IEEE P802.11  
Wireless LANs

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| IEEE 802.11 Study Group on Light Communications  November, 2017 Orlando Meeting Minutes | | | | |
| Date: 2017-11-06 | | | | |
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Abstract

Study Group on Light Communications meeting minutes from the IEEE 802.11 Kona meeting, September 2017.

**IEEE 802.11 Study Group on Light Communications**

**Monday, November 12, 2017, PM1 Session**

Attendance: around 25 people

1. The IEEE 802.11 LC SG meeting was called to order at by the temporary Chair, Nikola Serafimovski (pureLiFi).
2. The temporary Chair reviewed the IEEE-SA patent policy, logistics, and reminders, including meeting guidelines and attendance recording procedures.
   * It is reminded all to record their attendance.
3. Chair introduced the schedule for the week

– Press release on SG, contributions, CSD and PAR

1. Approve the minutes from the July meeting
   * Chair asked if there is discussions. No discussion. The minutes were approved.
2. Chair discussed press release on SG LC

* PR is in document no. 1589/r0
* Nikola said that timeline is longer than expected and PR is not ready yet
* Osama suggested to remove “airplanes” from list of use cases
* Christophe said not to change too much at this time
* Discussion in the group showed more people speaking in favor of keeping than removing it
* Decision was to keep it
* Osama noted that work in 802.15 should be mentioned in some way
* There was a discussion showing that any minor change proposed would be misleading
* It was decided to upload a revised version 1589/r1 and present it at the WG opening plenary

1. Gaurav presented 1587/r0

* Proposed to break the MAC into lower and upper parts
* Full duplex makes MAC layer complicated, RTS/CTS/ACK is split over separate channels
* There is a saying on slide 5 that LC has lower latency and needs to wait for RF
* Volker objected against this statement because if both media have same bandwidth and same channel access scheme, there should be no difference in the delay, same issue on slide 6
* Half duplex can reuse the existing 802.11ad MAC layer
* OSAMA asked if MPDU aggregation is used, answer was yes
* Because of higher bandwidth, GCMP encryption is suggested
* Volker asked if the upper/lower MAC is fixed in 802.11
* Joseph said it is no official break, OSAMA said that the lower MAC is essentially HW
* Nikola asked for some more explanation of the graph on Slide 13
* Gaurav will make a number of according to the discussion and upload a revision in 1587/r1

1. Nikola presented 1590/r0 in place of Ivica who could not attend the meeting
   * Handover between different LC would need to be addressed
   * Heterogeneous network management and reliable data recovery would need to be addressed
   * Wide span of data rates demonstrated in slide 7
   * Mark mentioned that low data rates should not be considered, rather something for AR/VR with uncompressed video
   * Trade-off between data rate and coverage in slide 8 is important
   * Volker asks if 200 Gbps mentioned as upper limits demonstrated shall be the upper limit which would complicate the standard
   * Nikola says that 100s of Mbps will be the right scope for this standard
   * Volker also spoke in favor of beyond 1 Gbit/s to enable AR/VR use cases
2. Nikola presented 1609/r0 for Simon who could not attend the meeting
   * offloading from cellular to Wi-Fi
   * same is expected from Wi-Fi to LC
   * highlights consumer opportunities due to SDR and IoT
   * highlights business opportunities in smart buildings, enterprise and transportation
   * requirements on LC
   * Volker sees some technical contradiction between reqs. On Propagartion and Avaiability
   * Christophe asks where the numbers of 10 LEDs per sqm and 10 devices per LED come from
   * Volker recommends to specify a mininum and a maximum value for each required parameter in the table on slide 13 and define the range within which the standard can be operated in this way
   * The group further discussed the coverage issue, which depends on analog frontend
3. Nikola presented 1649/r0 on behalf of Chen who will be available in the next SG LC meeting
   * Discussion on path loss exponent in RF <6 GHz is 2-3
   * With light it is between 4-8
   * Comparison between coverage of high data rates
   * LC covers high data rates in smaller areas
   * Volker asks for clarifications on the simulation conditions, is same illumination assumed for µLED and OTS LEDs 🡪 will be asked to the authors
   * Data density comparison>25 Mbps/m² in 10 m with LC, 2 Mbps/m² in 100 m with 11ax
   * Volker asks for inclusion of 60 GHz would make this study complete
   * Transmission delay
   * Simultaneous UL/DL
   * MU-MIMO
4. Meeting recessed