**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | July IEEE802.15.7r1 Minutes | |
| Date Submitted | July 2015 | |
| Source | Nikola Serafimovski (pureLiFi)  Yeong Min Jang (Kookmin University) | Voice: [ ] Fax: [ ] E-mail: [ ] |
| Re: | [If this is a proposed revision, cite the original document.]  [If this is a response to a Call for Contributions, cite the name and date of the Call for Contributions to which this document responds, as well as the relevant item number in the Call for Contributions.]  [Note: Contributions that are not responsive to this section of the template, and contributions which do not address the topic under which they are submitted, may be refused or consigned to the “General Contributions” area.] | |
| Abstract | [Minutes of July 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 9 sessions during the July 2015 meeting.**

**Session 1 (13 July 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
* Jung Hoon Lee – Dong Seoul University
* Sangsung Choi – ETRI
* Mohammad Nekoui – Olympus
* Alexander Fricke – TU Braunschweig
* Thomas Kuerner – TU Braunschweig
* Mounir Achir – Canon
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

The agenda (**doc. 483-r2**) was discussed and agreed.

Volker raised a question if the Call for Applications is still open. The Call for Applications was verbally closed during the May meeting in Vancouver but was not recorded in the meeting minutes and this needs to be updated.

Jaesang discussed (**doc. 537-r0**) his proposed changes to the Technical Considerations Document (TCD) draft (**doc. 492-r0**) relating to the Low-speed Photodiode (PD) detection.

The low-speed PD set is designed to address the Internet of Things (IoT)

Trang presented the Kookming University contribution (**doc. 527-r0**) discussing about the requirements for an Asynchronous Communications Mode to be considered as part of the TCD.

There was a discussion about the exact discussion on the Asynchronous OCC definition. In principle, there is an agreement that there is a need for Asynchronous OCC. However, there is a discussion about the strict structure.

Hideki and Rick raised the point that there are 3 variations:

* Varying frame rate on the camera
* Varying transmission frequency
* Varying start of the transmission frame and receiver start frame

There needs to be a further discussion to solidify and clarify the terminology.

Trang presented proposed changes (**doc. 533-r0**) to the TCD (**doc. 492-r0**).

**ACTION (due 14 July 2015):** Rick will collect comments from Jaesang (**doc. 537-r0**) and Trang (**doc. 533-r0**) that need to be included in the overall comments (**doc. 503-r0**) that need to be discussed in the table format.

Rick presented the Document Review Methodology (**doc. 501-r0**).

The Document Review Methodology (**doc. 501-r0**) was unanimously approved by a straw-poll by the committee. **YES: 15 No: 0 ABSTAIN: 2**

Rick presented the revised structure of the current draft TCD (**doc. 492-r0**). The comments from all members that have already commented on the draft TCD have been combined into a single document (**doc. 503-r0**) that will be discussed at a later time.

The committee accepts that that **doc. 492-r0 is the current official draft TCD** at this time.

Shareef presented Radiometric and Geometric Considerations for OCC (**doc. 526-r0**).

Meeting recessed until PM 1.

**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
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Shoichi Kitazawa – ATR
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order.

Discussion on **doc. 503-r0** will be moved to Tuesday 14 July 2015.

Rick presented an LOS Link Budget (**doc. 500-r1**). Rick suggested that for link budget calculations Radiometric units should be used. The ultimate decision needs to be on Energy per bit.

Rick and Volker to connect regarding the LoS channel model for long range systems.

Hideki and Nikola asked if there is a way to determine the impact/change on the Emission Pattern of a light source when you introduce fog (different density of fog will reduce the distance and increase the half-angle)? Rick is not aware of any work at this time but would look into any existing literature.

Murat might be able to simulate the Emission Pattern in a foggy situation

Murat presented the LiFi Reference channel Models: Office, Home, Hospital (**doc. 514-r1**). He only considers 1 sqcm of optical receiver area. The goal is to have a statistical view of a moving object in a given environment.

Meeting recessed until PM2.

**PM 2 (16:00 – 18:00)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order.

Volker presented Franhoufer HHI 2nd Response to the 15r1 CFA (**doc. 248-r1**), talking about the coexistence between OWC and Radio and highlighting the various areas that may be beneficial. Volker would like us to provide some information to the higher layers (requests from Telecoms) and the vendors generally do not provide this information.

Rick will include the need for such feedback systems to be an optional part of the TCD.

Hideki presented Panasonic Channel Models for Image Sensor-Communications (**doc. 534-r0**). This could be used as the baseline for more measurements that could be expanded to more events.

Meeting recessed until Tuesday, 14 July 2015 PM1.

**Session 2 (14 July 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Atsushi Kanno – NICT
* Keitarou Kondou – Sony
* Moon-Sik Lee – ETRI
* Young-Hoon Kim – ETRI
* Gerald Chul Sihn – ETRI
* Hoosung Lee – ETRI
* Andrew Estrada – Sony
* Robert Mokowitz – HTT Consulting
* Kato Toyoyuki – Anritsu Engineering Co. Ltd.
* Mounir Achir – Canon
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order.

Rick leads discussion on comment resolution for TCD (**doc. 492-r0**) as indicated in “Comments against TCD” (**doc. 503-r1**).

Meeting in recess until 14 July 2015, PM 2.

**PM 2 (16:00 – 18:00)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Sangsung Choi – ETRI
* Koji Horisaki – Toshiba
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order.

Rick continued going through on comment resolution for TCD (**doc. 492-r0**) as indicated in “Comments against TCD” (**doc. 503-r1**).

Meeting in recess until 15 July 2015, PM 1.

**Session 3 (15 July 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Sangsung Choi – ETRI
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University

Meeting called to order.

Trang presented a contribution on the effect of flicker and eye safety considerations (**doc. 575-r0**).

Rick mentioned that “manufacturers must be compliant to all eye safety regulations”.

Hideki mentioned that security cameras must not be affected by any flicker from data communications. Therefore, the high speed flicker should be greater than 500 Hz to ensure that the technology is compliant with CCTV regulations.

Rick lead the discussion on the comment resolution for TCD (**doc. 492-r2**) as indicated in “Comments against TCD” (**doc. 576-r1**).

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
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Sangsung Choi – ETRI
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University
* Robert Moskowitz – HTT Consulting
* Young-Hoon Kim – ETRI
* Hoosung Lee – ETRI
* Moon-Sik Lee – ETRI

Meeting called to order.

Rick lead the discussion on the comment resolution for TCD (**doc. 492-r2**) as indicated in “Comments against TCD” (**doc. 576-r1**).

The committee voted via a straw-poll (unanimously) to accept that “coexistence shall be investigated with the existing IEEE802.15.-2001 operating modes.”

All comments have been resolved in (**doc. 576-r1**).

Meeting recessed until Thursday 16 July 2015 PM 1.

**Session 4 (16 July 2015)**

**PM 1 (13:30 – 15:30)**

Yeong Min Jang (Kookmin University) – Chair

Attendees:

* Prof. Oshima – Panasonic in Osaka,
* Hideki Aoyama – Panasonic Japan
* Shoichi Kitazawa – ATR
* Yeong Min Jang – Kookmin University
* Rick Roberts – Intel
* Prof. Murat Uysal – Ozyegin University
* Volker Jungnickel – Hedrick Hertz Institute (HHI)
* Nikola Serafimovski – pureLiFi
* Prof. Jaesang Cha – Seoul National University of Science & Technology
* Jung Hoon Lee – Dong Seoul University
* Prof. Soo Young Chang – California State University Sacramento
* Shareef Ifthekhar – Kookmin University
* Trang Nguyen – Kookmin University
* Mohammad Nekoui – Olympus

Meeting called to order.

**MOTION**:

Moved: Yeong Min Jang

Seconded: Rick Roberts

“

The Technical Considerations Document (**15-15-0492-03-007a-technical-considerations-document.docx**) is up for a technical vote whether to be accepted:

**YES: 9** **NO: 0 ABSTAIN: 0**

”

The motion has passed a technical vote by the Committee and the TCD (**15-15-0492-03-007a-technical-considerations-document.docx**) requires a technical vote with over 75% acceptance to modify any part.

The committee has agreed to discuss ITU-T Liaison Statement (**15-15-0518-00-007a-itu-t-q18-15-liaison-request-on-owc.docx**) at the next meeting.

The Call for Proposal (**doc. 580-r0**) was discussed in preparation for the release during the September 2015 session.

The committee reviewed the standardization timeline (**doc. 274-r1**).

The committee will release a template document that will outline what is required from an Intention to Submit a Proposal.

Rick will take the last two comment documents on the TCD (**doc. 492-r3**) submitted by Volker and Murat and incorporate them in a single document for review in the September session.

Session adjourned until September 2015 in Bangkok.