**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | September IEEE802.15.7r1 Minutes |
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| Source | Nikola Serafimovski (pureLiFi)Yeong Min Jang (Kookmin University) | Voice: [ ]Fax: [ ]E-mail: [ ] |
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| Abstract | [Minutes of September 2015 Plenary Session]  |
| Purpose | [Description of what the author wants P802.15 to do with the information in the document.] |
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**Task group 802.15.7r1 met for 7 sessions during the September 2015 meeting.**

**Session 1 (14 September 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom
* Bob Heile – WiSun Alliance

Meeting called to order and the agenda for the meeting was discussed and agreed (**doc. 606-r2**).

Comments for revision of the TCD in (**doc. 596-r0**) were discussed against TCD draft (**doc. 492-r3**) and the outcome of the discussions were uploaded to a new version (**doc. 595-r1**). The updated TCD draft was uploaded as (**doc. 492-r4**).

Meeting recessed until PM 2.

**PM 1 (16:00 – 18:00)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom

Meeting called to order.

The pre-proposal template was discussed (**doc. 649-r0**). The committee agreed that Hideki will change the form to make it easy to complete in a “free to fill” format and will be updated (**doc. 649-r1**).

Rick discussed an updated version of the LOS Link Budget (**doc. 500-r2**).

Tuncer presented the LiFi channel model (**doc. 685-r0**).

Rick asked will the angle of arrival be considered as part of the Channel Model? Specifically, a file should be included to allow proposers to remove the influence of multi-path with simple optics and a particular field of view.

Jaesung asked what the sampling rate is and how to address different sampling rates?

Volker will provide input on how to change the channel model sampling rate to match the different sampling rate.

Yu suggested that in addition to the CIR files, the committee should provide a general formula that can be used to roughly evaluate the signal strength that can be easily changed to account for the different parameters that are available.

Meeting recessed until Tuesday, 15 September 2015 PM1.

**Session 2 (15 September 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom
* Hiroyo Ogawa – National Institute of Information & Communications Technology
* Shu Kato – Tohoku University

Meeting called to order and the agenda for the meeting was discussed and agreed (**doc. 606-r4**).

Hideki presented the Panasonic Channel Model (**doc. 534-r1**).

Rick asked if the color temperature changes the responsivity of the channel response.

Hideki – Yes, if you have two lights with the same Candela value but working on two different frequencies (Blue and Green) then the light sources will convert to effectively outputting different energy (W).

Nikola – how can this happen when the electrical power going into the light is fixed?

Trang presented the Kookmin channel model for sea and underwater communications (**doc. 718-r0**).

Rick – can the light source really be separated when looking at a lighthouse with a camera and it appears as a point source? Do you model the motion of the boat as part of the channel model?

Trang – no, we do not consider the motion as part of the channel model.

Nikola – do you assume that you have a stabilized platform for the lens that is spreading the signal on the Image Sensor?

Trang – we assume that our spreading lens is stabilized.

Rick – there are modern mechanisms that provide platform stabilization.

Hideki – image stabilizing mechanisms are used for smaller changes in motion.

Jaesung – we have already implemented stabilization systems for data communication in a real environment.

Jaesung presented a channel model for various scenarios focusing on short-range line of sight LoS environments (**doc. 716-r0**).

Hideki presented the updated version of the pre-proposal template (**doc. 649-r1**). Hideki will edit the template to reflect the new structure of the TCD (**doc. 492-r4**) and will upload it as a new document called Intent for Proposal Template that will be issued when the Call for Proposals (CFP) goes out.

Rick presented the new version of the TCD (**doc. 492-r4**) and the comments that were implemented (**doc. 596-r1**).

Nikola suggested that there should be a clarification for Horizontal Handover in the document and Volker suggested that we need the same clarification for the Vertical Handover comment later.

Rick edited the TCD and will upload the revised version (**doc. 492-r5**).

Nikola raised the discussion on the ITU-T discussion for the G.vlc specification.

Jaesung and Prof. Jang received an e-mail from the South Korean government organization group informing them that Korea Telecom is the host for the October meeting in Seoul around the end of Oct.

Yu Huawai has some products and they would like to combine the PLC products with VLC products and provide them potentially as an IoT solution.

Jeasung – Original ETRI/Samsung standards chair for VLC 802.15.7 standard is now the chair for the TTG-VLC (Korean VLC standard).

G.vlc – focusing mostly on WDM for PLC and want to have an extension to VLC.

Volker – it would be very appreciated if someone from the committee can provide any insights into the ITU-T standardization on the VLC.

The Chair uploaded the latest agenda document with the accelerated schedule (**doc. 606-r5**).

Meeting in recess until PM 2.

**PM 2 (16:00 – 18:00)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom

Meeting called to order.

The current draft of the TCD (**doc. 492-r5**) was discussed for a potential technical vote to become the new TCD of the Task Group.

**MOTION:**

The Technical Considerations Document (**15-15-0492-05-007a-technical-considerations-docusment.docx**) is up for a technical vote whether to be accepted

**Moved:**  Tuncer Baykas

**Seconded:** Nikola Serafimovski

**YES: 8 NO: 0 Abstain: 0**

The motion passed unanimously.

Yu Zeng presented China Telecom’s channel model in collaboration with Professor Nan Chi from Fudan University (**doc. 720-r0**) contribution.

Rick – there is no point in making the long distance outside VLC model mandatory.

Yu – we would not like the outside channel model to be mandatory, however, we could make use of the model if it was in one place.

Nikola – The outside channel model should not be mandatory for proposals, however, a consolidated data base would be useful for academia and the committee could be the hub.

Volker – I would be happy to work with Nan Ghi to establish a validated data set of external channel models.

**Chair – How shall we use the Channel Models?**

Nikola – We should use Murat’s channel model for High Speed PD contributions to evaluate the technical proposals. Volker and Yu should work with Nan Chi to create a cohesive and comprehensive outdoor channel model that will be optional. The outside channel model should be optional and used by the VLC community. We believe that there should be no requirement for a channel model for the Image Sensor or Low Speed PD technical contributions.

Jaesung – I support Nikola’s point, that we should have a channel model for high speed but not for low speed PD or Image Sensor and we want a cohesive report for the Outdoor Channel Model.

Rick – We need a Channel Model contribution for the High Speed PD that will be accepted by the committee. However, the low speed PD and the Image Sensor do not need a mandatory Channel Model.

Hideki – We should have a mandatory Channel Model for High Speed PD, but we should only use a Channel Model for the Image Sensor and Low Speed PD if there is a conflict on the proposals. The committee should decide on this Channel Model at this meeting.

Soo Young – All High Speed PD proposals need to use the proposed LiFi Channel Model.

Jaesung – The propagation channel model for China Telecom should be open to be made optional.

Hideki – We need to agree on a channel model for the Imaging Sensor that will allow a comparison if there is a conflict within the proposals.

Nikola – I agree, we need to establish the baseline model or set of models that will be used to compare competing proposals before the situation becomes heated.

Jaesung – If there is a conflict, then High Speed PD Channel Model is mandatory and Low Speed PD channel model is not mandatory and the Image Sensor any channel model can be used.

Meeting in recess until 16 September 2015, PM 1.

**Session 3 (16 September 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom
* Demir Rakanovic – U-Blox
* Shu Kato – Tohoku University

Meeting called to order. The Chair revised the agenda and it was agreed (**doc. 606-r5**).

Tuncer presented the draft document for the LiFi channel model. The document will be uploaded later in the day.

Yu presented a proposal for a Channel Model for Image Sensor and Low Rate PD Communication (**doc. 735-r0**).

The committee has agreed that it does not need proposers to evaluate their submissions against a Channel Model to hear Technical Proposals for the Image Sensor and Low Rate PD sections of the TCD (**doc. 492-r5**). The committee will ask the proposers to explain their assumptions and may ask proposers to change or augment their proposals for evaluation against various metrics.

The committee has agreed that all proposal submitted to the committee dealing with the PHY algorithms for the High Rate D must use the Channel Impulse Responses provided in TG7r1 Channel Model Document for High-rate PRD Communications (**doc. 746-r0**) for the specific Scenario that they intend to address in their proposal.[[1]](#footnote-1) The exact channel impulse responses are provided in TG7r1 CIRs Channel Model Document for High-rate PD Communications (**doc. 747-r0**).

There will also be an optional channel model used for evaluating algorithms for use in outdoor environment. The submission will be made at the next meeting in November 2015.

Meeting in recess until PM 2.

**PM 2 (16:00 – 18:00)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University
* Yu Zeng – China Telecom
* Demir Rakanovic – U-Blox
* Shu Kato – Tohoku University

Meeting called to order.

The committee reviewed TG7r1 Channel Model Document for High-rate PRD Communications (**doc. 746-r0**) and TG7r1 CIRs Channel Model Document for High-rate PRD Communications (**doc. 747-r0**). The committee decided that all changes and modifications should be submitted to the 902.15.7r1 e-mail reflector.

The draft Call for Proposals (**doc. 581-r2**) was discussed.

Meeting recessed until Thursday 17 September 2015 AM 2.

**Session 4 (17 September 2015)**

**AM 2 (10:30 – 12:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Soo Young Chang – California State University Sacramento
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Mohammad Arif Hossain – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order. A

The agenda was reviews and agreed.

The draft Call for Proposal (**doc. 580-r3**) was reviewed and considered by the committee.

Rick was tasked to edit the draft Call for Proposals with the suggested comments from Volker, Nikola and Rick.

**MOTION:**

The Call for Proposals Document (**15-15-0580-04-007a-tg7r1-call-for-proposals-cfp.docx**) is up for a technical vote whether to be accepted

**Moved:**  Nikola Serafimovski

**Seconded:** Hideki Aoyama

**YES: 8 NO: 0 Abstain: 0**

Meeting in recess until November, 2015.

1. As an example, a proposal for an algorithm to be used in an open office environment must provide results using all CIRs from Scenario 1: Open Office. If there are competing proposals, then the Proposers will be asked to use the same specific Scenario or both Scenarios if they are different. [↑](#footnote-ref-1)