IEEE P802.11
Wireless LANs

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| IEEE 802.11bd Task Group Meeting Minutes – September 2019 |
| Date: 2019-09-18 |
| Author(s): |
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Abstract

This document includes minutes of all IEEE 802.11bd meetings at the IEEE 802.11 interim meeting in Hanoi, Vietnam Sept 15-19, 2019.



Thanks to Hongyuan Zhang and Joseph Levy for recording the minutes during Ad-Hoc sessions.

Versions:

* R0: Uploaded Oct 18.
* R1: Note added to Motion #52. Uploaded Oct 25.

# TGbd Working Group PM1 – Monday, September 16, 2019

### Opening

* 1. Call to order 1:31pm in Hanoi Vietnam. 22 participants in the room.
	2. Displaying agenda 802.11-19/1412r1
	3. Chair introduced the task group leadership and welcomed the members to Hanoi.
	4. Chair presented meeting protocol slide.
	5. Chair presented policy slides and called for potentially essential patents. No response to the call.
	6. Chair presented meeting participation guidelines
	7. Chair presents the agenda for the meeting.
	8. Update there will be a presentation from John Kenney on progress in IEEE 1609 on Tuesday.
	9. No objections to adopting this agenda for the week.
	10. Question about the order of the presentations. Are they in order of submission numbers or grouped by topic.
	11. Chair states that some of the presenters have requested certain order. Please confirm with the ad-hoc chair, they will decide the order.

### Minutes

* 1. **Motion:** Approve the TGbd minutes for Jul meeting and TCs before Sep meeting as below: 802.11-19/1265r1 and 802.11-19/1267r0.
	2. Moved: James Lepp
	3. Seconded: Joseph Levy
	4. Motion passed Unanimously

### Approval of Task Group Documents

* 1. Editor presents draft FRD 802.11-19/0495r2 and highlights changes from the previous version.
	2. Editor presents draft SFD 802.11-19/0497r3 and highlights changes from the previous version.
	3. No discussion
	4. **Motion:** Approve the updated FRD document as in 802.11-19/095r2
	5. Moved Bahar Sadeghi
	6. Second: Qinghua Li
	7. Motion passes unanimously.
	8. **Motion:** Approve the updated SFD document as in 11-19/097r3
	9. Moved: Bahar Sadeghi
	10. Second: Rui Cao
	11. Motion passes unanimously.

### Discussion on Specification Skeleton

* 1. Editor presents the document 802.11-19/1638r0
	2. Request for the membership to review and provide comments to the editor. She would like to run a motion to approve this skeleton on Thursday.
	3. Discussion on the drafting procedure.

### Closing

* 1. Chair informed the group of the ad-hoc meetings
	2. Chair recessed at 2:02pm

# MAC Ad-Hoc PM1 – Monday, September 16, 2019

### Opening

### The Chair, James Lepp, convened the meeting at 14:05 ICT. Approx. 20 participants in the room.

### Agenda displayed is 802.11-19/1632r1, (TGbd agenda: 802.11-19/1412r2).

### The Chair welcomed the members and introduced the Ad Hoc leadership.

### The Chair reviewed the administrative slides (slides 1-9) and called for potentially essential patents.

### No response to the call for patents.

### Agenda

### Chair presented the agenda 802. 11-19/1632r1

### Discussion on the agenda

### The Chair called for additional contributions – none were forthcoming

### The first author of contribution 11-19/1158r2 was not present so the contribution will be presented by Yossi Shaul – it was requested to present first – there was no objection.

### It was agreed that the contributions will be taken in the order shown below:

### 11-19/1158r2 Mechanisms for reliable V2X operation

### 11-19/1482r0 Discussion on Multiple Frame Transmission in 11bd

### 11-19/1502r0 Frame Aggregation

### 11-19/1503r0 Wakeup Radio in ITS band

### 11-19/1619r0 PSDU length indication

### There was a question as to where the 20 MHz channel discussions would take place, the Chair informed that the 20 MHz channel discussion has been agreed to be had in the TG session, not in the Ad Hoc session.

### Agenda is accepted by unanimous consent.

### Technical Presentation 802.11-19/1158r2 (Yossi Shaul)

* 1. Presented
	2. Q – you went thought the material on RSSI very quickly, and you explain the impact of RSSI?
	3. A – In this contribution to meet functional safety requirements, the RSSI of the received signal is compared to the RSSI of the ACK
	4. Q – Why is rebroadcasting being discussed, in DSRC there is no rebroadcast of safety messages.
	5. A – In the EU, rebroadcast is allowed within 1 second – hence for reliability rebroadcast is allowed and necessary reliability.
	6. C – This is only for the case of extreme congestion or if the vehicle is not moving, so I don’t see the need for rebroadcast. I don’t see any information/study on channel congestion. Therefore, I don’t think we should consider rebroadcast – unless studies are done to support it.
	7. C – This proposal for rebroadcast is only for the case where the “self” MAC address in not in BroadcastACK, and Broadcast ACK is sent every 100ms in sparse conditions, every 1 sec in dense conditions, as shown on slide 6.
	8. C – BroadcastACK rules should not be defined here, they should be defined elsewhere, simply defining BroadcastACK is all we should do in TGbd.
	9. C – I see this as reducing the density of vehicles that can be supported, so I don’t think this is a good idea. Our focus should be on avoiding collisions, it would probably be best to nominate one vehicle to provide the feedback, but if all vehicles must send the feedback, I don’t see this working well. I think this needs more work and study.
	10. Q – Is RSSI useful to have?
	11. A – Yes RSSI is a nice to have, the MAC address is what is important.
	12. Q – Could this be put in the data frame?
	13. A – Yes it could be.
	14. C – Everything that includes data is in OCB as compared to the control frames.
	15. C – If we are talking about a basic safety message – every vehicle is a Tx and Rx – this allows the inclusion of this information in the BSM, which lowers the OH of sending this information in a separate transmission. Where should these rules be defined (here or ETSI or elsewhere). If you are a BSM sender, you send the MAC of the last BSM you received, unless there is a collision.
	16. No straw polls were run.

### Technical Presentation 802.11-19/1482r0 (Insun Jang)

* 1. Presented
	2. Q – How does this impact legacy devices?
	3. A – The upper layers can provide fairness.
	4. C – If the TXOP is more than zero, then this has to be balanced by the upper layers.
	5. Q – On slide 9: what is the benefit of using TXOP instead of aggregating the frames? Frame aggregation is more beneficial.
	6. A – For the frame aggregation case the OH is limited, the multi-frame case fair uses channel access.
	7. C – I think you need to support the baseline specification, where ACK is required, for broadcast there is not ACK.
	8. C – The TXOP is set to 0 in the base line specification, I am proposing to release this limit.
	9. Q – You are proposing to introduce the concept of TXOP holder to TGbd?
	10. A – Yes, I am proposing we add these concepts.
	11. Q – Do you know why 11p set TXOP to zero? Why should we change this? I think it was done to eliminate issues with hundreds of users using the channel., we don’t have one STA having multiple frames to transfer. In V2X one uses the channel and then gets off the channel, so others can use the channel. Are you assuming the STA has large amounts of data to data to send? I think the assumption of a large amount of data works against what 11p was designed to do – which was to limit channel access time. We should assume 11p made their decision for a reason and we should not change things without understanding why we are changing them.
	12. A – when there are too many stations, the upper layer can control the TXOP limit.
	13. Q – are their simulations to support this?
	14. A – no
	15. Do you agree to add the following text into 11bd SFD?
	- 11bd shall support multiple frame transmission in a TXOP when operating on OCB broadcast mode or OCB unicast mode.
	Result: yes 2, no 2, abstain 4

Chair recessed at 3:30pm

# PHY Ad-Hoc PM1 – Monday, September 16, 2019

### Opening

* 1. Call to order 2:00pm in Hanoi Vietnam
	2. Displaying agenda 11-19-1637r0
	3. Chair: Qinghua Li
	4. Chair: Hongyuan Zhang

### Technical Presentation 802.11-19/1151r1 (Yujin Noh, Newracom)

* 1. Discussion

Q: Why not consider M6?

A: Based on simulation, channel dependent.

Q: How about longer midamble periods.

A: Did not simulate longer periodicity.

* 1. SP1: **Do you agree to add the following to section 3 in 11bd SFD?**

“The number of midamble periods:

$$N\_{MA}=\left⌊\left(N\_{SYM}-1\right)/M\right⌋$$

*NSYM* : the number of data symbols”

Y5/N0/A4

### Technical Presentation 802.11-19/1152r1 (Yujin Noh, Newracom)

* 1. Discussion

Q: NGV-LTF and MA use the same compression or non-compression?

A: NGV-LTF was unchanged in simulation

Q: prefer unify compression between preamble and midamble.

A: agree

Q: also prefer preamble and midamble using same compression/noncompression mode.

### Technical Presentation 802.11-19/1109r1 (Dongguk Lim, LG)

* 1. Discussion

Q: is the goodput scaler M/(M+1) always valid with 300 bytes ?

A: always scale, did not consider corner cases.

Q: again on M/(M+1) is not accurate in the case of compressed midambles.

Q: slide 3 why Op3 is better than Op1 while they have the same duration?

A: because with Op3 the channel is sounded twice with average.

### Technical Presentation 802.11-19/1472r0 (Rui Cao, Marvell)

* 1. Discussion

Q: why use “or” between C-LTF and RC-LTF

A: different cases may show different preference.

Q: 2SS is optional, why we define its midamble periodicity?

A: you have to consider it for signaling

Q: Slide 6, 0dB what is wrong with CLTF and LTF. Was smoothing used?

A: very low SNR, CE estimation quality. Smoothing was simulated.

# Task Group AM1 – Tuesday, September 17, 2019

### Opening

* 1. Call to order 8:00am in Hanoi Vietnam. 24 participants are in the room.
	2. Displaying agenda 1412r2
	3. Chair introduced the task group leadership
	4. Chair made a call for potentially essential patent claims. No response
	5. Chair displayed IEEE meeting policy slides.
	6. Chair presents the agenda for the session. No discussion. No objection to adopting this agenda for the session.

### IEEE 1609 Progress Update (John Kenney)

* 1. Verbal update, no slides are being presented
		1. John talks about progress to date in collaboration between IEEE 1609 and IEEE 802.11bd
		2. In June IEEE 1609 meeting there was a presentation by Michael Fischer similar to IEEE 802.11-19/0273r4
		3. At that meeting IEEE 1609 sent a liaison to that they support 802.11bd amending the interface specifications.
		4. 802.11bd received this liaison at the July Vienna meeting and read the liaison but has not yet taken action.
		5. Last week IEEE 1609 met and discussed progress of the collaboration.
		6. Liaison person has previously been appointed: John Kenney
		7. IEEE 1609 is still considering joint collocated meeting. Result from last week was not to proceed with scheduling this for January 2020.
	2. Comment that Michael Fischer has missed two meetings, but is not the only person who can progress this work. Suggestion that the MAC Ad-Hoc pick up this topic and work on it.
	3. Chair comment that draft 0.1 may be ready after the November meeting. Comment resolution on D0.1 will be occurring at January meeting.
	4. Comment about access to D0.1 document
	5. Comment that the draft will be in the members only area.
	6. Comment that the TG can liaise a draft to another IEEE working group
	7. Comment that there would be a 15 or 25 day comment collection between November and January within the task group. Can extend the collection of comments to 1609.
	8. Comment that we need to make clear to 1609 that a D0.1 will be an early very rough draft, so we might need to be careful that any external party it is liaised to is aware of that caveat.
	9. Chair comments that January is a good time to meet face to face.
	10. Comment that in the past a small number of guests have been invited. Two back to back sessions could be arranged. Could get permission from WG leadership to have dial-in facilities, to the 802.11bd session. Don’t necessarily have to have in-person meeting.
	11. Additional information from liaison, the packet duplication presentation was also presented by the IEEE 802.11bd member at a recent SAE DSRC TC meeting. (based on 802.11-19/1055r1)

### Technical Presentation 802.11-19/1692r1 (Hiroyuki Motozuka)

* 1. Discussion
	2. Question about the use case for using 60GHz. See that its for “V2V see through”. Is it only unicast, or both unicast and broadcast mode?
	3. Considering the beamforming characteristics of the DMG PHY, unicast applications are the most appropriate.
	4. Why is discovery beacon used in your proposal?
	5. In 60GHz, stations need to perform this initial beamforming. So its discovery for the beamforming to create the beams.
	6. Does this discovery require a two-way handshake?
	7. It works without knowing the MAC address of the other station before setting up the beam sweep.
	8. Question about the traditional CSMA not used in 60GHz due to the directionality of the beams, do we need to do some kind of classification of STAs.
	9. Use the roles of AC or PCP. In OCB we could use contention based communication. Similar to 5.9GHz, we don’t need to schedule traffic or designate AP vs non-AP STAs. 802.11ad is already designed to use non-AP to non-AP communication.
	10. Are you proposing a new PHY clause in 802.11bd or just reusing 802.11ad/ay? (why not do it in 11ay or 11md TGs)
	11. The main change is the OCB MLME to enable this to be used in vehicular applications and enable 1609 protocols in 60GHz.
	12. Do you need to specify mandatory modes of all the 802.11ad/ay PHy options? (OFDM, single carrier, etc…)
	13. Comment that it would be good to show simulation in high doppler situations.
	14. Comment that there is a performance presentation on the server. 802.11-19/0100
	15. Comment that the use case is V2V cars following each other (driving in same direction) or at stop sign for example. So not in the extreme of relative speed. This is showing the static or low relative speed.
	16. Comment that no new PHY is needed, just the MAC to enable OCB and establish the beamforming. Enable 60GHz for vehicular applications. Today we should do the minimum for enabling it, in the future we can add new features if needed.
	17. Straw Poll
	18. Do you support to add the following text to Section 4 of SFD “11bd defines MAC sublayer functions and MLME extensions for DMG STAs in which dot11OCBActivated is true.”
	19. Y6/N0/A18

### Technical Presentation 802.11-19/0788r2 (Paul Unterhuber)

* 1. Previous versions have been presented by Stephen Sand. Presenter starts with slide 20 showing new material. (presents slide 20-22, then strawpoll on slide 26)
	2. Strawpoll discussion
	3. We haven’t had text on ranging in 5.9GHz. PAR requires a positioning mechanism. Do you think this satisfies the PAR?
	4. Yes, if we increase the frequency, we get better accuracy. With 60GHz we get much better resolution in our ranging.
	5. In 802.11 we have Fine Timing Measurement (FTM). Which method do you think for 60GHz, the same method?
	6. Can consider the same method as 5.9GHz.
	7. Question about which line is which on the graph.
	8. To make this work in the automotive environment do we need to do anything specific or different than 60GHz ranging that’s been done in other task groups?
	9. Presentation is to show what the limits are, but doesn’t propose a specific implementation of this mmwave ranging.
	10. Question about the scope of the changes to the spec. and what that means for the implications of the strawpoll.
	11. The strawpoll is to judge interest in doing ranging in 60GHz. Presentation shows that the accuracy performance is better than 5.9GHz.
	12. Comment that if we have 60GHz it make sense to also do 60GHz ranging. However we already have ranging in 60GHz in 802.11 today. Do we need to do any work to change it in 802.11bd?
	13. Strawpoll:
	14. Do you agree to add that 802.11bd in the 60Gz band supports roud-trip-time (RTT) ranging for TBD Hz bandwidth PPDUs?
	15. Comment that agree to add 60GHz ranging, but stating RTT is too specific.
	16. Presenter changed strawpoll text on the screen
	17. Do you agree that 802.11d should support the 60GHz band ranging for TBD Hz bandwidth PPDUs?
	18. Y9/N0/A10

### Technical Presentation 802.11-19/1154r1 (Yujin Noh)

* 1. Comment, so you conclusion is that {+1, +j} is not ideal?
	2. We don’t have backwards compatibility with 11n/11ac, so a good opportunity to pick a better mechanism.
	3. Commenter doesn’t see a reason to do it different than what has been used for many years already.
	4. Comment about whether PAPR is the most important factor to optimize for.
	5. Comment that it isn’t shown but +1, +j is worse than +1, +1.
	6. Strawpolls will be run later

Chair recessed at 10am.

# PHY Ad-Hoc PM1 – Wednesday, September 18, 2019

### Opening

* 1. Call to order 1:30pm in Hanoi Vietnam
	2. Displaying agenda 802.11-19-1637r1
	3. Chair: Qinghua Li
	4. Chair: Hongyuan Zhang

### Technical Presentation 802.11-19/1151r2 (Yujin Noh, Newracom)

* 1. SP2: **Do you agree to add the following to section 3 in 11bd SFD?**

“11bd PPDU shall support at least two values of midamble periodicity. Midamble periodicity is TBD.”

Y11/N1/A3

* 1. SP3: **Do you agree to add the following to section 3 in 11bd SFD?**

“11bd PPDU shall support Midamble periodicity indication that

 indicates the Midamble periodicity in number of OFDM symbols

in the Data field”

Y12/N0/A6

###  Technical Presentation 802.11-19/1152r1 (Yujin Noh, Newracom)

* 1. SP1: **Do you agree to add the following to section 3 in 11bd SFD?**

“11bd shall support 2x Compressed NGV-LTF. NGV-LTF is TBD”

Y8/N0/A6

* 1. SP2: **Do you agree to add the following to section 3 in 11bd SFD?**

“NGV-Signal field shall include 1 bit to indicate NGV-LTF format

The first option is 2x compressed LTF

The second option is non-compressed LTF”

Y10/N0/A5

### Technical Presentation 802.11-19/1472r0 (Rui Cao, marvell)

* 1. SP1: **Do you agree to add the following to section 3 in 11bd SFD?**

“The midamble and NGV-LTF format of 11bd 10MHz PPDU shall use repeated LTF or repeated compressed TF for NGV-Data modulated with BPSK”

Y5/N0/A6

* 1. SP2: **Do you agree to add the following to section 3 in 11bd SFD?**

“11bd shall use two bits in NGV-SIG to signal the midamble period”

Y8/N1/A6

* 1. SP2: **Do you agree to add the following to section 3 in 11bd SFD?**

“One of the midamble period is 4”

Y9/N0/A5

### Technical Presentation 802.11-19/864r1 (David Lopez-Perez, Nokia)

* 1. Discussion

Q: conflict with current preamble format, may need autodetection

A: agree

Q: similar to SOMA, high layer smear the low layer constellation, performance impact?

A: Will run simulation.

### Technical Presentation 802.11-19/1470r0 (Prashant Verma, Marvell)

* 1. Discussion

Q: unfairness on 11p device if boost both non DCM and DCM BPSK?

A: does not make difference.

Q: any impact on ACI.

A: small impact

 11.2 SP1: **Do you agree to add the following text into Section 3 of SFD?**

“11bd L-STF shall be boosted by 3dB when NGV data portion is modulated with BPSK.”

“11bd L-LTF shall be boosted by 3dB when NGV data portion is modulated with BPSK.”

 Y8/N0/A3

### Technical Presentation 802.11-19/1471r0 (Rui Cao, Marvell)

* 1. Discussion

Q: do you need to add LTF repetition bit?

A: LTF repetition is tied up with BPSK modulation, don’t need additional signaling.

### Technical Presentation 802.11-19/1484r1 (Dongguk Lim, LG)

* 1. Discussion

Q: Are you proposing one NGV-SIG format or two?

A: one format, always repetition mode.

### Technical Presentation 802.11-19/1485r0 (Dongguk Lim, LG)

* 1. No Comments

### Technical Presentation 802.11-19/1636r0 (Qinghua Li, Intel)

* 1. Discussion:

 Q: why bypass interleaver in NGV-SIG2?

 A: diversity gain

 Q (Dongguk): 24 bits in NGV-SIG is enough. PPDU type is not needed. Unclear about version

 Indication.

 Q (Rui Cao): NGV-SIG diversity gain is not needed, because performance is gated by RLSIG anyways.

 Q (Rui Cao): Coding bit is not needed, STBC is also TBD, Version+PPDU type is questionable.

# MAC Ad-Hoc PM1 – Wednesday, September 18, 2019

### Opening

### The Chair, James Lepp, convened the meeting at 13:33 ICT. Approx. 15 participants in the room.

### Agenda displayed is 802.11-19/1632r1

### The Chair welcomed the members and introduced the Ad Hoc leadership.

### The Chair reviewed the administrative slides (slides 1-9) and called for potentially essential patents.

### No response to the call for patents.

### Agenda

### Chair presented the agenda 802. 11-19/1632r1

### Discussion on the agenda

### The Chair called for additional contributions – none were forthcoming

### It was agreed that the contributions will be taken in the order shown below:

### 11-19/1502r0 Frame Aggregation

### 11-19/1503r0 Wakeup Radio in ITS band

### 11-19/1619r0 PSDU length indication

### Technical Presentation 802.11-19/1502r0 (James Lepp)

* 1. Presented
	2. C – In the broadcast mode there are no ACKs, A-MDSU requires block ACK – a key feature of A-MSDU is the retry, which requires an ACK – therefore there may be a need for more than one sequence number.
	3. Q - On slide 10 – what is the issue related to TGbc?
	4. Q – Is block ACK required?
	5. A – Yes
	6. C – the broadcast cases in TGbd and TGbc are orthogonal – I don’t think they relate to each other.
	7. C – So we are trying to allow aggregation of broadcast?
	8. Q – I don’t understand why we would want to consider aggregation, what is the use of aggregation, does this improve latency, does this improve throughput?
	9. A – Yes it would improve latency and efficiency. If there are multiple applications, multiple packets could be aggregated into a single frame, instead of multiple frames.
	10. C – Concern that aggregation could cause long channel waiting time. Would like to see a way to limit air time.
	11. Straw Poll: Should 802.11bd amendment enable at least one of A-MPDU or A-MSDU operation to work for broadcast OCB?
	Y/N/A 9/0/4
	12. Straw Poll: Should 802.11bd amendment enable both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraint on A-MSDU in A-MPDU as defined in 802.11ac?
	Y/N/A 10/0/3

### Technical Presentation 802.11-19/1503r0 (James Lepp)

### Presented

### C – In the broadcast mode there are no ACKs, A-MDSU requires block ACK – a key feature of A-MSDU is the retry, which requires an ACK – therefore there may be a need for more than one sequence number.

### Q - On slide 10 – what is the issue related to TGbc?

### Q – Is block ACK required?

### A – Yes

### C – the broadcast cases in TGbd and TGbc are orthogonal – I don’t think they relate to each other.

### C – So we are trying to allow aggregation of broadcast?

### Q – I don’t understand why we would want to consider aggregation, what is the use of aggregation, does this improve latency, does this improve throughput?

### A – Yes it would improve latency and efficiency. If there are multiple applications, multiple packets could be aggregated into a single frame, instead of multiple frames.

### C – Concern that aggregation could cause long channel waiting time. Would like to see a way to limit air time.

### Straw Poll: Should 802.11bd amendment enable at least one of A-MPDU or A-MSDU operation to work for broadcast OCB?

### Y/N/A 9/0/4

### Straw Poll: Should 802.11bd amendment enable both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraint on A-MSDU in A-MPDU as defined in 802.11ac?

### Y/N/A 10/0/3

### Technical Presentation 802.11-19/1619r0 (Liwen Chu)

* 1. Presented
	2. C – In the broadcast mode there are no ACKs, A-MDSU requires block ACK – a key feature of A-MSDU is the retry, which requires an ACK – therefore there may be a need for more than one sequence number.
	3. Q - On slide 10 – what is the issue related to TGbc?
	4. Q – Is block ACK required?
	5. A – Yes
	6. C – the broadcast cases in TGbd and TGbc are orthogonal – I don’t think they relate to each other.
	7. C – So we are trying to allow aggregation of broadcast?
	8. Q – I don’t understand why we would want to consider aggregation, what is the use of aggregation, does this improve latency, does this improve throughput?
	9. A – Yes it would improve latency and efficiency. If there are multiple applications, multiple packets could be aggregated into a single frame, instead of multiple frames.
	10. C – Concern that aggregation could cause long channel waiting time. Would like to see a way to limit air time.
	11. Straw Poll: Should 802.11bd amendment enable at least one of A-MPDU or A-MSDU operation to work for broadcast OCB?
	12. Y/N/A 9/0/4
	13. Straw Poll: Should 802.11bd amendment enable both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraint on A-MSDU in A-MPDU as defined in 802.11ac?
	14. Y/N/A 10/0/3

# Task Group AM1 – Thursday, September 19, 2019

### Opening

* 1. Call to order 80:03am in Hanoi Vietnam. 30 participants in the room
	2. Displaying agenda 1412r2
	3. Chair called for potentially essential patents. No response

### Technical Presentation 802.11-19/1473r0 (Rui Cao)

* 1. Comment that the spectral mask for 20MHz is something we need to address in this group.
	2. Comment on slide 3, it seems to break the mask also on the left-hand side of the graph
	3. Can do digital TX filtering for the in-band, this presentation is concentrating on the out of band.
	4. Comment that it would make more sense to make a straight line to -40, not to -20.
	5. Comment that if you need more dB at 20, you also need more at 15 and 25.
	6. Comment that going lower than -44 doesn’t make sense.
	7. Suggest doing the full temperature sweep and max voltage testing to make a better-informed decision.
	8. Comment that this is class C, but there is also class D in the standard.
	9. Response that most of the market uses class C.
	10. Strawpolls discussion
	11. Comment that the +/-15MHz mask should be closer to the +/-20MHz. Make +/-15MHz tighter, to compensate for loosening +/-20MHz.
	12. Comment that could also loosen +/-25MHz.
	13. Do you agree to add the following text into section 3 of SFD? 11bd 20MHz PPU Data symbol shall use 11ac 40MHz OFDM downclocked by 2?

### Technical Presentation 802.11-19/1480r1 (Insun Jang)

* 1. Comment that there is another proposal which could be a third option for this strawpoll. Asking to present this, and then make a decision
	2. Comment that there can be individual counters for the two 10MHz subchannels, or a single counter for the full 20MHz. For the 20MHz counter, both 10MHz channels have to be idle.
	3. Discussing at a high level about channel state, regardless of sensing method.

### Technical Presentation 802.11-19/1494r0 (Yossi Shaul)

* 1. Comment that its L-SIG plus L-LTF
	2. Comment that this relies on the dynamic range in the receiver is 20MHz.
	3. Comment about decoding a legacy 11p 10MHz frame.
	4. Response don’t need to decode the packet, just the L-SIG
	5. Comment that L-SIG is BCC, and 11p body is BCC. So you need two BCC decoders
	6. Comment that you only decode the header, no the data.
	7. Comment that if the frame is for you, you do need to decode the data too.
	8. At the time you may need a spare BCC decoder to process the other channel.
	9. Comment that this really depends on the implementation and buffers, switching and symbol by symbol processing.
	10. This is only for channel access sensing.
	11. Comment that you can scan this way, but not receive a packet. Opinion that this only works for scanning.
	12. Comment that decoding the L-SIG for NAV setting, and for receiving messages are typically combined.
	13. Decoding the L-SIG for channel access is required for fairness.
	14. Comment that this design still needs two decoders, one for legacy 11p frame reception, and one for L-SIG NAV setting.
	15. Comment that there are other proposals that don’t use L-SIG to set the NAV.
	16. Comment that this is proposing a specific decoder design.
	17. Commenter doesn’t like that the proposal requires the decoder to read the L-SIG on both 10MHz channels.
	18. Comment that it is much more cost effective to just buffer the L-SIG and decode.
	19. Comments about L-SIG protection in 11n/11ac vs 11a having a problem.
	20. Comment that the L-SIG should be fine to use for setting the NAV of an 11p frame.
	21. Comment that this presentation just shows it is feasible to process the NAV on both 10MHz subchannels, not necessarily specifying a design that must be used.
	22. Response that there are a few other ways to do this, and it depends on the implementation.

### Technical Presentation 802.11-19/1478r0 (Hanseul Hong)

* 1. Question about ED sensing on the secondary channel. This doesn’t require decoding the preamble.

### Straw Polls 802.11-19/1480r1 (Insun Jang)

* 1. Strawpoll#1
	2. Comment that “subchannels” isn’t defined. Updated text.
	3. Lots of discussion about sensitivity level statement.
	4. Do you agree to add the following text into 11bd SFD?
	5. -A 20MHz channel shall use sensing and backoff procedures for both of the 10 MHz cannels
	6. -20MHz channel access shall use only one backoff counter
	7. -Two continuous 10MHz channels shall use the same receive sensitivity level, i.e. Receive sensitivity level is TBD.
	8. Strawpoll deferred to next session.

## Closing

* 1. Chair informed the membership that motions for the week will be run in the last forty minutes of AM2 session
	2. Chair recessed at 9:59am

# Task Group AM2 – Thursday, September 19, 2019

### Opening

* 1. Call to order 10:30am in Hanoi Vietnam. 35 participants in the room.
	2. Displaying agenda 1412r3
	3. Chair displayed the policy slides and asked if anyone had questions about the meeting policies
	4. Chair called for potentially essential patents. No response

### Straw Polls 802.11-19/1480r1 (Insun Jang)

* 1. Strawpoll#1
	2. Do you agree to add the following text into 11bd SFD?
	3. -A 20MHz channel includes two contiguous 10MHz channels
	4. -20MHz channel access shall use sensing and backoff procedures for both of the 10 MHz channels.
	5. -20MHz channel access shall use only one backoff counter
	6. -Two continuous 10MHz channels shall use the same receive sensitivity level.
	7. Y19/N0/A7
	8. Strawpoll #2
	9. Do you agree to add the following text into 11bd SFD?
	10. -20MHz channel access performs a backoff procedure based on the channel states of two contiguous 10MHz channels.
	11. -The backoff counter decreases when two contiguous 10MHz channels are idle.
	12. -Idle states are checked by TBD sensing methods (e.g. packet detection, GI detection, energy detection).
	13. Y18/N0/A3

### Straw Polls 802.11-19/1478r1 (Hanseul Hong)

* 1. Discussion about whether NAV is something that is set, or something that is determined.
	2. Discussion about NAV protection in legacy PHYs. Or PHYs and MAC.
	3. Straw Poll #1:
	4. Do you agree to add the following to SFD:
	5. -When channel busy is indicated in the secondary channel and the duration of channel use is not known (eg. NAV, Packet detection), channel state shall be determined to be idle shall be checked during TBD IFS (eg., AIFS, EIFS) sensing period before it resumes the backoff procedure.
	6. Y17/N0/A6
	7. Straw Poll 5
	8. When 10MHz fallback transmission is enabled by the upper layer and the channel busy is indicated for the secondary channel during the backoff procedure:
	9. -Channel sensing is performed in the primary channel for the remaining backoff counter
	10. -10MHz PPDU transmission after the expiration of backoff
	11. Y4/N0/A17

### Technical Presentation 802.11-19/1481r0 (Insun Jang)

* 1. Comment about the value of the repetition using SIFS if it can’t overcome a collision.
	2. Comment about PHY level combining as a benefit of repetition.
	3. Discussion about channel access after the SIFS period.
	4. Straw poll not run due to time constraints

### Straw Poll 802.11-19/1484r2 (Dongguk Lim)

* 1. Straw Poll 1
	2. Do you agree to add the following to section 3 in 11bd SFD?
	3. “The NGV-SIG field carries information required to interpret 11bd PPDU. The NGV-SIG field is composed of 24 data bits. The contents for 24 data bits are TBD. The NGV-SIG symbol shall be BCC encoded at rate, R = 1/2, be interleaved, be mapped to a BPSK Constellation.”
	4. Y11/N2/A10
	5. Straw Poll 2
	6. Comment about using different interlevers.
	7. Comment about implementation complexity vs performance gain – and this is the easy implementation, but not the best performance.
	8. Comment to adjust the strawpoll
	9. Straw Poll 2
	10. Do you agree to add the following to section 3 in 11bd SFD:
	11. The preamble of 11bd PPDU shall include repeated NGV-SIG after NGV-SIG.
	12. Y16/N0/A5
	13. Straw Poll 3
	14. Do you agree to add the following to section 3 in 11bd SFD? The repeated NGV-SIG is configured identically to the NGV-SIG.
	15. Y13/N2/A5
	16. Straw Poll 4
	17. Do you agree to add the following to section 3 in 11bd SFD? The preamble of 11bd PPDU shall include NGV-STF and NGV-LTF after repeated NGV-SIG. The composition of NGV-STF and NGV-LTF is TBD.



* 1. Y14/N0/A2

### Straw Poll 802.11-19/1485r2 (Dongguk Lim)

* 1. Straw Poll 1
	2. Do you agree to add the folliwng sentence into section 3 of 11bd SFD?
	3. RL-SIG is modulated same as L-SIG
	4. Y14/N0/A5

### Straw Poll 802.11-19/1471r1 (Rui Cao)

* 1. Straw Poll 3
	2. Do you agree to add the following text into Section 3 of SFD?
	3. -The NGV-STF in 11bd 10MHz PPDU shall use 11ac 20MHz VHT STF with 2x downclock
	4. -The NGV-LTF in 11bd 10MHz PPDU shall use 11ac 20MHz VHT STF with 2x downclock
	5. Y13/N0/A6
	6. Straw Poll 4
	7. Discussion about tone plan, suggestion this can be a further strawpoll later.
	8. Do you agree to add the following text into Section 3 of SFD?
	9. -The NGV-STF in 11bd 20MHz PPDU shall use 11ac 40MHz VHT STF with 2x downclock
	10. -The NGV-LTF in 11bd 20MHz PPDU shall use 11ac 40MHz VHT STF with 2x downclock
	11. Y13/N0/A5

### Straw Poll 802.11-19/1473r1 (Rui Cao)

* 1. Straw Poll 3
	2. Do you agree that the 11bd 20MHz lass C spectrum mask shall be defined as:
	3. Class C: +/-9.5 MHz: 0 dBr
	4. +/-10MHz: -26 dBr
	5. +/-10.5MHz: -32 dBr
	6. +/-15 MHz: TBD
	7. +/-20 MHz: TBD
	8. +/-25 MHz: TBD
	9. Y9/N0/A2

### Discussion about next session

* 1. Chair suggests that a vice chair can run the PM2 session starting at 4pm
	2. Chair polls the room and 9 members will be at the PM2 session
	3. Discussion about whether there will be enough people considering chair and many members may be a the 802.11be meeting for an election.
	4. Chair polls the room and 17 members will be at the PM2 session after the 802.11be election
	5. Chair decides to proceed with a delayed start for PM2. Session will start at 4:40pm this afternoon.
	6. Recess for 2 minutes while editor prepares the motion slides.

### Motions 802.11-19/0514r7 (Bahar Sadeghi)

* 1. **Motion #27 (DCN:11-19/1619r0)**
	2. Move to add the following text to Section 3.2 of 11bd SFD:
	3. “For each frame carried in a 11bd PPDU, one MPDU Delimiter shall be used to indicate the length of the frame in octets.”
	4. Moved: Liwen Chu
	5. Second: Hongyuan Zhang
	6. No Discussion
	7. Result: Passes Unanimously
	8. **Motion #28 (802.11-19/1619r0)**
	9. Move to include the following text to section 3.1 of 11bd SFD:

-11bd L-STF shall be boosted by 3dB when NGV data portion is modulated with BPSK.

-11bd L-LTF shall be boosted by 3dB when NGV data portion is modulated with BPSK.

* 1. Moved: Prashant Sharma
	2. Second: Hongyuan Zhang
	3. Discussion: Asking about if power is higher, does that cause to move from a class C mask to a class D mask in the regulatory rules.
	4. Response that power limits are for average power not peak power. This shouldn’t push into the class D power range.
	5. This is for the long range mode. In the extended range, the data portion is improved and the preamble becomes the bottleneck, that is why there is a need to boost the preamble power.
	6. Comment that the power boost may be unfair to legacy 11p in certain conditions
	7. Result: Y6/N4/A5 Motion fails
	8. **Motion #29 (802.11-19/1470r0)**
	9. Move to make the following changes in 11bd SFD:

-Remove Section 4.1 Physical Layer

-Add the following text in Section 4.2

“11bd supports enabling DMG operation when dot11OCBActivated is true.”

* 1. Moved: Hiroyuki Motozuka
	2. Second: Bahar Sadeghi
	3. No Discussion
	4. Result: Passes Unanimously
	5. **Motion #30 (802.11-19/1162r0)**
	6. Move to include the following text to section 3 of 11bd SFD:

 

* 1. Moved: Yujin Noh
	2. Second: Riu Cao
	3. Discussion:
	4. The variable NMA is not defined.
	5. Number of symbols per period.
	6. Clarify that there is a number of midamble periods, as well as how many symbols per period. We should unify the terminology for what “period” means.
	7. Result: Y9/N0/A4 Motion passes
	8. **Motion #31 (802.11-19/1151r3)**
	9. Move to include the following text to section 3 of 11bd SFD:

“11bd PPDU shall support at least two values of midamble periodicity.

Midamble periodicity is TBD.”

* 1. Moved: Yujin Noh
	2. Second: Dongguk Lim
	3. No Discussion
	4. Result: Motion Passes Unanimously
	5. **Motion #32 (802.11-19/1151r3)**
	6. Move to include the following text to section 3 of 11bd SFD:

“11bd PPDU shall support Midamble periodicity indication that indicates the Midamble periodicity in number of OFDM symbols in the Data field.”

* 1. Moved: Yujin Noh
	2. Second: Dongguk Lim
	3. Discussion: the text is redundant
	4. **Motion to amend**
	5. Remove “that indicates the Midamble periodicity” from the middle of the sentence.
	6. Moved: Ioannis Sarris
	7. Second: Bahar Sadeghi
	8. Result (motion to amend): Y15/N0/A1
	9. **Amended Motion #32 (802.11-19/1151r3)**
	10. Move to include the following text to section 3 of 11bd SFD: “11bd PPDU shall support Midamble periodicity indication in number of OFDM symbols in the Data field.”
	11. Moved: Yujin Noh
	12. Second: Dongguk Lim
	13. No Discussion
	14. Result: Motion passes unanimously
	15. **Motion #33 (802.11-19/1152r2)**
	16. Move to include the following text to section 3 of 11bd SFD:

“11bd shall support 2x Compressed NGV-LTF.

Midamble is the same format as NGV-LTF.”

* 1. Moved: Yujin Noh
	2. Second: Rui Cao
	3. Discussion: Is the term “compressed” defined somewhere? Response: it is defined in the contribution and also in 802.11ax drafts.
	4. Result: Y9/N0/A6 Motion passes
	5. **Motion #34 (802.11-19/1152r2)**
	6. Move to include the following text to section 3 of 11bd SFD:

 “NGV-Signal field shall include 1 bit to indicate NGV-LTF format.

 The first option is 2x compressed LTF.

 The second option is non-compressed LTF.”

* 1. Moved: Yujin Noh
	2. Second: Dongguk Lim
	3. No Discussion
	4. Result: Y8/N1/A5 Motion passes
	5. **Motion #35 (802.11-19/1502r1)**
	6. Move to include the following text to section 3.2 of 11bd SFD:

“11bd enables at least one of A-MPDU or A-MSDU operation to work for broadcast OCB.”

* 1. Moved: James Lepp
	2. Second: Joseph Levy
	3. Discussion: Comment that it is difficult to use aggregation for broadcast frames.
	4. Result: Y6/N6/A4 Motion fails
1. Chair recessed at 12:32pm

# Task Group PM2 – Thursday, September 19, 2019

### Opening

* 1. Call to order 4:41pm in Hanoi Vietnam. There are 15 participants in the room
	2. Displaying agenda 1412r3
	3. Chair called for potentially essential patents. No response.
	4. Chair presented the agenda for the session
	5. No discussion
	6. No objection to adopting the agenda for the session

### Technical Motions 802.11-19/0514r9 (Bahar Sadeghi)

* 1. **Motion #36 (802.11-19/1502r1)**
	2. Move to include the following text to section 3.2 of 11bd SFD:

“11bd enables both A-MSDU and A-MPDU operation to work for unicast OCB and not to exceed the constraints on A-MSDU in A-MPDU as defined in 802.11ac.”

* 1. Moved: James Lepp
	2. Second: Joseph Levy
	3. No Discussion
	4. Result: Motion Passes Unanimously
	5. **Motion #37 (802.11-19/1503r1)**
	6. Move to include the following text to 11bd FRD:

“802.11bd considers mechanisms for power saving in NGV.”

* 1. Moved: James Lepp
	2. Second: Rui Yang
	3. No Discussion
	4. Result: Motion Passes Unanimously
	5. **Motion #38 (802.11-19/1103r1)**
	6. Move to include the following text to section 3.2 of 11bd SFD:

“802.11bd amendment will allow Wake-up Radio (WUR) for OCB in 5.9GHz.”

* 1. Moved: James Lepp
	2. Second: Hanseul Hong
	3. Discussion:
	4. Confused about what the word allow means
	5. Clarification that it’s a rebanding of the WUR currently in 2.4GHz and 5GHz.
	6. Question about scope of changes needed to 802.11ba to make it work in 5.9GHz 10MHz channelization
	7. Different opinions about how much work it is to make the 4MHz OOK fit in 10MHz.
	8. **Motion to Table**
	9. Moved: Bahar Sadeghi
	10. Second: Joseph Levy
	11. Result: Y8/N1/A6 Motion is tabled
	12. **Motion #39 (802.11-19/1472r1)**
	13. Move to include the following text to section 3 of 11bd SFD:

“The Midamble and NGV-LTF format of 11bd 10MHz PPDU shall use Repeated LTF or Repeated compressed LTF for NGV-Data modulated with BPSK”

* 1. Moved: Rui Cao
	2. Second: Dongguk Lim
	3. No Discussion
	4. Results: Motion passes unanimously
	5. **Motion #40 (802.11-19/1472r1)**
	6. Move to include the following text to section 3 of 11bd SFD:

“11bd shall use two bits in NGV-SIG to signal the Midamble period.”

* 1. Moved: Rui Cao
	2. Second: Dongguk Lim
	3. No discussion
	4. Result: Motion passes with unanimous consent
	5. **Motion #41 (802.11-19/1472r1)**
	6. Move to include the following text to section 3 of 11bd SFD:

“One of the Midamble periods is 4.”

* 1. Moved: Rui Cao
	2. Second: Dongguk Lim
	3. Discussion: Do we need to be this specific about the midamble periodicity in the SFD at this point in time?
	4. This number of 4 is the consensus of several submissions of simulations over several meetings.
	5. Result: Y9/N0/A6 Motion Passes
	6. **Motion # 42 (802.11-19/1473r0)**
	7. Move to include the following text to section 3 of 11bd SFD:

“11bd 20MHz PPDU Data symbol shall use 11ac 40MHz OFDM downclocked by 2.”

* 1. Moved Rui Cao
	2. Second: Dongguk Lim
	3. No discussion
	4. Result: Motion passes with unanimous consent
	5. **Motion #43 (802.11-19/1480r2)**
	6. Move to include the following text to 11bd SFD:

“-A 20MHz channel includes two contiguous 10MHz channels

 -20MHz channel access shall use sensing and backoff procedure for both of 10MHz channels

 -20MHz channel access shall use only one backoff counter

 -Two contiguous 10MHz channels shall use the same receive sensitivity level”

* 1. Moved: Insun Jang
	2. Second: Dongguk Lim
	3. No discussion
	4. Result: Motion passes unanimously
	5. **Motion #44 (802.11-19/1480r2)**
	6. Move to include the following text to 11bd SFD:
	7. “20MHz channel access performs a backoff procedure based on the channel states of two contiguous 10MHz channels. The backoff counter decreases when two contiguous 10MHz channels are idle. Idle states are checked by TBD sensing methods (e.g., Packet detection, GI detection, energy detection). More details are TBD.”
	8. Moved: Insun Jang
	9. Second: James Lepp
	10. No Discussion
	11. Result: Motion passes unanimously
	12. **Motion #45 (802.11-19/1478r2)**
	13. Move to include the following text to section 3 of 11bd SFD:
	14. “When channel busy is indicated in the secondary channel and the duration of channel use is not known (e.g., NAV, packet detection), channel state shall be determined to be idle for a TBD IFS (e.g., AIFS, EIFS) sensing period before it resumes the backoff procedure.”
	15. Moved: Hanseul Hong
	16. Second: Ronny Kim
	17. No Discussion
	18. Result: Motion passes unanimously
	19. **Motion #46 (802.11-19/1484r3)**
	20. Move to include the following text to section 3 of the 11bd SFD:

“The NGV-SIG field carries information required to interpret 11bd PPDU. The NGV-SIG field is composed of 24 data bits. The contents for 24 data bits are TBD. The NGV-SIG symbol shall be BCC encoded at rate, R = 1/2, be interleaved, be mapped to a BPSK constellation.”

* 1. Moved: Dongguk Lim
	2. Second: Rui Cao
	3. No Discussion
	4. Result: Motion passes unanimously
	5. **Motion #47 (802.11-19/1484r3)**
	6. Move to include the following text to section 3 of the 11bd SFD:

“The preamble of 11bd PPDU shall include repeated NGV-SIG after NGV-SIG.”

* 1. Moved: Rui Cao
	2. Second: Insun Jang
	3. Discussion: Does it mean the repeated NGV-SIG is after the first NGV SIG.
	4. Yes, this NGV-SIG is already defined, this adds the “repeated NGV-SIG”.
	5. Result: Y7/N0/A4 Motion Passes
	6. **Motion #48 (802.11-19/1484r3)**
	7. Move to include the following text to section 3 of the 11bd SFD:

“The RNGV-SIG is configured identically to the NGV-SIG.

* 1. Moved: Insun Jang
	2. Second: Rui Cao
	3. Discussion: editorially, it would be good to capture that RNGV-SIG means “repeated NGV-SIG”
	4. Editor responds that this is captured
	5. Result: Y8/N0/3A Motion Passes
	6. **Motion #49 (802.11-19/1485r2)**
	7. Move to include the following text to section 3 of the 11bd SFD

“The preamble of 11bd PPDU shall include NGV-STF and NGV-LTF after repeated NGV-SIG. The composition of NGV-STF and NGV-LTF is TBD”



* 1. Moved: Insun Jang
	2. Second: Bahar Sadeghi
	3. No discussion
	4. Result: Motion passes unanimously
	5. **Motion #50 (802.11-19/1471r1)**
	6. Move to include the following text to section 3 of the 11bd SFD:

“The NGV-STF in 11bd 10MHz PPDU shall use 11ac 20MHz VHT-STF with 2x downclock.”

“The NGV-LTF in 11bd 10MHz PPDU shall use 11ac 20MHz VHT-LTF with 2x downclock.”

* 1. Moved: Rui Cao
	2. Second: Bahar Sadeghi
	3. No Discussion
	4. Result: Motion passed unanimously
	5. **Motion #51 (802.11-19/1471r1)**
	6. Move to include the following text to section 3 of the 11bd SFD:

“The NGV-STF in 11bd 20MHz PPDU shall use 11ac 40MHz VHT-STF with 2x downclock.”

“The NGV-LTF in 11bd 20MHz PPDU shall use 11ac 40MHz VHT-LTF with 2x downclock.”

* 1. Moved: Rui Cao
	2. Second: Yujin Noh
	3. No discussion
	4. Result: Motion passed unanimously
	5. **Motion #52 (802.11-19/1471r1)**
	6. Move to include the following text to section 3 of the 11bd SFD:

“11bd 20MHz PPDU Data symbol shall use 11ac 40MHz OFDM downclocked by 2”

* 1. Mover: Rui Cao
	2. Second: Bahar Sadeghi
	3. No Discussion
	4. Result: Motion passed unanimously
	5. Secretary’s Note: Motion #42 and Motion #52 were run as documented in these minutes. Subsequent to the meeting it came to the attention of the editor and other members that these were two identical motions. Since the results of the two identical motions are also identical there is no ambiguity in the actions required of the Editor. This note has been added to inform members that this is what transpired.
	6. **Motion #53 (802.11-19/1471r1)**
	7. Move to include the following text to section 3 of the 11bd SFD:



* 1. Moved: Rui Cao
	2. Second Bahar Sadeghi
	3. No discussion
	4. Result: Motion passed unanimously
	5. **Motion #54 (802.11-19/1484r3)**
	6. Move to include the following text to section 3 of the 11bd SFD:

“RL-SIG is modulated same as L-SIG”

* 1. Moved: Dongguk Lim
	2. Second: Rui Cao
	3. No Discussion
	4. Result: motion passes unanimously

### Task Group Timeline Review 802.11-19/1912r3 (Bo Sun)

* 1. Chair is presenting timeline on slide 24
	2. This is the timeline agreed back in January at the first 802.11bd TG meeting.
	3. We have not met the goal of producing a Draft 1.0 by September.
	4. The slide proposes updated dates for a new timeline.
	5. Discussion
		1. Question: When are we going to stop putting new material in the SFD?
		2. Chair: Based on experience, that happens when draft 1.0 is approved.
		3. Comment: The chair may run a motion after D0.1 to not run SFD and draft in parallel. After 0.1, before 1.0 or somewhere in between.
		4. Comment: We have quite a bit of PHY specified in the SFD, but not as much MAC. Expect we may want to close the PHY and keep the MAC in the SFD open for longer. This pace is similar to other task groups.
		5. Comment: The 1.0 in 2 meetings after November seems optimistic.
		6. Comment: This looks like a tight schedule, might be better to continue working out some ideas before jumping straight into the specification draft.
		7. Comment: to compete with other standards we need to have good quality features, not necessarily a tight schedule, would be good to learn the requirement of the market
		8. Comment: there is external attention on this schedule. Suggest to make it realistic, but not aggressive just to look good.
		9. Comment: SASB usually meets in Dec, and not in January so change from Jan 2022 to Dec 2021 makes sense.
	6. **Motion:** Is there any objection to change the timeline as shown on the screen
	7. No objection

### Draft Specification Skeleton 802.11-19/1412r3 (Bahar Sadeghi)

* 1. Presenting 802.11-19/1912r3 Slide 25
	2. The skeleton was presented on Monday. Call for volunteers to draft text in November.
	3. **Motion:** Approve the content of 11-19/1638r0 as the P802.11bd spec draft skeleton document for future spec development:
	4. <https://mentor.ieee.org/802.11/dcn/19/11-19-1638-00-00bd-proposed-tgbd-draft-specification.docx>
	5. Moved Bahar Sadeghi
	6. Second Hongyuan Zhang
	7. No discussion
	8. Result: Motion passed unanimously

### Teleconference Plan

* 1. Displaying 802.11-19/1412r3 - Slide 26
	2. Plan shown: Oct 8 6pm, Oct 22 10am
	3. Discussion: if we need another one we can schedule one with 10 days notice.
	4. Comment that we should
	5. Comment that week of Oct 22 is ITS World Congress in Singapore and some members may be unavailable
	6. Comment that Wi-Fi Alliance is also meeting that same week.
	7. Change to Oct 29 10am
	8. No objection to this teleconference plan (oct 8, 6pm, oct 29, 10am)
	9. Brief discussion about software for the teleconference: Zoom, Joinme, or Webex. Chair will send out the meeting invite with the correct link.

### Closing Report 802.11-19/1698r0 (Bo Sun)

* 1. Chair presenting and editing the closing report with latest information from this session
	2. Chair asks if there is any other business
	3. Chair adjourns the meeting at 5:48pm

# Next Meetings

Face to face:

Waikoloa Hilton, Hawaii, USA, November 11, 2019

Teleconferences:

~~October 8, 6pm ET~~ (cancelled)

October 29, 10am ET