IEEE P802.11
Wireless LANs

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| Minutes of Coexistence Standing Committee September 2017 meetings |
| Date: 2017-09-29 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Guido R. Hiertz | Ericsson | Ericsson Allee 152134 HerzogenrathGermany | +49-2407-575-5575 | hiertz@ieee.org |

Abstract

This document contains the minutes of the Coexistence Standing Committee (SC) meetings on 2017-09-11 and 2017-09-13 during the IEEE 802.11 interim meeting in the Waikoloa Village, Hawaii, USA.

# Monday, 2017-09-11

At 2017-09-11T13:31−10:00 the chairman calls the meeting to order. Andrew Myles is chairman of the Coexistence Standing Committee (SC). Guido R. Hiertz is secretary of the Coexistence SC. The chairman introduces the agenda contained in 11-17/1216r2. The chairman reminds attendees to record attendance. At 2017-09-11T13:33−10:00 the chairman reviews the IEEE patent policy.

At 2017-09-11T13:36−10:00 the Coexistence SC approves the agenda. At 2017-09-11T13:37−10:00 the Coexistence SC approves the minutes of its July 2017 meeting contained in document 11-17/1179r0.

At 2017-09-11T13:37−10:00 the chairman starts reviewing his document 11-17/1216r2 from slide 13. At 2017-09-11T13:41−10:00 the 802.11 WG chairman, Adrian Stephens, mentioned that he will update the 802.11 WG members area with the latest submissions to ETSI TC BRAN. At 2017-09-11T13:51−10:00 an attendee commented about slide 30 that in general the tests in EN 301 893 are in order but need to be slightly improved. The commentor mentions that there are a few minor mistakes and test labs are reporting about their experience with the new, complicated test procedures.

At 2017-09-11T13:52−10:00 the chairman continues reviewing his slides from page 31. At 2017-09-11T13:54−10:00 the chairman continues from page 34 since the attendee volunteering to report from 3GPP’s meeting is not in the room. At 2017-09-11T13:59−10:00 the chairman interrupts his presentation to receive comments on whether 802.11 should liaise again with 3GPP. Nobody in the room wants to liaise again.

At 2017-09-11T14:00−10:00 the chairman continues from page 42 of his slides. At 2017-09-11T14:07−10:00 an attendee comments that he expresses a qualified no on the question if we should further engage with 3GPP. This is related to page 47 of the chairman’s document. Attendees furthermore discuss and debate as follows.

Comment: There are a whole bunch of challenges here. Individuals that attend both meetings may report at 802.11. I also observe that there are large companies that have separate teams at both organizations. Even for them internal company coordination is an issue.

Comment: There are two separate questions: Coexistence and how 802.11 fits into the 5G world.

Comment: I don’t want both both questions to be confused. They should be handled separately.

Comment: This group debates coexistence. SC AANI considers the 5G context.

Comment: We should not expect other SDOs to wait for our permission to do something. Otherwise, other SDOs may also make us wait for their permission. This doesn’t make sense.

Comment: It should be a topic-by-topic decision whether to cooperate with 3GPP or to go through ETSI BRAN.

Comment: We must influence ETSI BRAN because they are so influential not only in Europe but all over the world. Through ETSI BRAN we must force other bodies to act according to our liking.

Comment: We must review things document by document. It’s too much for everyone to review every issue.

Comment: First, we need to identify the areas that need our attention.

Comment: In engaging at ETSI BRAN we also cover all other non-802.11 technologies. In talking to 3GPP we only influence their technologies.

At 2017-09-11T14:22−10:00 the chairman continues from page 48 of his presentation. At 2017-09-11T14:25−10:00 an attendee mentions with respect to page 54 that he will bring a submission regarding technology neutral preamble definitions to ETSI TC BRAN. The attendee states that he wants to bring it to ETSI BRAN first so that it be neutral and not under the suspicion of this being influenced by 802.11.

At 2017-09-11T14:28−10:00 the chairman continues from slide 55 of his document. At 2017-09-11T14:29−10:00 the question is asked if there is interest in a technology neutral greenfield preamble for the proposed unlicesnsed 6 GHz spectrum. Nobody shows interest in such a greenfield preamble. This relates to page 60 of 11-17/1216. At 2017-09-11T14:30−10:00 the chairman continues from page 61 of his slides.

At 2017-09-11T14:37−10:00 an attendee comments about page 64.

Comment: 802.11ax spatial reuse enhancements are a good example where restrictive rules in EN 301 893 harm 802.11’s ability to innovate.

Comment: Restrictive rules are dangerous because mistakes prohibit that 802.11 features are used. With restrictive rules, we are limited reacting. Restrictive rules prevent us from being proactive.

Comment: We should be afraid of being unable to innovate. We have to evaluate the risk of being trapped in the past vs. claimed coexistence issues. So far, I haven’t learned of any true issue. There is no evidence for any observed issue.

Comment: I don’t want Europe to constantly fall behind the rest of the world. With restrictive rules Europeans are always last to make use of latest 802.11 technology. EN 301 893’s influence goes beyond Europe.

Comment: Innovation cannot be predicted. The current version of EN 301 893 permits 2 MHz transmissions because of OFDMA that 802.11ax will introduce. Without such a modification, an important aspect of 802.11ax could not be used in Europe. Would we have missed this aspect in the current version 2.1.1 of EN 301 893 OFDMA according to 802.11ax could not be used.

Comment: At trade shows, 802.11ax products have been announced already. They cannot be used as is in Europe.

Comment: Any modification to a European harmonized standard requires adoption by the according ETSI group and a European approval procedure by the European member states. This is followed by the European Commission reviewing a standard and listing it. Or not. The 60 GHz standard EN 302 567 is an example of the European Commission rejecting to list it and everything needs to be repeated. This causes huge delays. Every tiny detail we add to EN 301 893 does not only increase its complexity it also increases the probability of EN 301 893 not being approved.

Comment: In unlicensed spectrum using a shared medium every transmission is harmful to somebody else’s transmission. Your understanding of RED is incorrect. Don’t get hung up with efficiency. 802.11 is very inefficient.

Comment: The 802.11 standard is approaching 5,000 pages. There are so many features that restritives rules will harm our ability to use the standard. Complexity kills.

Comment: Very detailed regulatory requirements are difficult to update and maintain. Our standard proves that the more pages there are the less agile everything becomes.

Comment: You are right with what you said. Right now, I want to focus on SR as it relates to EN 301 893 v2.1.1.

Comment: SR is a very good example for complexity. 802.11ax introduces various SR concepts and they all need to be checked against EN 301 893. Furthermore, for every detail in EN 301 893 there needs to be a test case in the Harmonized Standard. Testing is complex and may cause devices to be prohibited from the market.

2017-09-11T14:47−10:00 the chairman continues from page 65.

Comment: You are ignoring the complexity of SR. There are several SR concepts in 802.11ax. This is not simple. SR using coloring needs a test specification that observes the device at the protocol level. How would a test lab know if a device under test truly monitored the wireless medium? Describing the color bits in the 802.11 PHY header needs normative references again. This is something ETSI and the EC want to get rid of.

Comment: You always need a test clause for every detail in clause 4 of EN 301 893.

Comment: I believe there is a way to describe how to transmit on top of another device. Absolutely right. This is a real challenge. How do we do it without external references?

Comment: Measurements are not simple. Some devices cannot be cabled. How to measure then? Over the air measurements can be inaccurate. Antenna gains and everything needs to be considered. There may be inconsistent test results between different test labs then.

Comment: I believe there is a thousand ways of developing bad standards and documents to circumvent rules. With technology neutrality, no standard has more importance than any other. EN 301 893 is just a bureaucratic effort. Your proposal makes no sense.

At 2017-09-11T14:57−10:00 the chairman continues from page 66.

Nobody believes Spatial reuse is unimportant so that it does not need to be enabled.

At 2017-09-11T15:01−10:00 the chairman continues from page 68. At 2017-09-11T15:02−10:00 the chairman introduces his submission 11-17/1392r0.

At 2017-09-11T15:14−10:00 attendees start discussing the submission.

Comment: What are we talking about? Please clarify which presentation you are referring to.

Response: This is 11-17/1392 that summarizes various aspects of ETSI BRAN for TGax.

Comment: Your statement on slide 6 is incorrect. There is no “EDCA-like” LBT in EN 301 893. EN 301 893 describes an exact copy of EDCA.

Comment: Your repetition of “efficiency” does not help. We saw various submissions to SG HEW that outline how inefficient 802.11 is. Easily, channel occupancy is 60 % or more for management traffic. The system just talks to itself. This is inefficient use of the wireless medium if less than 40 % of all transmissions carry user data. We will shoot ourselves in the foot if you continue bringing this argument.

Comment: Your statement on page 10 is incorrect. There has been a sinle simulation only so far. This is insufficient to draw conclusions from.

Comment: I disagree with the principle of simple “thought experiments.” They seem to be promising but do not work.

Comment: Note that ETSI BRAN had a compromise to converge the ED threshold to −72 dBm for all technologies.

Comment: Get rid of 90 % of what you have in 11-17/1392r0. Present just one slide. As usually, you inflate things. Restrict it to the fact and the content.

At 2017-09-11T15:27−10:00 the chairman will make himself available during AM2 tomorrow to discuss how to shorten the slides.

At 2017-09-11T15:28−10:00 the chairman declares the meeting to be in recess.

# Wednesday, 2017-09-13

At 2017-09-13T13:31−10:00 the chairman calls the meeting to order. Andrew Myles is chairman of the Coexistence Standing Committee (SC). Guido R. Hiertz is secretary of the Coexistence SC. The chairman introduces the agenda contained in 11-17/1216r5. The Coexistence SC unanimously approves the agenda. At 2017-09-13T13:34−10:00 the chairman introduces 11-17/1469r2. At 2017-09-13T13:41−10:00 the chairman concludes his presentation.

Comment: The current EN 301 893 does not mention a PD/ED use. It just refers to the 802.11 standard.

Comment: You should upload earlier. Some of us had evening sessions to chair or attend.

Comment: I see this document for the first time.

Comment: Please change some biased statements. There are some modifications necessary.

Comment: Make statements more factual. There should be no “believes” in this submission.

Comment: We debated yesterday. EN 301 893 does not use LBT “similar to EDCA.” EN 301 893 uses an exact copy of EDCA. The LBT in EN 301 893 describes EDCA. There is no difference.

Comment: Do not forget that EN 301 893 version 2.1.1 does allow for the transmit power dependent SR mechanism that 802.11ax describes.

Based on the comments the chairman creates 11-17/1469r3. The group agrees to have submission 11-17/1469r3 be presented to TGax.

At 2017-09-13T13:50−10:00 Vinko Erceg presents submission 11-17/1478r0. At 2017-09-13T14:02−10:00 Vinko Erceg concludes his presentation.

Comment: These arguments don’t matter, because the −82 dBm is your own choice. You don’t have to do it.

Response: −72 dBm is not very good for Wi-Fi because of ACI situation.

Comment: Your submission would be stronger if you provide data.

Comment: I don’t understand from your submission what 802.11ax wants.

Response: I agree, our proposal is not very good here. The text on slide 6 is not good.

Comment: What do you think works for 802.11ax?

Response: I believe −62 dBm/−82 dBm works without considering spatial reuse. With consideration of spatial reuse, it all falls apart.

Comment: It would be better if we don’t codify and repeat specs in EN 301 893. Maybe EN 301 893 could refer to one of legacy modes of 802.11 for sensing.

Response: One of the issues in ETSI BRAN is to remove all technical references in EN 301 893. Authorities, ETSI, and European Commission don’t want any normative references to other standards.

Comment: I am not sure that I agree. Currently EN 301 893 does incorporate normative references. It might be the easiest way to reference to external standards in EN 301 893.

Comment: Yes, the current version is the last version that should contain normative references to external technical standards. For the sake of technology neutrality, they shall be removed with future revisions. Having normative references in the current version was part of a compromise to make progress.

Question: What is your plan next?

Response: We are going to have a submission.

Comment: We have some time to converge on input to ETSI BRAN’s next meeting in December.

Comment: We are after some solution that should allow 802.11 to do what it did in the past and to allow 802.11ax to use spatial reuse.

At 2017-09-13T14:11−10:00 Menzo introduces document 11-17/1428r1. At 2017-09-13T14:41−10:00 Menzo concludes his presentation

Comment: What happens in real world?

Response: In a more complicated scenario a round robin fashion will not be achieved.

Comment: With full-buffer, you achieve a steady-state situation.

Response: Yes. With non-full buffer, I see similar results. Not the sharp, strictly limited graphs that are shown in my presentation. But still, the CDF is capped. This is important.

Comment: Please remember that during AIFS you already count down by 1.

Comment: I believe exponential backoff is to break the tie. How do you break the tie if you only have a contention window of 4?

Response: There are always some number of random slots that allow you to go into.

Comment: I really like this. This interesting stuff. In a sense, this is out of scope of the group. In another sense, this is in scope. How do you propose to move this forward?

Response: I want to write it up as a submission to TGmd. I want to provide a “delta” to the current description of EDCA. The “delta” between deterministic medium access and random backoff medium access is very small.

Comment: I hate to jump on this, but I would like further serious studies and real-life deployments.

Response: There was a previous version that I called moderated backoff. It was similar but did not have the deterministic aspect. The University of Palermo implemented the moderated backoff scheme in a software defined radio platform. There is a related paper.

Comment: May you share the code of the protocol? Your code for simulator?

Response: Yes, I might do this.

Comment: This is the kind of innovation the current restrictive rules of EN 301 893 prohibit. If 802.11 were to adopt this scheme, it must not be used in Europe unless the 5 GHz standard is modified. This is a good example how we cut off ourselves from improvements.

Comment: I will write it up, I invite everyone to help or join the work. Feel free to ask for other simulation studies.

Comment: Did you optimize the random backoff?

Response: No, I used CWmin equal to 15 and CWmax equal to 63.

At 2017-09-13T14:55−10:00 Guido R. Hiertz presents 11-17/1179r0. At 2017-09-13T15:08−10:00 Guido R. Hiertz concludes his presentation.

Comment: I was a member of the Arpanet project. I confirm your findings. Back then, it was technically too difficult to reliably detect power. It was too hard, close to impossible. You are right that preamble detection came first. It was easier to detect a signal than to measure power.

At 2017-09-13T15:12−10:00 Thomas Derham presents 11-17/1498r0. At 2017-09-13T15:22−10:00 Thomas Derham concludes his presentation.

Comment: Regarding page 4 in your slides I would like to state that we had a long discussion about what I call blocking energy issue.

Comment: I believe you bring back the blocking energy thing over and over. However, also 802.11 makes frequent use of padding. Padding is used to block the medium from being accessed by other devices.

Comment: With respect to 3GPP I believe things have worked very well for us. We have influenced them according to our liking.

At 2017-09-13T15:28−10:00 the chairman adjourns the Coexistence SC.