IEEE P802.15
Wireless Specialty Networks

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| IEEE 802.15.13 July, 2019 Interim Meeting Minutes for Vienna |
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Abstract

# This document contains the TG13 Multi-Gigabit/s Optical Wireless Communications Meeting minutes from the July meeting in Vienna July 2019.

**Monday, July 15, 2019, PM1**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Tuncer Baykas (Mediopol University)
1. The Chair Volker Jungnickel (Fraunhofer HHI) The Chair called the meeting to order and gave

a short overview on TG13 activities, IEEE rules, the way to get the voting right, etc..

1. The Chair presented the agenda doc. 15-19-0274-01-0013 and read the IP and patent policy.
2. The Chair briefly introduced the schedule of TG13 this week and mentioned that there is no joint meeting with experts from TG4y on security this time as it is not needed.
3. TG13 **Motion** #50 to approve the agenda for the week in document 15-19-274-01-0013.

Moved by Tuncer
Seconded by Sang-Kyu
Approved by unanimous consent MOTION PASSES
4. The meeting minutes for the meeting in Vancouver were presented in doc. 15-19-01-00-0013.
5. TG13 **Motion** #51 to approve the meeting minutes from January 15-19-0248-00-0013.

Moved by Nikola
Seconded by Sang-Kyu

Approved by unanimous consent MOTION PASSES

1. The meeting minutes for the telcos between Atlanta and Vienna meetings were presented in doc. 15-19/0288r0.
2. TG13 **Motion** #52 to approve the telco meeting minutes between Atlanta and Vienna meetings in doc. 15-19/0288r0.

Moved by Sang-Kyu

Seconded by Nikola

Approved by unanimous consent. MOTION PASSES.

1. The group started to identify TBDs in the TG13 draft D5.0. TBDs were initially collected as part of the revised meeting slides. Finally, they were collected in doc.15-19/0390r0. In this session, following TBDs were identified:

Clause 1-3: Editorial

Clause 4:

* Broadcast topology: How to signal to the devices
* MIMO at the device side (also to be worked into Clauses 5, 6, 7)
* Full duplex (also to be worked into Clauses 5, 6, 7)
* Security
* Coexistence
* Clock rate and MCS selection

Clause 5:

* References to tables etc. are missing
* Interframe spaces and turn-around times
* OWPAN ID is now 48 bit address
* Autentification can be removed
* MCS request to be defined in PM and LB PHYs
* BAT request to be defined in HB PHYs
* Rank request to be defined for MIMO
* Request one block size explicitly or compute this
* Add 5.9 for MIMO
1. The meeting recessed.

**Tuesday, July 16, 2019, AM2**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Tuncer Baykas (Mediopol University)
1. The Chair Volker Jungnickel (Fraunhofer HHI) The Chair called the meeting to order.

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The Chair presented the agenda doc. 15-19-0274-02-0013.

1. The Group continued to identify TBDs in D5.0. TBDs were initially collected as part of the revised meeting slides. Finally, they were collected in doc.15-19/0390r0. In this session, following TBDs were identified:

Clause 6

* Auxiliary security header
* Auxiliary address
* Element numbering
* Advanced modulation control element
* Support for multi-frontend devices
* Poll frame requirements „shall“ apply only for NBE MAC mode
* Element ID to be decided
* GTS request element
* Supported MCS element
* Check the fields for random access element
* Probe request element, what is mandatory/optional

Clause 7

* MCPS priority
* PIB attributes for security and energy detection threshold
* Turnaround time constant
* Discuss capabilities and which are mandatory/optional

Clause 8

* Remove any content related to security from draft

Clause 9

* PHY constants
* PHY PIB attributes
* OFE capabilities
* Table stating *MaxPSDUSize* for each PHY
1. The meeting recessed.

**Tuesday, July 16, 2019, PM1**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Tuncer Baykas (Mediopol University)
1. The Chair, Volker Jungnickel (Fraunhofer HHI), called the meeting to order and asked for attendance check.
2. The Chair asked who takes the meeting minutes as a Secretary, and then Sang-Kyu Lim (ETRI) volunteered to take the meeting minutes.
3. The Chair made a Motion to approve the agenda. 15-19/274r02. Motion was approved.
4. The Group continued to identify TBDs in D5.0. TBDs were initially collected as part of the revised meeting slides. Finally, they were collected in doc.15-19/0390r0. In this session, following TBDs were identified:

Clause 10 (PM PHY)

* Create a table for index of MCSs what is mandatory what is optional
* Turnaround times for for short control packet (shortest block length, lowest MCS in payload)
* MIMO-RS mapping table
* Numbering bits in the header should be discussed
* Table stating PHY constants (MaxPSDUSize) should be added
* General structure of the PHY should be handled
* Check numbering of octets and bits in the header again

Clause 11 (LB PHY)

* Create a table for index of MCSs what is mandatory what is optional
* Turnaround times for for short control packet (shortest block length, lowest MCS in payload)
* MIMO-RS mapping table
* Numbering bits in the header should be discussed
* Check LB PHY is still consistent with new MAC needs

Clause 12 (HB PHY)

* Turnaround times for short control packet (shortest block length, lowest MCS in payload)
* MIMO-RS mapping table
* Numbering bits in the header should be discussed
* Frame type and header is not defined
* Frame types should be discussed
* PHY layer does not have the same frame parts of the mac layer
* ITU-T and IEEE has totally different architectures
* In PSDU there is MAC layer

The group discussed how ITU-T PHY will effect the TG13 standard. We need to connect ITU-T to reserve one frame type. Duration indication, Multicast indication, OWPAN ID Source ID are not needed. Reserve core part for these FTs for further use. Duration Indication could be interesting. Eventually use core part for 802.15.13

1. The group started to discuss how to resolve the various issues in the TBD list.
2. Regarding Clause 8, the proposal is to remove any content related to security from draft.
3. The group discussed Clause 1-3. They are editorial and can be handled later.
4. Tuncer Baykas presented “Adaptive MIMO OFDM in IEEE 802.15.13” 15-19/322r0

C: New use cases for MIMO could be considered, such as AR and VR.

C: This would need another channel model, and an appropriate environment to be modelled.

C: Fraunhofer has an AR/VR showroom where the channel modeling could be made.

C: For finishing the standard, additional text for all Clauses need to be provided, as MIMO increases the complexity. So far, just MISO has been defined. Concepts can probably be easily extended to MIMO but this has to be done throughout all the Clauses. Tuncer is advices to contact Lennert in order to do this until September who has an overview where changes need to be made.

1. The meeting recessed.

**Wednesday, July 17, 2019, PM1**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Harry Bims (Bims Laboratories, Inc.)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Carlos Castro (Fraunhofer HHI)
* Tuncer Baykas (Mediopol University)
* Soo-Young Chang (SYCA)
1. The Chair, Volker Jungnickel (Fraunhofer HHI), called the meeting to order and asked for attendance check.
2. The Chair asked who takes the meeting minutes as a Secretary, and then Sang-Kyu Lim (ETRI) volunteered to take the meeting minutes.
3. The Chair briefly explained the PAR and CSD issue discussed in IG VAT meeting after WG Midweek Plenary.
4. IG VAT group is preparing the PAR and CSD documents to add the new PHY for high data rate OCC to IEEE 802.15.7-2018.
5. According to Vinayagam Mariappan, the new TG for high data rate OCC will be officially started on January 2020 and focus only on the PHY for high data rate OCC.
6. Xu Wang (VLNComm) and Chong Han (pureLiFi) joined this meeting via phone calls because they didn’t attend this meeting.
7. The Chair presented the agenda doc. 15-19-0274-03-0013 and briefly introduced the schedule on Thursday (AM1 and AM2).
8. The Chair briefly explained the issue discussed in AC meeting this morning. According to James Gilb, Technical Editor of WG level, WG Letter Ballot for TG13 cannot be approved through this Plenary Meeting because normally there are doubts about the fundamental editorial quality of brand new drafts. So, if WG Letter Ballot for TG13 would begin now, then TG13 will get so many comments which are all the same. The Chair said that the best way now is to do TBD works as much as we can so that the unfinished work is minimized.
9. TG13 conducted a short discussion on the coexistence issue in terms of the coexistence with RF-based communication technologies, minimizing the interference with neighboring OWC networks, and the coexistence with other standard such as G.9991.
10. So, consequently, some of sentences in Section 4.4 have been modified and some of new sentences have been added. The updated text for the coexistence is shown in Section 4.4 of the doc. 15-19/0304r3.
11. TG13 had a long discussion on the clock rate selection issue. The current text for the clock rate selection was copied from IEEE 802.15.7-2011.
12. Consequently, the group decided to implement the following procedure in order to define the new clock rate selection.
* Start beacon and association in basic mode
* Available clock rates become part of the MCS table supported [To Do PHY]
* Exchange possible MCS tables during association [MAC: extend for PM-PHY MCSs]
* Every packet starts with Preamble and Header in basic mode [ To Do PHY]
* Lowest common mode is selected for the Payload [To Do PHY]
1. Sang-Kyu Lim asked the Chair to upload the updated agenda document to the document server.
2. Sang-Kyu Lim notified the Chair that AM1 session on Thursday for TG13 is not shown in the Attendance Check System.
3. The meeting recessed.

**Thursday, July 18, 2019, AM1**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Harry Bims (Bims Laboratories, Inc.)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Tuncer Baykas (Mediopol University)
* Soo-Young Chang (SYCA)
1. The Chair, Volker Jungnickel (Fraunhofer HHI), called the meeting to order and asked for attendance check.
2. The Chair asked who takes the meeting minutes as a Secretary, and then Sang-Kyu Lim (ETRI) volunteered to take the meeting minutes.
3. The Chair checked the TBD list in 15-19/274r02.
4. A new comment list “Comment List against D5.0”is created by the Chair 15-19/323r0.
5. Kai Lennert presented “Text prepared for clause 4” in doc. 15-19/304r0..
6. The group discussed the broadcast topology
* What do we want to do with Broadcast topology?
* We should keep it either with PHY header or Beacon indication.
* PHY header should be simpler, putting topology information is MAC layer issue ok.
* In this case you don’t support Non beacon enabled mode.
* One could use OWPAN broadcast id as identifier and nobody should associate with that.
* Add sentence in 5.1.1: “OWPANs in broadcast mode shall make use of the OWPAN ID FF:FF:FF:FF.”
* Add to 5.13 and destination for broadcast is set to address FF:FF:FF:FF
* The MIMO system should be considered.
* During association, only robust mode is used.
* There may be a layered superframe.
* Coordinator should be able inform the device what type of transmission it has been assigned.
* It needs an aggregated MIMO feedback, to allow aggregated Superframe structure.
* MIMO transmission should be explained in more detail (t.b.d. for Tuncer)
1. The group discussed current features of the system.
* Text should be discussed with more people working on the MAC.
* Group discussed how to go forward to the letter ballot.
* Group postponed the discussion on MIMO modes.
* Group checked the full duplex mode
* Full duplex is stated in the capabilities part of the document.
* Group should check how it work with the beacon enabled mode.
* The relay functionality will work better in non-beacon-enabled mode.
* The text should be added in clause 5 and 6.
* Relay functionality will be added by Tuncer in Clause 5 and 6 in non-beacon-enabled mode.
* An implementation without SIFS is compliant.
* Full duplex is integrated.
1. Group started discussing security:
* Group checked the security related Clauses in chapter 4.
1. The meeting recessed.

**Thursday, July 18, 2019, AM2**

Attendance:

* Volker Jungnickel (Fraunhofer HHI)
* Kai Lennert Bober (Fraunhofer HHI)
* Sang-Kyu Lim (ETRI)
* Tuncer Baykas (Mediopol University)
* Nikola Serafimovski (pureLiFi)
* Vinayagam Mariappan (SNUST)
* Malte Hinrichs (Fraunhofer HHI)
* Dries van Wageningen (Signify)
* Carlos Castro (Fraunhofer HHI)
* Bechadergue (OLEDCOMM)
* Jerome Arokkiam (Osram GmbH)
1. The Chair, Volker Jungnickel (Fraunhofer HHI), called the meeting to order and asked for attendance check.
2. Chong Han (pureLiFi), and Xu Wang (VLNComm) joined this session via phone calls again.
3. The Chair opened the agenda doc. 15-19-0274-03-0013 and he updated the agenda document while summarizing the activities this week.
4. The Chair asked who takes the meeting minutes as a Secretary, and then Sang-Kyu Lim (ETRI) volunteered to take the meeting minutes.
5. The Chair appointed Tuncer Baykas (Mediopol University) for reporting the activities of TG13 this week in the WG15 Closing Plenary due to the fact that the Chair could not attend.
6. The Chair briefly explained the issue again discussed in AC meeting yesterday. According to James Gilb, Technical Editor of WG level, WG Letter Ballot for TG13 cannot be approved through this Plenary Meeting because it should be pre-checked before approving it. So, if WG Letter Ballot for TG13 begins now, then TG13 will get so many comments which are all the same.
7. The group discussed the schedule after July Plenary Meeting and the plan for finalizing the work in TG13.
* **July Plenary :**  Identify and resolve TBD, move new text into the draft
* **July to September :** Create new draft D6.0 and send it for informal review by TG13 and James Gilb and Ben Rolfe (eventually), continue working on TBDs
* **September Interim :** Resolve comments from internal and informal review, create D7.0 and send it to WGLB
* **September to Nov. :** Do WGLB and submit comments
* **November Plenary :** WGLB comment resolution and send Draft D8.0 to recirc. ballot
* **Nov. To January :** Create comments from recirc
* **January Interim :** Submit draft to SB
1. The plans until September were discussed.
* Create new draft D6.0 and send it for informal review by TG13 and James Gilb and Ben Rolfe (eventually)
* Continue working on TBDs, create new text blocks
1. The plans for the September Interim meeting were discussed.
* Resolve comments from internal and informal review
* Create D7.0 and send it to WGLB
1. The Chair explained the issue again to Nikola, which was discussed in AC meeting yesterday, because Nikola joined this session a little bit late. Nikola also agreed to the plan and the current situation that the Chair has explained again.
2. The Chair updated the Suggested Timeline document, and then he uploaded the doc. 15-17/0288r9 to the document server.
3. Lennert reviewed the new documents which was created to replace the old texts in D5.0, and the new documents have been uploaded. The Chair and Lennert created the comment resolution sheet, which is doc. 15-19/0323r0 in order to officially replace the old texts in D5.0 with the new documents.
4. TG13 **Motion** #53 to include the resolution of comments against TG13 draft 5.0 as contained in doc. 15-19/0323r0 into the new TG13 draft D6.0 and to approve that the Technical Editor is granted the right to correct the section numbering and make editorial changes.

Moved by Nikola
Seconded by Sang-Kyu

Y / N / A = 4 / 0 / 0 MOTION PASSES

1. The next telco dates to resolve the TBDs on the draft were discussed. However, Lennert addressed that there is a limit to what we discuss the issues such as the clock rate selection issue which needs much time through the teleconferences.
2. TG13 **Motion** #54 to approve the telco schedule as contained in doc. 15-19/0274r4.

July 30 10:00-11:00 EST on TBD

August 13 10:00-11:00 EST on TBD

August 27 10:00-11:00 EST on TBD

September 10 10:00-11:00 EST on TBD

Moved by Nikola
Seconded by Sang-Kyu

Approved by unanimous consent MOTION PASSES

1. TG13 **Motion** #55 to update the timeline of TG13 as included in doc. 15-17/0288r9.

Moved by Nikola
Seconded by Sang-Kyu

Approved by unanimous consent MOTION PASSES

1. The Chair asked for any other business. There was none.
2. The meeting adjourned.