IEEE P802.11
Wireless LANs

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| IEEE 802.11 TGbb Task Group on Light Communications September, 2018 Kona Meeting Minutes |
| Date: 2018-09-10 |
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Abstract

This document contains the Task Group on Light Communications (TGbb) meeting minutes from the IEEE 802.11 Kona meeting, September 2018.

**IEEE 802.11 Task Group TGbb**

**Monday, September 10, 2018, AM2 Session**

Attendance: around 20 people

1. The IEEE 802.11 TGbb meeting was called to order at by the Chair, Nikola Serafimovski (pureLiFi). As the secretary could not attend, Volker Jungnickel (Fraunhofer HHI) recorded the minutes.

1. The Chair Nikola Serafimovski (pureLiFi) reviewed the IEEE-SA patent policy, logistics, and reminders, including meeting guidelines and attendance recording procedures.
	* It is reminded all to record their attendance.
2. The Chair Nikola Serafimovski (pureLiFi) introduced the schedule for the meeting
	* + Go through contributions related to channel models (doc. 1582r0 and doc. 1574r0)
		+ Go through contributions related to simulation scenarios (docs. 1423/r0, 1593r0)
		+ Go through evaluation methodology (doc. 1429r0)

It was decided not to finalize the Call for Proposals at the September meeting because this was considered unrealistic based on the current status of the required documents.

1. Tuncer Baykas (IMU) run a motion, seconded by Harry Bims (Bims Laboratories Inc.), to approve the agenda in doc 1379r1. Motion passes unanimously.
2. Tuncer Baykas (IMU) run a motion, seconded by Oliver Pengfei Luo (Huawei), to approve the minutes of the phone calls held between the July and September meeting. Motion passes.
3. Tuncer Baykas (IMU) run a motion, seconded by Volker Jungnickel (HHI) to approve the Minutes from July meeting in doc. 1251r4. Motion passes.
4. Tuncer Baykas (IMU) presented doc. 18/1109/r0 on the Reference Channel Models for LC.
	* It was again discussed that the illumination values should be represented in W/m² rather than Lumen because the Lumen value depends also on the sensitivity curve of the human eye. The value is currently given to indicate that normal lighting conditions are fulfilled.
	* Q: In Fig. 12 why D7 is different.
	* A: Because the Rx looks down and has constantly higher path loss than any other PDs.
	* Q: Do the channel impulse responses contain the LED or not?
	* A: There are both responses available in the document. The optical frequency response does not contain it, while the effective CIR contain the LED and PD models.
	* C: CIRs with mat files for all scenarios will be available on Mentor in 1603r0.
5. There was a straw poll to start comment collection for the proposed channel model document in doc. 1542r0. Comments should be submitted until 24 Sept. 2018. Y/N/A = 12/0/2
6. Straw poll: Should the channel model concerning the operating theater in doc. 1582r0. Y/N/A 0/5/9.
7. Should the Scenario 3: Hopitals from doc. 15-15-0514r0 be used in TG11bb : Y/N/A 5/0/8.
8. Volker Jungnickel (Fraunhofer) presented "LC Frontend Models" 802.11-18/1574r0.
	* Q: Slide 4 What is the bandwidth of the measurement?
	* A: 300 MHz.
	* Q: How could we add nonlinear effects of frontend model?
	* A:  We are planning to create material in the future and group may add effects in the future.
	* Q: The LED which is used one is red. Will you provide results with a white LED?
	* A: We may provide white led in the future.
	* C: We incorporate what is presented into the channel document and provide a simple model for the simulations.
	* A: It could be included as frontend model.

Meeting was recessed until Tuesday September 11, 2018 in PM2.

**Tuesday, September 12, 2018, PM2 Session**

Attendance: around 25 people

1. The IEEE 802.11 TGbb meeting was called to order at by the Chair, Nikola Serafimovski (pureLiFi). As the secretary could not attend, Volker Jungnickel (Fraunhofer HHI) recorded the minutes.

1. The Chair Nikola Serafimovski (pureLiFi) reviewed the IEEE-SA patent policy, logistics, and reminders, including meeting guidelines and attendance recording procedures.
	* It is reminded all to record their attendance.
2. The Chair Nikola Serafimovski (pureLiFi) introduced the agenda of the meeting. The agenda was approved with unanimous consent.
3. Jeong Gon Kim (Korea Polytechnic University) presented doc. 1593r2 on simulation scenarios requesting to include that environment to increase the diversity.
	* Q: Include notes from Tuncer obtained by email
4. Oliver Pengfei Luo (Huawei) presented 1422r0 on Simulation Scenarios. He introduced the definition of a simulation scenarios. It was reminded that TGax needed more than 2 years to finish the similar document. TGbb is smaller and needs a way to go forward with the required effort. He proposed a unified set of scenarios, asking the question if the group would adopt these scenarios as a baseline set. If so, tehse scenarios will be used for refining the scenarios description.

Q: Why based on TGax and not TGay?

A: Based on TGax template. The Chair answered that the framework is very well defined in this document and it was most mature. The document has the most participants and required the most difficult consensus.

Q: But TGay is 60 GHz and propagation is closer to the LC considered here.

A: The Chair explained that TGbb works on the basis of 802.11-2016 plus a number of previous and running amendments. So all the previous work has to be considered.

Q: 60 GHz is more directional and better comparable to LC than TGax. There is lot of flexibility needed for LC and it is believed that the TGay may better provide this flexibility. The document goes more on the methodology.

A: The document is a proposal of the author and he choose TGax. In TGay we cannot find a finalized simulation scenario document in TGay, while in ax there is a mature structure of the document.

Q: The channel modeling methodology is much more similar compared to TGay. TGax is based on WINNER while TGay uses ray tracing same as TGbb.

C: One should not mix the two points, selecting the ToC of a mature document as a baseline and what channel modeling approach is used.

Q: What is the meaning of “managed”.

A: ESS allows some coordination among adjacent APs while there is also an unmanaged mode where the AP works on its own. The definition will be included in the next version of the document.

1. Oliver Pengfei Luo (Huawei) presented 1423r0 on TGbb simulation scenarios. He went through the document in much detail and explained the details.

Q: Structure like in TGax, content is taken from TGax. TGay is more generic and simpler instead of more sophisticated. The LC community is new and would be difficult to provide information with so much detail like required here, why not using less details.

A: The Chair answered that TGax basis is very detailed, to narrow down and compare different solutions. It is not so difficult to implement because there are many ns3 simulators in the open source, which do not contain everything but could be used with limited effort.

Q: There are no simulators in ns3 for 11ax freely available. Things in the document are taken over without discussing if it is reasonable or not. Using the structure of 11ax is fine but some content from 11ay could fit better here.

A: There is a 802.11-2016 ns3 simulator with many components for simulating the system, of course 11ax and 11ay are not available because they are new. One should aim at an open framework for LC.

**Oliver asked for volunteers to help complete the missing parameters in the document.**

C: Topology is fixed by the channel model and needs not to be defined.

D: System level evaluation should let the positions be random.

C: We are using ray tracing and our channel model is not statistical one. Geometric-statistical channel models like WINNER are not available for LC. For developing the technology and deciding which is the better PHY or MAC, it is in a fortunate situation to have the deterministic approach already based on ray tracing. We have the right methodology to create channel models and to evaluate the performance.

Q: Did you choose the type of the document due to the better structure?

A: Yes

C: The scenario should be representative, and the statistics needs not to be complete.

C: The group is driven by contributions. Whoever wants to change things should make presentations and then the group may decide what to.

1. Anthasios Stavridis (Ericsson) presented doc. 1546r2. The document is using the Fast session transfer (FST) mechanism to overcome eventual blocking and other mobility issues and directive nature of the channel. The channel is very much dependent on the geometric setup of the transceivers, otherwise performance is bad. Blockage causes connectivity problems. There is the MIMO approach but has issues with backhauling and others. Alternative is the use of RF and LC in parallel. Once LC is possible, data transmission is redirected to LC. Multiband operation can be implemented with minor modifications. FST mechanism is defined in 802.11-2016 for switching between one MAC sublayer to another MAC sublayer. There are many advantages mentioned like increased connectivity, support of high mobility, increased coverage, cross-room connectivity and others. Thanks to the hybrid solution this can be solved.

There were only few question on clarification.

There was a straw poll if the group believes or not that the effective cooperation of 802.11bb with the rest of the IEEE 802.11 family of standards is beneficial for 11bb. Y/N/A: 14/0/1.

The second straw poll in doc. 1546r2 was not run because the question was considered unclear by the group.

The meeting recessed an 18:00.

1. Oliver run a straw poll asking “Does the committee agree to accept the “Proposed Simulation Scenarios”