18/1557r0 “Padding Design for FDMA” Steve Shellhammer (Qualcomm):** The same problem as in 18/1463 is considered. In contrast to 18/1463, the high SNR case is studied.

**Straw Poll:**

* Do you agree to add the following to the draft?
  + “The Padding Field should be chosen to minimize correlation with the HDR and LDR Sync Fields, to avoid false alarms of WUR Sync detection. One recommended padding design is a continuous sequence of 4 µs MC-OOK On symbols.”

**Y/N/A: 2/5/5**

**11-18/1477r0 “ Proposed Spec test”, Dongguk Lim (LGE):** The figures illustrating the length related to FDMA have been updated compared to D0.4.

Some discussion related to whether the padding was also part of DATA as illustrated in the figures.

The answer is that it was. Based on the discussion in the group it was decided that this should not be the case and it is suggested to therefore update the proposed spec text accordingly.

**11-18/1475r0 “PAPR Investigation on FDMA Transmission Follow-up”, Eunsung Park (LGE):** Different phase rotations have been evaluated for FDMA in order to find which one gives the smallest PAR. The evaluation is done for the three examples provided in the appendix.

**Q:** I don’t believe the 1 dB difference really matters.

**Q:** The investigation is concerned with the three examples, but since one may implement something else it is not clear that these phase rotations are optimal for what is selected to be implemented anyway. Therefore, I suggest to not specify this at all.

**11-18/1196r1 “Spec Text on Recommended CSD” Steve Shellhammer (Qualcomm):** Steve starts to presents the proposed spec text, but does not finish before the session is ended.

**The PHY ad-hoc meeting is recessed at 3.30 pm**

**Monday, September 10 2018, 1:30-3:30 pm**

**TGba MAC ad-hoc Meeting**

Ad-hoc Group Chair: Minyoung PARK (Intel)

Ad-hoc Secretary: Yunsong YANG (Huawei)

1. Called to order at 13:31 local time by Minyoung Park.
2. Attendance: 24.
3. Approval of agenda (11-18-1381r2 has been approved in AM2 session and is shown on the screen)

* No changes, comments or questions.
* Agenda (r2), as approved, will be used for this session.

1. Review patent policy and guidelines
   * No items identified.
2. Presentation
   * 11-18-1376-00-00ba-discussion-on-wur-capabilities-element (Lei Huang, Panasonic)
     + Various fields in the WUR Capability element contain only reserved bits for the AP. Therefore, propose to remove the WUR Capability element from the Beacon, Probe Response, and Association Response frames. A WUR AP indicates that it is WUR-capable by including the WUR Operation element, instead.
     + There are no disputes that those fields currently contains only reserved bits. However, several members express the concern that the proposed optimization is too early and may prevent possible AP capabilities to be added in the future. It would be better that the group consider such optimization at a later stage when we know for sure that there is no AP capability that needs to be indicated.
     + SP deferred.
   * 11-18-1490-01-00ba-response-frame-in-wur-mode-setup (Suhwook Kim, LGE)
     + Propose to add additional Status Code values for “Denied” with specific reasons. The goal is to provide more information to the requesting STA as to why the request is denied so that the STA may make an informed decision as to what to do next.
     + Members understand that value 2 allows the STA to request again using new parameters. However, it is questioned whether value 3 actually provides information clear enough to the STA.
     + Need more offline discussion.
     + SP deferred.
   * 11-18-1520-01-00ba-duty-cycle-operation-clarifications (Rojan Chitrakar, Panasonic)
     + As to the question of when the STA can enter the sleep mode, it is clarified that the STA can enter the sleep mode at any time after the WUR mode is negotiated. The Starting Time of the WUR Duty Cycle only tells the boundary of each Duty Cycle.
     + The author world like to make the field 8 octets.
     + SP1:
       - Discussion: removed the text after the “8 octets”.

SP1 (as modified): Do you agree to change the “Starting Time Of the WUR Duty Cycle” field size to 8 octets?

Result: Y/N/A = 12/0/2.

* + - SP2 and SP3: deferred.
  + 11-18-1554-00-00ba-indicating-neighboring-bss-wur-discovery-frame-offset (Xiaofei Wang, InterDigital)
    - Questioned whether, with the clock drift, adding the offset will provide accurate timing of the Neighbor BSS’s transmission of WUR Discovery frame or not.
    - Commented that it could increase the chance that the STA misses the detection of the WUR Discovery frame if too aggressively trying to save more power.
    - Commented that background research is the best mode for using the WUR Discovery frame,
    - There was a confusion as to whether the Beacon needs to be received in order to synchronize with the Neighbor BSS in the first place.
    - Xiaofei further presented the text proposal in doc. 11-18-1555r0 to provide some clarity.
    - Members are yet convinced of the usage of this feature. More offline discussions are needed.
    - SP: deferred.
  + 11-18-1552-00-00ba-wur-only-discovery-mode-for-wur-stas (Xiaofei Wang, InterDigital)
    - Questioned on what needs to be specified on the STA side, given all information needed are already defined on the AP side.
    - Commented that the WUR scanning probably most likely will serve as an interim scanning. Additional active scanning or passive scanning is needed afterwards in order to provide BSSParameterSet to the SME.
    - Also commented that the WUR Discovery frame is unprotected and can be faked. Additional active or passive scanning is a better way to confirm that the AP is there. Mentioned that an integrity protection scheme for Beacon frame is currently being considered for REVmd.
    - Out of time. Will continue the Q&A in the next MAC Ad-hoc session.

1. Recessed at 15:32 local time.

**Monday, September 10 2018, 4:00-6:00 pm**

**TGba PHY ad-hoc Meeting**

Ad-hoc Group Chair: Eunsung Park (LGE)

Ad-hoc Secretary: Leif Wilhelmsson (Ericsson)

**Meeting called to order at 4.00 pm by Chair Eunsung Park (LGE).** 5 persons in the room.

**Presentations:**

**11-18/1551r0 “An Investigation on SYNC Detector False Alarms”, Alphan Sahin (InterDigital):** An alternative detector is presented which is shown to give a better trade-off between missed detection and false alarm. The proposed detector takes the noise into account to achieve this.

**Q:** You are estimating the noise at both sides of the correlation peak?

**A:** Yes.

**Q:** Is there any preferred sequence?

**A:** No, we did not look into this.

Due to the very small number of people present, it did not make sense to have any more presentations.

**The meeting is declared to be in recess at 4.25 pm**

**Monday, September 10 2018, 4:00-6:00 pm**

**TGba MAC ad-hoc Meeting**

Ad-hoc Group Chair: Minyoung PARK (Intel)

Ad-hoc Secretary: Yunsong YANG (Huawei)

1. Called to order at 16:01 local time by Minyoung Park.
2. Attendance: 16.
3. Approval of agenda (11-18-1381r3 on the server and shown on the screen)

* No comments or questions.
* Agenda (r3) is approved unanimously.

1. Review patent policy and guidelines
   * No items identified.
2. Presentation
   * Q&A for 11-18-1552-00-00ba-wur-only-discovery-mode-for-wur-stas (Xiaofei Wang, InterDigital)
     + Xiaofei: the intent is to achieve the use case 9A in the use case doc. 11-17-1386r7.
     + Discussion on if the WUR beacon can be used for such purpose.
     + More offline discussion needed.
     + SP deferred.
   * 11-18-1599-00-00ba-draft-text-for-secure-wur-frame-format-tbds (Alfred Asterjadhi, Qualcomm)
     + Commented that the reserved bits in the STA Info field format (figure 9-963e1) are wasteful and should be better used for carry more WIDs. Suggest to remove the reserved bits.
       - The related text are highlighted to indicate that a decision is pending.
     + Commented on the last sub-bullet in clause 31.8.3.1, that the PPN is 12-bits but the Sequence Number field is only 8 bits.
       - Deleted the reference of the Sequence Number field. The PPN is in the entire TD Control field.
     + A number of editorial changes are also made along the review.
     + The document is updated as r1.

SP: Do you support to adopt the spec changes in doc. 11-18/1599r1?

Result: Y/N/A = 3/0/3.

* + 11-18-1538-01-00ba-multi-wid-addressed-wur-frame (Kaiying Lv, ZTE)
    - Discussed the Block ID allocation scheme.
    - Kaiying: the first WID within a block can be the block ID. The alternative approach is to assign a unique value (which cannot be reused as WID) as the block ID. But it consumes the WID space.
    - Discussed the example. One WID can be the first WID of multiple blocks (each of the multiple blocks is at a different granularity level). So, also need to signaling the granularity level.
    - Discussed the number of granularity levels needed. Two levels of granularity may not be adequate as the WIDs of the STAs to be waken may be spread all over the place.
    - More offline discussion needed.
    - SP deferred.
  + 11-18-1594-00-00ba-discussion-on-the-frame-body-in-vl-wake-up-frame (Woojin Ahn, WILUS)
    - Commented that if we can’t agree on the detailed scheduling information, there will be more TBDs to the draft.
    - Suggested that we can agree on the format for now and agree that the 4 bits are reserved. And define how to use them later.
    - Out of time. Will come back at a later session.

1. Recessed at 18:05 local time.

**Tuesday, September 11 2018, 10:30-12:30 am**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document:

<https://mentor.ieee.org/802.11/dcn/18/11-18-1381-05-00ba-tgba-agenda-2018-september.pptx>

* Call meeting to order
* IEEE 802 and 802.11 IPR Policy and procedure
* Presentations, Recess

**Chair Minyoung Park (Intel) calls the meeting to order at 10.32 am.** (about30 persons in the room.)

Minyoung goes through the agenda and points out that he has added a motion on the coexistence assurance document to the agenda on Thursday PM1.

Minyoung asks if there are any questions on the agenda. No questions asked.

Minyoung makes a Call for Potentially Essential Patents. No potentially essential patents reported and no questions asked.

Steve gives an update on the PHY progress from the PHY Ad-hoc meetings.

**Presentations:**

**11-18/1196r1 “Spec Text on Recommended CSD”, Steve Shellhammer (Qualcomm):** The document as already been presented, but a quick recap is provided since some people were not present at that time.

**Straw Poll**

Do you support the Spec Text in this document IEEE 802.11-18/1196r1?

**Y/N/A: 13/0/7**

**11-18/1567r0 “Spec Text on MC-OOK Symbol Randomization”, Steve Shellhammer (Qualcomm):** This document contains the spec text which is the results of a harmonization of different inputs targeting to minimize spectral lines and flattening the spectrum of the transmitted signal. The reason for eliminating spectral lines and flattening the spectrum is to allow for as high transmission power as possible.

Q: Is the randomization also seen as an example, or is it mandatory

A: The intention was that it should be mandatory to allow for coherent reception.

Q: The LFSR content is not really needed in the Table, it suffices to give b2, b1, and b0.

A: The idea was to make this example overly clear. You are probably correct that it is not needed.

Q: If you consider that you gain 1 dB, the added complexity is exceptionally small.

**Straw Poll:**

Do you support the Spec Text in this document 802.11-18/1567r1?

**Y/N/A: 8/0/12**

**11-18/1545r1 “TX Requirement – Spectral flatness” Leif Wilhelmsson (Ericsson):** The contribution presents a suggested approach for defining spectral flatness and a corresponding requirement. The approach is closely related to the work done within the TG to ensure that the transmitted signal can be transmitted with as high power as possible and not unnecessarily limited because of regulatory PSD limitations.

**Straw Poll 1:**

Do you believe Spectral flatness should be a requirement for 11ba?

**Y/N/A: 14/0/9**

**Straw Poll 2:**

Do you believe the Spectral flatness requirement for 11ba should be specified along the lines described in this contribution and that we should prepare this text for D1.0?

**Y/N/A: 15/0/5**

**11-18/1528r1 “Annex Update for MC-OOK Symbol Examples” Dennis Sundman (Ericsson):** Text has been added to the annex in order to explain why the examples have been selected.

**Q:** I don’t think Example 1 has that good PAPR, so I don’t know what it means that the sequence has low PAPR.

**A:** Let’s update the text so that it says that it has the lowest PAPR among the BPSK MC-OOK On symbols.

**Straw Poll:**

Do you support the addition of Spec Text as marked in Red in this document IEEE 802.11-18/1528r1?

**Y/N/A: 15/0/5**

**11-18/1564r0, “Further Discussion on Content of BPSK”, Minyoung Park (Intel):** Since there has been some offline discussions regarding the BPSK Mark, Minyoung wants to re-run the strawpoll in order to see if the support has increased.

**Straw Poll 5:**

* Do you support to define BPSK Mark as L-SIG/RL-SIG with Length divisible by 3?

**Y/N/A: 10/2/4**

**11-18/1570r1 “Multiple WID WUR Frame Format” Jinsoo Ahn (Yonsei University):**

**The meeting is declared to be in recess 12.30 pm.**

**Tuesday, September 11 2018, 1:30-3:30 pm**

**TGba PHY ad-hoc Meeting**

Ad-hoc Group Chair: Steve Shellhammer (Qualcomm)

Ad-hoc Secretary: Leif Wilhelmsson (Ericsson)

**Meeting called to order at 1.30 pm by Steve Shellhammer (Qualcomm).** About 10 persons in the room.

**Presentations:**

**11-18/1477r1 “Proposed Spec Text for WUR FDMA transmission” Dongguk Lim (LGE):** During the presentation of revision 0, Dongguk received feedback concerning that the Padding should not be part of the WUR Data in the figures, but explicitly indicated. Revision 1 of this contribution has been updated to reflect this.

**Straw Poll:**

Do you support to incorporate the proposed changes in document 18/1477r1 to the next IEEE 802.11ba Draft?

**Y/N/A: 7/0/0**

**11-18/1643r0 “Spec Text on Spectral flatness”, Leif Wilhelmsson (Ericsson):** Based on document 1545r1 and the support for developing spec text along the lines outlined in 1545r1, the PHY ad-hoc group worked on generating the requested text. The result is 11-18/1643r0.

**11-18/1551r0 “An Investigation on SYNC Detector False Alarms” Alphan Sahin (InterDigital):**

The presentation is presented again since so few were in the room when it was presented and there was time for it.

**The meeting is declared to be in recess at 2.50 pm**

**Tuesday, September 11 2018, 1:30-3:30 pm**

**TGba MAC ad-hoc Meeting**

Ad-hoc Group Chair: Minyoung PARK (Intel)

Ad-hoc Secretary: Yunsong YANG (Huawei)

# TGba MAC Ad-hoc Group 13:30-15:30 (PM1) local time

1. Called to order at 13:31 local time by Minyoung Park.
2. Attendance: 34.
3. Approval of agenda (11-18-1381r5 on the server and shown on the screen)

* No comments or questions.
* Agenda (r5) is approved unanimously.

1. Review patent policy and guidelines
   * No items identified.
2. Presentation

11-18-1570-01-00ba-multiple-wid-wur-frame-format (Jinsoo Ahn, Yonsei Univ.)

* Commented that the new indicator for the Multiple WID Support is not necessary. There is no need to use two bits to indicate one capability.
* Discussed that there is no need to indicate the capability of receiving WUR Discovery frame. The Discovery frame is broadcasted to everyone. It doesn’t matter if a particular STA is capable of receiving it or not.
* Discussed that there is no need to indicate the capability of receiving WUR Vendor-Specific frame. If the vendor implements it, the vendor’s device will know.
* Discussed whether the name of the Nonzero Length Frame Body Support bit is confusing. But the group decided not to change the name of the bit.
* SP1: skipped.
* SP2 discussion:
  + Members requested that the word padding (in option A) be changed to reserved bits.
  + Discussed the difference between padding and reserved bit.
  + So, 4-bit padding is changed to 4 reserved bits.

SP2: Which option do you prefer?

* Option A : 12-bit WID + 4-bit padding for each WID as a multi-WID Wake-up Frame format
* Option B : Nx12-bit WID + small padding as a multi-WID wake-up Frame format
* Abstain

Result:

* Option A: 9.
* Option B: 10.
* Abstain = 7.
* SP3: skipped.

Q&A for 11-18-1594-01-00ba-discussion-on-the-frame-body-in-vl-wake-up-frame (Woojin Ahn, WILUS)

* SP1: skipped.
* SP2 discussion:
  + Commented that the question is dependent on the previous question (i.e., whether there is space for the schedule information.)
  + There is suggestion to put the schedule information in the TD Control field.
  + It is clarified that there is no need to delay the wake up for an individually addressed Wake Up frame.
* More offline discussion needed.
* SP2: deferred.

11-18-0895-03-00ba-addressing-in-vl-wake-up-frame (Woojin Ahn, WILUS)

* Document has been presented before.
* Discussion on the original SP2:
  + Commented that the added text “and does not have Frame Body field” is unnecessary. The Frame Body field isn’t present in individually addressed WUR Wake Up frame.
    - The added text is removed.
  + It is clarified that the first WID is not included in the frame body field.
  + Commented on that value 0 may not be good.
  + Suggested using TXID in the address field of VL Wake up frame.
* The original SP2 becomes SP3 and is skipped.
* Created a new SP2:

New SP2: Which do you prefer?

The address field of the VL WUR Wake-up frame is set to:

* Option 1) TXID
* Option 2) the first WUR ID in the list of WUR identifiers
* Abs:

Result:

* Option 1: 6
* Option 2: 7
* Abstain: 3.

11-18-1521-00-00ba-spec-text-for-wur-duty-cycle-operation-clarification (Rojan Chitrakar, Panasonic)

* Commented, on the note added under the table, that this isn’t the first place that the WUR mode is mentioned. Suggested adding the note where the WUR mode is first mentioned.
  + The author still believes that this is the right place.
* Then commented that the WUR Mode Suspend should also be mentioned in the note.
  + Added the WUR Mode Suspend.
* The document is updated to r1.

SP: Do you agree to incorporate the proposed changes provided in document 11-18/1521r1 in the next draft of TGba?

Result: Y/N/A = 14/0/0.

11-18-1523-01-00ba-wur-fdma-transmission-in-duty-cycle-mode (Rojan Chitrakar, Panasonic)

* Commented that we don’t this on the PCR and questioned why we want to do it for WUR.
* Commented the absence duration can be seen as an OFF duration. So, this can be accommodated by the duty-cycle operation. It isn’t always-on.
* Discussed that the behavior should be similar to the current behavior on the PCR in implementation:
  + The AP defers the transmission of any WUR Wake Up frame on the WUR channel for this STA from the beginning of the TWBTT. The AP waits until the WUR Beacon is transmitted on the WUR Primary channel, then transmits the WUR Wake Up frame shortly after that.
  + On the STA side, the STA starts an implementation-specific timer when switching to the Primary channel to listen to the WUR Beacon at the TWBTT and returns to its WUR channel when the timer expires.

SP1: Do you agree that an AP capable of transmitting WUR FDMA PPDU may allocate an “Always On” WUR STA capable of switching WUR channels to a WUR channel other than the WUR primary channel?

Result: Y/N/A = 9/2/4.

SP2: Do you agree that Absence Durations that start at TWBTTs may be defined as shown in slide 5?

The AP shall not transmit WUR frames to the WUR STA on its allocated WUR non-primary channel during Absence Durations.

Result: Y/N/A = 7/1/5.

SP3: Do you agree that the AP indicates the Absence Duration to an “Always On” WUR STA not allocated to the WUR primary channel in the WUR Mode element (during WUR Mode setup negotiation)?

Result: Y/N/A = 7/3/8.

1. Recessed at 15:33 local time. (Note that the MAC Ad-hoc is eventually adjourned at the beginning of Wednesday PM2 session.)

**Wednesday, September 12 2018, 4:00-6:00 pm**

**Meeting Agenda:**

The meeting agenda is shown below, and published in the agenda document:

<https://mentor.ieee.org/802.11/dcn/18/11-18-1381-07-00ba-tgba-agenda-2018-september.pptx>

* Call meeting to order
* IEEE 802 and 802.11 IPR Policy and procedure
* Presentations/SPs
* **Motion – Coexistence Assurance Document**
* **Motions,** Recess

**Minyoung calls the meeting to order at 4.00 pm.** (About 55 persons in the room.)

The PHY and MAC ad-hoc meetings are adjourned. These were recessed earlier as the original agenda suggested there would be an additional ad-hoc session.

Minyoung reminds about recording the attendance.

Minyoung goes through the modified agenda and comments on that one session has been cancelled. Minyoung asks if there is any question.

**Motion**: Move to approve the agenda in document 11-18/1381r7

Move: John Notor

Second: Alfred Asterjadhi

Motion passed by unanimous consent

Minyoung makes a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked.

**Presentations:**

**11-18/1557r1 “Padding Design for FDMA”, Steve Shellhammer (Qualcomm):**  This is an updated revision taking into account results shown in 11-18/1463r0. Basically, verifying the results in 11-18/1463r0.

**Q:** Are you proposing to change the decision based on this.

**A:** We did not have any decision, and basically this is just supporting the results in 11-18/1463r0.

**11-18/1637r1 “Spec Text on FDMA Padding Content”, Rui Cao (Marvell):**

**Q:** Will the requirement LSIG/3 have any impact on this?

**A:** This relation is guaranteed.

**Q:** Is this mandatory or optional.

**A:** FDMA is optional, but if you do FDMA this is mandatory for padding.

**Straw Poll**

Do you support the Spec Text in this document 802.11-18/1637r1?

**Y/N/A: 27/0/1**

The motion is postponed due to that the document needs to be uploaded.

**11-18/1643r1, “Spec Text on Spectral flatness”, Leif Wilhelmsson (Ericsson);**

**Straw Poll:**

Do you support the Spec Text in this document 802.11-18/1643r0?

**Y/N/A: 20/0/9**

**11-18/1490r4 “Response frame in WUR Mode Setup”, Suhwook Kim (LGE):** This is a slightly updated version of what has been presented in MAC ad-hoc sessions.

**Straw Poll 1:**

Do you support modification of WUR Mode Response Status field as follow

* + 0: Accept
  + 1: Denied, due to unspecified reason
  + 2: Denied, the preferred Duty Cycle Period is too large
  + 3 – 255: Reserved

**Y/N/A: 16/0/14**

**Straw Poll 2:**

Do you support modification of WUR Mode Response Status field as follow

* + 0: Accept
  + 1: Denied, due to unspecified reason
  + 2: Denied, the preferred Duty Cycle Period is too large
  + 3: Denied, WUR Mode Setup is unavailable until TBTT for next DTIM Beacon
  + 4-255: Reserved

**Y/N/A: 5/3/20**

**11-18/1538r2 “Block Addressed WUR Frame”, Kaiying Lv(ZTE)** The contribution has been presented in a MAC ad-hoc session, and this revision contains a minor update.

**Straw Poll 1:**

Do you agree the Block ID allocation scheme shown in slide 3 and 4?

**Y/N/A: 3/2/28**

**11-18/1524r2 “Spec text for WUR FDMA transmission in Duty Cycle mode”, Rojan Chitrakar (Panasonic)** Minor update made in this revision compared to the earlier one.

**Straw Poll:**

Do you agree to incorporate the proposed changes provided in document 11-18/1524r2 in the next draft of TGba?

**Y/N/A: 17/0/7**

**Motions:**

**Motion – Coexistence Assurance Document**

Move to adopt 11-18/1069r0 as the coexistence assurance document for 802.11ba amendment.

**Move:** Yongho Seok

**Second:** Xiaofei Wang

**Y/N/A: 28/0/2, motion passes**

**11-18/1196r2**

**Motion**

Move to incorporate the specification text changes in document IEEE 802.11-18/1196r2 into the next version of the draft.

**Move:** Steve Shellhammer

**Second:** Po-Kai Huang

Motion passed by unanimous consent

**11-18/1567r2**

**Motion:**

Move to incorporate the specification text changes in document IEEE 802.11-18/1567r2 into the next version of the draft.

**Move:** Steve Shellhammer

**Second:** Miguel Lopez

Motion passed by unanimous consent

**11-18/1637r1**

**Motion:**

Move to incorporate the specification text changes in document IEEE 802.11-18/1637r1 into the next version of the draft.

**Move:** Rui Cao

**Second:** Miguel Lopez

Motion passed by unanimous consent

**11-18/1638r2**

**Motion:**

Move to adopt the Spec Text changes in this document IEEE 802.11-18/1638r2?

**Move:** Minyoung Park

**Second:** Bin Tian

**Y/N/A: 18/0/9, motion passes**

**Recess at 6.00 pm.**

**Thursday, September 13 2018, 1:30-3:30 pm**

**Meeting Agenda:**

The meeting agenda is shown below and published in the agenda document:

<https://mentor.ieee.org/802.11/dcn/18/11-18-1381-08-00ba-tgba-agenda-2018-september.pptx>

* Call meeting to order
* IEEE 802 and 802.11 IPR Policy and procedure
* Motions
* Motion –802.11 WG letter ballot
* TG timeline discussion
* Goal for November 2018 F2F meeting
* Teleconference call schedule
* Presentations
* Recess

**Minyoung calls the meeting to order at 1.30 pm. (About 35 persons in the room.)**

Minyoung reminds about recording the attendance.

Minyoung goes through the agenda and asks if there is any question. There are no questions and the agenda is approved.

Minyoung makes a Call for Potentially Essential Patents. No potentially essential patents reported and no questions asked.

**Motions:**

**11-18/1528r3**

**Motion:**

Move to incorporate the specification text changes as marked in **Red** in this document, IEEE 802.11-18/1528r3, into the next version of the TGba draft.

**Move:** Dennis Sundman

**Second:** Miguel Lopez

Motion passed by unanimous consent

**11-18/1643r2**

**Motion:**

Move to incorporate the specification text changes in document IEEE 802.11-18/1643r2 into the next version of the draft of TGba.

**Move:** Leif Wilhelmsson

**Second:** Steve Shellhammer

Motion passed by unanimous consent

**11-18/1477r2**

**Motion:**

Move to adopt the spec. text changes in Doc. IEEE 802.11-18/1477r2 into the next IEEE 802.11ba Draft?

**Move:** Dongguk Lim

**Second:** Eunsung Park

Motion passed by unanimous consent

**11-18/1599r4**

**Motion:**

Move to adopt the changes as shown in 11-18/1599r4 to the next version of the TGba draft

**Move:** Alfred Asterjadhi

**Second:** Po-Kai Huang

Y/N/A: 10/2/12, motion passes

**11-18/1649r1**

**Motion 1:**

Move to adopt the spec text in document 802.11-18/1521r1 into the 802.11ba draft D1.0.

**Move:** Rojan Chitrakar

**Second:** Lei Huang

Motion passed by unanimous consent

**Motion 2:**

Move to adopt the spec text in document 802.11-18/1524r2 into the 802.11ba draft D1.0.

**Move:** Rojan Chitrakar

**Second:** Lei Huang

Motion passed by unanimous consent

**11-18/1659r1**

**Motion:**

Move to incorporate the specification text change in document 18/1659r1 into the next version of the draft

**Move:** Suhwook Kim

**Second:** Dongguk Lim

Motion passed by unanimous consent

**Motion – WG Letter Ballot**

* Instruct the editor to generate TGba Draft 1.0, and
* Approve a 30 day Working Group Technical Letter Ballot asking the question “Should TGba Draft 1.0 be forwarded to Sponsor Ballot?”

**Move:** Yunsong Yang

**Second:** Xiaofei Wang

**Y/N/A:** 30/0/1, motion passes

**TGba Timeline**

The TGba timeline, shown below, is left unchanged.

* **2017**
  + **January**: TGba formation meeting
* **2018**
  + **January**: TGba Draft 0.1
  + **September**: TGba Draft 1.0
* **2019:**
  + **January**: TGba Draft 2.0
  + **May**: MDR (mandatory document review)
  + **September**: Formation of sponsor ballot pool
  + **November**: Sponsor ballot
* **2020:**
  + **September**: RevCom

**Goals for November 2018**

* Comment resolution for Draft 1.0
* Review TG timeline

**Teleconference Call Schedule:**

* November 5th (Monday) 10:00 ET, 1.5 hour

**Presentations:**

**11-18/1669r1 “Proposed spec text for Frame Body field in the variable-length WUR Wake Up frame”, Woojin Ahn (WILUS)**

**Q:** I believe this text is already included in the presentation by Alfred Asterjadhi.

**Q:** This presentation is not to resolve any TBDs in the text?

**A:** No

**Straw Poll:**

Do you support to adopt the spec changes as shown in doc 11-18/1669r1 in the next version of TGba draft?

**Y/N/A:** 16/0/13

**Motion:**

Move to adopt the changes as shown in 11-18/1669r1 in the next version of TGba draft

Move: Woojin Ahn

Second: John Son

Motion passed by unanimous consent

**11-18/1670r0 “Proposed spec text for the address of the variable-length WUR Wake Up frame”, Woojin Ahn (WILUS)**

Since the group seems to have widely different opinions, Minyoung suggests that the text is discussed more offline before voting.

**Straw Poll 1:**

Which option do you prefer?

**Option 1/Option 2/Abstain: 10/5/12**

**The meeting in adjourned at 3.57 pm.**