IEEE P802.11
Wireless LANs

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| IEEE 802.11bd Task Group Meeting Minutes – December 2019 |
| Date: 2019-12-17 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| James Lepp | BlackBerry | 1001 Farrar Road, Ottawa, Canada |  | jlepp@blackberry.com |
| Joseph Levy | Interdigital |  |  |  |
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Abstract

This document includes minutes of all IEEE 802.11bd teleconference between the November and January face to face meetings.

*Versioning:*

R0: Uploaded after Dec 3 teleconference

R1: Uploaded after Dec 17 teleconference

# Tuesday, December 3, 2020

## Opening

* 1. Call to order 9:10 AM EST
	2. Chair introduced the patent policy and meeting rules.
	3. No response to the call for patents.

## Agenda

* 1. Chair presented the agenda as sent on email list: <http://www.ieee802.org/11/email/stds-802-11-tgbd/msg00152.html>.
	2. Chair is verifying that presenters are on the call and order of presentations
	3. Agenda for this session has been adopted without objection

### Technical Submission ([802.11-19/2115r0](https://mentor.ieee.org/802.11/dcn/19/11-19-2115-00-00bd-broadcast-ack-operation.pptx))

* 1. Presentation by Onn Haran
	2. Discussion
		1. Question about slide 5 option 2, what is the MAC header
		2. Response: there are 24 bits available to indicate this in the MAC header
		3. Question: on slide 11 vs slide 7 are two different approaches. Which one do you prefer.
		4. Response: they don’t conflict each other. Could use either or both. If group chooses to reduce the amount of work, we just want to define one, the most efficient should be used and that is the slide 11 scheme.
		5. Comment: this was discussed in 802.11aa and it was found that multi-recipient doesn’t do error recovery well and is complex to implement.
		6. Response: doesn’t agree with complexity argument
		7. Comment: Even if we decide to include a mechanism for reliable multicast, this isn’t a good solution. (still discussing slide 11). The issue is with PIFS recovery if the first BroadcastAck is wrong.
		8. Comment on slide 10, is this the only change required for the new BlockAck procedure. There are additional cases that rely on the BlockAck agreement and maintaining the scoreboard context and buffer.
		9. Question: How does the originator know the group to which it is sending? Are their additional messages for this?
		10. Response: There is a safety protocol running on top of 802.11. This safety protocol will have an understanding of the other vehicles around it, and which of them it wants to communicate with in this manner.
		11. Comment: The upper layer will have the information about which other stations are around.
		12. Question: on slide 7, does it only allow for one retry?
		13. Comment: this is only an example. The unacknowledged broadcast is used for the safety messages and they are repeated every 100ms. For other types of signaling you want it to be reliable and retry.
		14. Question: In your scenario you are considering BlockAck as a BroadcastAck.
		15. Comment: Yes, considering to use BlockAck as the mechanism to transmit Broadcast Ack
		16. Question: Have you considered just sending simple Ack, it may save time.
		17. Comment: If not using A-MPDU, might want to consider shorter simple Ack for these cases.
		18. Comment: need to check which fields are needed. (Ack vs BlockAck)
		19. Question to the other commenter on why PIFS recovery can’t be done on slide 11.
		20. Comment that the OCB environment changes more quickly than other 802.11 environments so finishing transmission sequences quickly is important.
		21. Comment: The use case is platooning which has low relative speed, but possibly a number of hidden nodes. Suggestion that RTS/CTS or CTS-to-self protection before transmitting might be helpful.
		22. Discussion about whether RTS/CTS helps or not.
		23. Would you use basic rate, or higher data rate? 11bd has a larger range of rates.
		24. Straw polls will be added for the January meeting to discuss moving forward with reliable broadcast protocols.

### Technical Submission ([802.11-19/1946r0](https://mentor.ieee.org/802.11/dcn/19/11-19-1946-00-00bd-detection-of-adpative-repetitions.pptx))

* 1. Presentation by Alessio Filippi
	2. Discussion:
		1. Comment about doing repetition with a deterministic gap. If the cause of the original packet failure is a collision, then assuming both transmitters use the same gap, won’t both collide? Suggest to look at the real-world testing outdoors to see what the cause of packet loss are, and if 32us gap is enough to solve it.
		2. Agree that system testing with different channel busy ratio is needed. Discussion about interferer vs low SNR situations.
		3. Comment maybe this is good for NLOS channel.
		4. Comment on adding randomness to the gap between repetitions.
		5. Comment that interference is a big factor and if there is interference the EVM isn’t helpful
		6. Question about the channel model for simulation on slide 16. It appears the channel estimation may not be accurate.
		7. Comment from co-author Vincent Martinez that they have also simulated in more challenging channels and larger number of OFDM symbols, 5, 7, 8.
		8. Comment that there is a way to get both repetition gain, but also get some diversity gain. This may require additional signaling.
		9. Discussion about extra tones on the side of the subcarrier for the data portion to add extra signaling proposal from November.
		10. There are Strawpolls in this presentation and they will be run in January to collect the groups opinion on this topic.

### Regulatory discussion

* 1. Secretary (James) had sent the following two links to the email reflector to inform members of an upcoming regulatory procedure regarding the 5.9GHz spectrum our 802.11bd amendment targets.
		1. <https://www.fcc.gov/news-events/events/2019/12/december-2019-open-commission-meeting>
		2. <https://www.fcc.gov/ecfs/search/filings?limit=50&offset=0&proceedings_name=19-138>
	2. Discussion about the FCC process timeline for draft NPRM (available today), FCC Open meeting (Dec 12), the date the NPRM is published (a date after Dec 13), then it’s a 30-day comment period. This comment period will overlap with our January face to face meeting.
	3. IEEE 802.18 TAG is the group within IEEE 802 that can file comments at the FCC on radio regulatory matters related to our standards.
	4. In the past there was an 802.11 Regulatory Standing Committee. They have historical documents to provide background [11-13/1449](https://mentor.ieee.org/802.11/dcn/13/11-13-1449-02-0reg-proposal-for-dsrc-band-coexistence.pptx) [11-15/0402](https://mentor.ieee.org/802.11/dcn/15/11-15-0402-02-0reg-dsrc-band-sharing-tt-status-and-report-finalization.pptx) [11-14/1596](https://mentor.ieee.org/802.11/dcn/14/11-14-1596-04-0reg-final-report-of-dsrc-coexistence-tiger-team.docx) on this topic that goes back several years.
	5. Suggestion to devote some time to discuss this topic during January face to face.
	6. Suggestion that “802.11bd TG” will want to provide our position to “802.11 WG”.
		1. 802.11bd position may differ or conflict with the position of other parts of 802.11 promoting Wi-Fi operation in the lower 45MHz.
		2. There are other parts of the NPRM where 802.11 may have unified view such as details about channel 180 and 183.
	7. Comments in support to have this as an agenda item in the January meeting
	8. There was a request that Bo ask for some time on this topic at the Wednesday plenary.
	9. Question about the out of band emissions and the loss of the guard band between unlicensed channels and ITS safety channels.
	10. Comment that this is part of the NPRM. The details about power levels and emissions masks are things we can comment on.
	11. Chair (Bo) asks Vice Chair (Joe Levy) to kick off an on-line discussion on the 802.11bd reflector to start building a position before the January face to face meeting.

### Closing

* 1. Chair asks members to send any agenda items for the next teleconference via email.
	2. Chair adjourns at 10:47am

Attendance:

* James Lepp (BlackBerry)
* Bo Sun (ZTE)
* Ronny Yongho Kim (KNUT)
* Bahar Sadeghi (Intel)
* Onn Haran (Autotalks)
* Dongguk Lim (LGE)
* Hanseul Hong
* Vincent Martinez (NXP)
* Hiroyuki Motozuka (Panasonic)
* Hyonjin Jung
* John Kenney (Toyota)
* Joseph Levy (Interdigital)
* Justin Anderson
* Liwen Chu (Marvell)
* Osama Abdul-Magd (Huawei)
* Paul Unterhuber (DLR)
* Suzanne Sloan
* Yonggang Fang (ZTE)
* Yossis
* Yujin Noh
* Ront
* George Calcev
* Allessio Filippi (NXP)
* Steve Sill (USDOT)
* Ionnis Sarris (u-blox)
* HL (Interdigital)
* Yossis
* Yongsu Gwak (KNUT)

# Tuesday, December 17, 2020

## Opening

* 1. Call to order 9:00 AM EST
	2. Chair introduced the patent policy and meeting rules.
	3. No response to the call for patents.

## Agenda

* 1. Chair presented the agenda as sent on email list: <http://www.ieee802.org/11/email/stds-802-11-tgbd/msg00162.html>.

## Discussion on FCC NPRM ([802.11-19/2157r0](https://mentor.ieee.org/802.11/dcn/19/11-19-2157-00-00bd-status-fcc-nprm-for-the-5-9-ghz-band-for-tgbd.pptx))

* 1. Chair displayed the email from 802.18 chair that shows the timeline of the FCC NPRM comment period. It shows when 802.18 can develop and approve comments to be submitted to the FCC. It shows the 802 EC approval timeline
	2. Joseph Levy presented 802.11-19/2157r0
	3. Question about whether 802.11bd can work on something as a group, or go as individuals to 802.18.
	4. Comment that there was discussion at 802.11 CAC. Three paths to send a document to FCC. 802.11, 802.18, 802 EC. 802.11 can submit to FCC if EC “has no objection”.
	5. 802.18 chair provides perspective. Documents drafted by 802.18 go to the 802 EC and are sourced from 802, as a whole.
	6. Discussion about drafting comments via 802.11bd or 802.18.
	7. Further discussion about process of 802.11bd providing positions to 802.18.
	8. Comment from 802.18 Chair (Jay Holcomb) that they would welcome comments from 802.11bd.
	9. Comment from several members that providing comments through 802.18 provides the strongest voice.
	10. Discussion about what parts of 802.11 are proponents for the unlicensed use of lower 45MHz. 802.11ac, 11ax, and 11be.
	11. Discussion of history of the 802.11 Spectrum and Regulatory Tiger Team.
	12. Discussion about OOBE proposals in the NPRM (Slide 10 item 15)
	13. Discussion about timeline at January meeting.
	14. Chair suggests members provide comments on the email reflector discussion that the Vice Chair (Joseph) has started.
	15. *Secretary note: 10am Secretary changes to Joseph Levy*
	16. The time line was reviewed in more detail: typically, after publishing in the US Federal Record there will be a 30-day comment period, and a 60-day reply comments period. (note: this has been confirmed in the NPRM provided by the FCC on 17 December 2019, after the close of this meeting.)
	17. The 802.18 Chair indicated he would supply a working time line, indicating that it was likely that the NPRM would be published in early January.
	18. It was noted that if TGbd supports the action of 802.11 and/or 802/802.18 providing comments or reply comments to the public record regarding the FCC NPRM the decision and final text would need to be available at the January meeting, most likely by the 802.11 mid-week plenary. As it is likely that the comment period will close in early February, and the reply comments period in early March. Hence leaving the January meeting as the only meeting prior to the close of these deadlines.

### Closing

* 1. Chair – summed up the status and reminded participants that input to the discussion should be made on the TGbd reflector to progress this work.
	2. Chair adjourns at 10:25am

Attendance:

* James Lepp (BlackBerry)
* Bo Sun (ZTE)
* Joseph Levy (Interdigital)
* Carl Kain (Noblis)
* Charles Perkins (Qorvo)
* Ronny Yongho Kim
* Alan Berkema (HP)
* Hanseul Hong
* John Kenney (Toyota)
* Paul Unterhuber (DLR)
* Rui Yang (Interdigital)
* Vincent Martinez (NXP)
* Yujin Noh
* Yonggang Fang
* Yongsu Gwak (KNUT)
* Ionnis Sarris (u-blox)
* Jay Holcomb (Itron)
* Dongguk Lim (LG)
* Alessio Filippi (NXP)

# Next Meetings

Face to face:

Hotel Irvine, Irvine, California, USA, January 13, 2019

Teleconferences:

December 17, 9-11am EST

 More information:

 <http://www.ieee802.org/11/email/stds-802-11-tgbd/index.html>

 <http://www.ieee802.org/11/Reports/tgbd_update.htm>