IEEE P802.11
Wireless LANs

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| Minutes of the November 2022 meeting of the IEEE 802.11 Coexistence Standing Committee |
| Date: 2022-11-21 |
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Abstract

This document contains the minutes of the November 2022 meeting of the IEEE 802.11 Coexistence Standing Committee.

Meeting location: Bangkok Marriott Marquis Queen's Park, 199 Sukhumvit Soi 22, Klong Ton, Klongtoey, Bangkok, 10110 Thailand

1. At 2022-11-16T16:01+07:00 the chair of the IEEE 802.11 Coexistence Standing Committee (SC) calls the SC’s meeting to order. Andrew Myles acts as chair of the SC. Guido R. Hiertz acts as recording secretary. The chair presents 11-22/1714r3. At this moment, 11-22/1714r3 is identical to 11-22/1714r2. 11-22/1714r2 is on Mentor server. Any changes to 11-22/1714r2 will be captured in 11-22/1714r3.
2. At 2022-11-16T16:02+07:00 the chair presents slides explaining the meeting rules that apply for this meeting. This especially applies to pages five to ten.
3. At 2022-11-16T16:03+07:00 the chair presents the proposed agenda of this meeting. The proposed agenda is contained on page 12 of the chair’s presentation.
	1. At 2022-11-16T16:05+07:00 the chair asks for unanimous approval of the agenda.
		1. Nobody objects.
		2. The agenda is adopted by unanimous consent.
4. The chair continues from page 14 of his document 11-22/1714r3.
5. At 2022-11-16T16:06+07:00 chair presents page 17 of 11-22/1714r3.
	1. The chair presents the following motion
		1. “The IEEE 802 Coex SC approves 11-22-1688-00 as the minutes of its virtual meeting in September 2022”
		2. The chair asks if there is any objection to approve this motion by unanimous consent.
		3. Nobody objects.
	2. 11-22/1688r0 is approved by unanimous consent.
6. At 2022-11-16T16:06+07:00 the chair continues from page 20 of 11-22/1714r3.
	1. Comment: Normally this archive works. Currently it’s broken.
	2. Comment: IEEE is about to fix it.
7. At 2022-11-16T16:08+07:00 continues from page 23 of 11-22/1714r3.
8. At 2022-11-16T16:26+07:00 attendees discuss page 38 of 11-22/1714r3.
	1. Comment: What is this document? Your opinion? Is this the chair’s document? I have serious issues with what you are throwing out here. What is the status of this document? Why are we looking at this?
	2. Comment: On the slide, I am stating this is my opinion. I believe it is important to summarize the situation. If you disagree, please object and state what you believe is correct. If I fail, hold me to account.
9. At 2022-11-16T16:28+07:00 continues from page 39 of 11-22/1714r3. At 2022-11-16T19:29+07:00 attendees discuss the chair’s document.
	1. Comment: I believe what you do here is completely inappropriate. You put a name of a company without any discussion.
	2. Comment: Feel free to express your view. What don’t you like?
	3. Comment: You just state that something is not viable and you give no reason. We sit here 2 h listening to this. I am questioning why we are listening to this. You are always interrupting me.
	4. Comment: Tell me what you don’t like.
	5. Comment: We need more meaningful discussions. You are just making a statement.
	6. Comment: There is nothing in your complaint I can respond to. You are welcome to make a submission.
	7. Comment: It’s best if there is a document that expresses an opinion that this is put into a separate document. The set of slides that represent your opinion do not belong into the agenda. Put them into a separate set of slides. If you believe something is not okay, you are welcome to express your opinion. I assume this is because of the list of cons given here.
	8. Comment: I agree. This is not a new disagreement.
	9. Comment: Ideally, we would have additional presentations. The question is how much details do we need to go in, here.
	10. Comment: I am giving high-level presentations.
	11. Comment: At top of the hour we have 802.15 here.
	12. Comment: Upload a new document that has this material in a separate document.
10. At 2022-11-16T16:34+07:00 the chair continues from page 40 of 11-22/1714r3.
11. At 2022-11-16T16:41+07:00 the chair arrives at page 51 of 11-22/1714r3. Attendees discuss about page 58 of the chair’s document.
	1. Comment: I would like to move on to another topic. The LAA market data is difficult to find. This tells me that there is limited use of the technology. We do need to understand NB FH in 6 GHz. That’s the focus I would like to see.
	2. Comment: SL-U is a new technology coming out of 3GPP. This is something we are going to watch.
12. At 2022-11-16T16:42+07:00 chair continues from page 63 of 11-22/1714r3.
13. At 2022-11-16T16:43+07:00 Rich Kennedy presents 11-22/1672r0. At 2022-11-16T16:52+07:00 Rich concludes his presentation.
	1. Comment: That’s a good idea to collaborate. Solve problems before things get out of hand. What do you think the problems are?
	2. Comment: That is part 2. It’s going to be difficult to hop if 320 MHz channels are in use. To what extend will the use of 320 MHz dominate? That is what needs to be analyzed. It’s best if we work on this together and not that we bring a solution, first. This could happen through an external group, too.
	3. Comment: Thanks for your presentation. At 6 GHz there are multiple modes of operation. Is there an intent that Bluetooth would use the AFC-enabled standard power mode?
	4. Comment: We are evaluating the use cases. The project just started. For now, I am proposing to look at what we have to transfer into 6GHz; AFH and 2 MHz channels. It is important to note that congestion is problematic in 2.4 GHz. We don’t have a specific approach. We know we need to do something.
	5. Comment: I am supportive of working together. There are various technologies in 802.11ax and 802.11be to avoid certain channels to make coexistence with BT happen. For 802.11, most operation is wide channel, high throughput. We really need to maintain the throughput in 6 GHz. I am happy to discuss with you what is needed to make cooperation happen. Dedicated meetings, joint groups etc. We want benefits for both.
	6. Comment: I appreciate it. Most device makers in BT are also Wi-Fi device makers. There are ways to work on this internally. Together we can make it work.
	7. Comment: You are only mentioning 6 GHz. Does BT SIG consider also going into 5 GHz? Would the special conditions in 5 GHz make it more complicated for BT?
	8. Comment: You know that it will. It’s the DFS in 5 GHz that is problematic. Our project is called higher bands. Yes, the lack of 6 GHz in China requires 5 GHz but we are not going to do DFS.
	9. Comment: As far as I know, 3GPP also has interest in 6 GHz. Are you working with them?
	10. Comment: We are aware of this. This project just started this week. We will learn of all the hurdles.
	11. Comment: I want to follow-up on what Dorothy said. We need to think about how to structure this. A dedicated group seems useful to me. We need to get going because BT is in a hurry.
	12. Comment: It would be good to reinstitute the BT liaison position.
14. At 2022-11-16T17:03+07:00 the SC moves to another meeting room because IEEE 802.15 attendees arrive and the current meeting room is too small.
15. At 2022-11-16T17:09+07:00 the chair continues from page 75of his document 11-22/1714r3.
16. At 2022-11-16T17:10+07:00 the chair hands the meeting over to Clint Powell.
17. At 2022-11-16T17:13+07:00 Clint Powell presents 15-22/647r0. Clint ends his presentation at 2022-11-16T17:19+07:00.
	1. Comment: Does the NB proposal for UWB still exist? That caused concern in 802.11.
	2. Comment: Yes, it still exists. It is under development. There is a significant number of contributions in that area. Now is a good point in the process to consider issues. To understand what gives best performance we need to work together.
	3. Comment: What work on coexistence has been done in 802.15.4?
	4. Comment: We looked at some traditional concepts. We tried to align the center frequencies at the end of 802.11 channels. We are considering such ideas. We are considering 2.5 MHz of channel bandwidth. We are looking at channel access mechanism enhancements that could improve coexistence in the presence of other technologies. Nothing is concrete. Just discussed.
	5. Comment: My hope is that this is a open discussion. You can ask questions to others in the room.
	6. Comment: We brought this to the 802.15.4ab group to engage individuals and to not have discussion only between the chairs. You need to have this discussion.
	7. Comment: What is an 802.15.4 UWB band?
	8. Comment: That should read overlapping bands.
	9. Comment: Mandatory requirement by regulations is DAA etc. Do you want to develop a different technology or what the regulators demand? ITU-R and Japanese regulatory have requirements, like duty cycle requirements etc. In this meeting, do you want to talk about extra technology solution or government-required ones?
	10. Comment: Obviously, we have to fulfill all regulatory requirements. That’s the baseline. There is no reason why 802.11 and 802.15 could not get together to do something better than regulatory authorities require. Regulators don’t know our technology.
	11. Comment: A little bit unhappy is better than completely unhappy because regulators step in.
	12. Comment: There has been discussion about Wi-Fi and NB FH coexistence. See ETSI BRAN.
	13. Comment: Our colleague proposed a solution with looking at primary channels and other channels. This might be something to build upon.
	14. Comment: We had some lessons from the 2.4 GHz band. There it’s mostly avoidance than coexistence. Maybe we can draw that lesson for 6 GHz.
	15. Comment: Avoid channels that Wi-Fi has in use.
	16. Comment: The priority channels and a general avoidance strategy are good ideas. NB in UWB means probably some 500 µs packets preceding UWB transmissions. This ends up in a duty cycle of 1 % or 2 %. Thereby, we hope to reduce airtime by 50 % or more. BT has some great mechanisms that we try to adapt. AFH is one example. Another is enabling more Wi-Fi aware hopping. Knowing the Wi-Fi channel bandplan. Generating hopping schemes that are aware. There is this study from Jeff Bailey. Is there any preexisting work at 802.11 to coexist with UWB?
	17. Comment: I wanted to comment on the previous remark. I want to see UWB in role of ranging, sensing but also data communication. We cannot refer to it as 1 % technology, only. If we don’t want to ignore each other, only, we need to do more. Wi-Fi is much stronger in the market than UWB. UWB transmits at a so low power that it is hard to detect. The two groups should agree on a shared technology to mutually detect. We need to find something shared without having both radios on each side. We need to agree on what both use for channel access.
	18. Comment: NB offers opportunity to Wi-Fi to do something.
	19. Comment: There are many Wi-Fi implementations that might not be so good at detecting something else.
	20. Comment: 802.11ax is rolling into 6 GHz. Theses device are lost. We cannot change them anymore. We need something existing on each side. Wi-Fi needs to detect UWB und vice versa.
	21. Comment: If we can show that we work together to find solution it’s a big advantage. Then, regulators are convinced.
18. At 2022-11-16T17:46+07:00 Mohmmad Rahmani presents 15-22/642. At 2022-11-16T17:55+07:00 Mohammad concludes his presentation.
	1. Comment: Are you using NB?
	2. Comment: No
	3. Comment: What is duty cycle?
	4. Comment: The duty cycle is 3.5 %.
	5. Comment: You saw more interference in higher band than lower band.
	6. Comment: Because the higher band is closer to UWB links than lower links.
	7. Comment: If you don’t turn on the coexistence function, you see more interference to Wi-Fi than on UWB?
	8. Comment: No. With the coexistence on, it is 20 % packet loss on Wi-Fi. Without it is more
	9. Comment: It’s 40 %.
	10. Comment: Would this topology a good characterization of everything? Is this topology good?
	11. Comment: We did this so close to see something. Otherwise, we could not really see the effect.
	12. Comment: In a normal environment, coexistence is not of a big concern. Is this a fair observation?
	13. Comment: We can do more analysis. We need more scientific tests. For now, we wanted to have a preview of coexistence issue.
	14. Comment: Does your setup work well with other Wi-Fi technologies than Wi-Fi 6? Have you tested other Wi-Fi radios, also?
	15. Comment: Here, we tested 802.11ax, only.
19. At 2022-11-16T18:03+07:00 the chair declares the meeting adjourned.