**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | IEEE802.15.13 Meeting Minutes | |
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| Abstract | [Minutes of September 2017 Session] | |
| Purpose | [Description of what the author wants P802.15 to do with the information in the document.] | |
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**Task group 802.15.13 met for 11 meetings during the September 2017 Interim Session in Kona, HI.**

**Meeting #1, Monday 11 September 2017, AM 2 (10:30 – 12:30)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Mohammad Noshad (VLNComm)
* Li Qiang-John (Huawei)
* Jiamin Chen (Huawei)
* Sang-Kyu Lim (ETRI)

The meeting was called to order by Volker Jungnickel (Fraunhofer HHI).

Volker Jungnickel presented **doc. 15-17-0509r2**.

Patent slides are shown and the rules to attendance are explained.

Chair discuss about the LOA issue and encourage the members to start early.

Chair introduced the modification to the July meeting minutes. The meeting minutes was updated and approved **doc. 15-17-0432r3.**

Chair introduced the agenda of the meeting.

Sang-Kyu Lim volunteered to be the vice chair of TG13 and was approved by the group.

Chair updated the meeting slides **doc. 15-17-0509r3**

Chair leaded the discussion on the TG website, some modifications were suggested

* Draft CSD => CSD
* Add Sang-Kyu Lim as vice chair
* Change Secretary to technical editor
* Add secretaries

Chair will implement those changes in cooperation with Rick Alfwin.

Chair lead the discussion on the Liaison with ITU-T G.vlc. Chair introduced the situation of G.vlc.

* ITU-T had sent a liaison to 802.15 in 2015
* Chair mentioned that there are more chipset manufactures who want to support OWC in G.vlc but IEEE has more OWC experts.
* Chair expressed intention to have a mechanism that have both groups updated about the progress in both groups.

Meeting recessed until PM1.

**Meeting #2, Monday 11 September 2017, PM 1 (13:30 – 15:30)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Mohammad Noshad (VLNComm)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* The meeting was called to order by the Chair Volker Jungnickel (Fraunhofer HHI).
* Discussion on John’s presentation 0514/r0

The committee discussed question 1 on slide 3 in 0514/r0 concerning VPPM but postponed the decision to Meeting #3.

The committee discussed question 2 on slide 3 in 0514/r0 concerning RPO-OFDM. Including this modulation would break the basic assumption to implement modulation and dimming as separate functions in the OWC system. This assumption leads to significant simplifications of the PHY and MAC layer.

**TG3 motion #5**

**TG13 moves that:**

**all text on RPO-OFDM is removed from D1 in order to separate data transmission and dimming.**

**Moved by: John**

**Seconded by: Volker**

**Y/N/A:  3/0/0**

The committee continued the discussion on question #1.

The meeting recessed until PM2.

**Meeting #3, Monday 11 September 2017, PM 3 (16:00 – 18:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Mohammad Noshad (VLNComm)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)

The committee continued the discussion on question #1 and summarized the current status in the following Motion, although the views are still controversial in the details.

**TG13 motion #6**

**TG13 moves that:**

**The way forward on VPPM is to keep it in the standard as one possible modulation method of the Pulsed Modulation PHY. Informative text on the principles of dimming will be contained in Section 4. Implementation details will be described in an Annex.**

**Moved by: Mohammad**

**Seconded by: John**

**Y/N/A:  3/0/0**

The committee continued the discussion on question #3 on slide 3 in 0514/r0 which resulted in the following motion.

TG13 Motion #7

TG13 moves that:

The concepts of visibility pattern and compensation time for dimming support will be removed from the specification since dimming has been moved to the annex.

Moved by: Mohammad

Seconded by: John

Y/N/A:  3/0/0

The committee continued the discussion on the questions contained on slide 4 in 0514/r0 which resulted in the following motion.

TG13 Motion #8

TG13 moves that:

Color function shall be moved to the Appendix H, as agreed in previous comment resolution in doc. 15-17-0297-02, as it belongs to the user interface and is not part of the PHY and MAC layer defined in TG13.

Moved by: John

Seconded by: Volker

Y/N/A:  3/0/0

The committee continued the discussion on the questions contained on slide 5. The general view is that the Pulsed Modulation PHY is a combination of the outcome of the Ad-hoc and some parts remaining from the old PHY II from 15.7-2011. The detailed discussion is postponed to one of the sessions on Tuesday.

The meeting recessed until Tuesday AM1.

**Meeting #4, Tuesday 12 September 2017, AM1 (8:00 – 10:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Mohammad Noshad (VLNComm)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Nikola Serafimovski (PureLiFi)

The group started to discuss the outcome of the Ad-hoc in Berlin which was fixed in doc. 15-17-454-03-0013.

The group decided to remove all comments that are still embedded in this document and upload a revised.

Mohammad presented doc. 15-17-0454-04-0013 agreed during the Ad-hoc meeting.

The group discussed the document.

Following outcomes were fixed as comments:

5S6S line coding for 4-PAM needs to be defined. A new clause t.b.d. is added. Content will be provided by Fraunhofer HHI.

There was a discussion on the clock with no outcome yet.

There was a discussion on the RS code and how to unify the various (*n*, *k*) pairs. The way forward is that Mohammad comes up with two pairs, where one pair has large block size k and low error protection for data and another pair has short block size *k* and higher error protection for control. There should be an implementation note how to realize those particular pairs.

The meeting recessed until Tuesday AM2.

**Meeting #5, Tuesday 12 September 2017, AM2 (10:30 – 12:30)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Mohammad Noshad (VLNComm)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Nikola Serafimovski (PureLiFi)
* Joe Polland (CommScope)

The committee postpones further technical discussion and started with comment resolution based on doc. 15-17-0479-01-0013 lead by John as the Technical Editor.

Regarding comment 29 there was a longer discussion about coexistence between the existing 15.17-2011 standard and the emerging 15.7m and 15.13 standards. As 15.7-2011 is hardly used, TG13 would like to delete PHY II and PHY III also from TG7m draft. In this way, coexistence between both emerging standards can be achieved. The Chair takes the action item to start resolving that issue by discussions with Bob Heile and committee members from TG7m.

By November the TG needs input to the introduction into the three PHYs types, the justification why they are distinct and needed.

**The Technical Editor expects contributions in the November meeting for the new clauses 4.4.1.x.** Moreover, there should be a discussion on coexistence issues in the November meeting the will have an impact on the final text. The discussion should also include whether FDM or TDM approaches should be used for coexistence, taking into account that it is getting increasingly difficult to use FDM taking into account that 802.15.13 operates in the same spectrum that can also be received by 802.15.7-2011 and G.vlc devices.

The meeting was recessed until Tuesday PM2.

**Meeting #6, Tuesday 12 September 2017, PM2 (16:00 – 18:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The committee continued comment resolution starting at #48 and completing until #73 in doc. 15-17-0479-01-0013.

The meeting was recessed until Wednesday AM1.

**Meeting #7, Wednesday 13 September 2017, AM1 (8:00 – 9:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The meeting was called to order by the Chair, Volker Jungnickel.

The chair informed the group about recent PAR and CSD drafts posted by the IG VAT, having a srtong overlap with the PAR of TG13. The Chair saw the need to object formally at the WG level because the IG is not eligible to develop such documents. In the AC meeting it was then decided to have a joint meeting with the IG VAT in Orlando to clarify the intention of the interest group and to ensure a unique identity of any new standard to be developed by IEEE 802. The WG chair in coordination with the IG VAT and TG13 Chairs aim at finding a time slot which is not overlapping with TG7m, TG13 and 802.11 LC SG.

The committee continued comment resolution starting at #74 and completing until #97 in doc. 15-17-0479-01-0013.

The meeting was recessed until Wednesday PM1.

**Meeting #8, Wednesday 13 September 2017, PM1 (13:30 – 15:30)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The meeting was called to order by the Chair, Volker Jungnickel.

The chair informed the TG13 that there will be a joint slot together with TG7m and IG VAT to find a common understanding about the role of all groups working on OWC in 802.15 and the standards they are working on. The group also discussed to keep the 8 time slots for TG13 plus this additional slot orthogonal with the time slots assigned to the LC SG in 802.11 to allow all members of TG13 to attend all the meetings related to Li-Fi.

The committee continued comment resolution starting at #98 and completing until #146 in doc. 15-17-0479-01-0013.

The meeting was recessed until Wednesday PM2 which is an additional session decided to be used by the TG13 to finalize comment resolution.

**Meeting #9, Wednesday 13 September 2017, PM2 (16:00 – 18:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The meeting was called to order by the Chair, Volker Jungnickel.

This additional meeting was announced over the WG email reflector with the aim to finish comment resolution against D0.

The committee continued comment resolution starting at #147 and completing all comments in doc. 15-17-0479-01-0013.

The committee had a discussion about how to integrate the different PHYs and postponed this discussion after it has completed comment resolution.

The committee discussed the plan for Thursday sessions and revised the meeting slides, accordingly.

The meeting was recessed until Thursday AM1.

**Meeting #10, Thursday 14 September 2017, AM1 (8:00 – 10:00)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The meeting was called to order by the Chair, Volker Jungnickel.

The task group developed a draft text as a reply to the ITU-T G.vlc liaison statement to 802.15 in doc. 15-15-0518-00-007a that will be uploaded and sent to the WG Chair for discussion at the WG closing plenary.

The group discussed the unification of parameters for the pulsed modulation PHY which will be contained in doc. 15-17-0454-05-0013 and finished during the PM1 meeting.

The meeting was recessed until Thursday PM1.

**Meeting #11, Thursday 14 September 2017, PM1 (13:30 – 15:30)**

Attendees:

* Volker Jungnickel (Fraunhofer HHI)
* Li Qiang-John (Huawei)
* Sang-Kyu Lim (ETRI)
* Mohammad Noshad (VLNComm)
* Nikola Serafimovski (PureLiFi)

The meeting was called to order by the Chair, Volker Jungnickel.

The group reviewed the draft document to be sent to ITU-T. TG13 made the following motion

TG13 moves that:

The WG Chair is asked to sent a reply to the ITU-T SG15 Q18 concerning the G.vlc work item. The draft text is contained in doc. 15-17-0546-00-0013. The WG chair is allowed final editing to this document.

Moved by Volker

Seconded by Sang-Kyu Lim

Motion is approved by unanimous consent.

The group further discussed unification of the parameters for the Pulsed Modulation PHY which will be contained in doc. 15-17-0454-05-0013. As few points were left open for further discussion, finalization was postponed to the November meeting to be included in D2.

The task group reviewed the overall schedule which is in plan and decided that D1 shall be ready on October 13. Comments will be treated at the November plenary meeting in Orlando if submitted before Oct. 30. Final comments shall be submitted until January 1, 2018 and be treated at the January interim meeting.

The meeting was adjourned until the November meeting in Orlando.