**IEEE P802.15**

**Wireless Personal Area Networks**

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| Abstract | [Minutes of January  |
| 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 5 sessions during the January 2015 meeting.**

**Session 1 (14 January 2015 – PM2)**

Chaired by Yeong Min Jang (Kookmin University)

Attendees list: Rick (Intel), Koji (Toshiba), Soichi Kitazawa (ATR), Prof Murat Uysal (Ozyegin University), Nikola (PureLiFi), Mike McInnis (The Boeing Company), Oshima (Panasonic), Aoyama (Panasonic), Rojan (Panasonic)

Q: How are officers appointed?

A: Bob Heile assigns Chair and Vice-chair.

Bob: Chair appoints secretary and Technical Editor.

Rojan (Panasonic) volunteered to act as secretary for the session.

**Bob nominated Yeong Min as Chair and Rick as Vice-chair. Bob asked if there are any objections. No objection heard.**

Chair went through the patent policy slides (<http://standards.ieee.org/board/pat/pat-slideset.ppt>)

**Item1.1**: Rick presented 15/0003 (Proposed Timeline)

Discussion:

Rojan: Who’s the audience for the CFA?

Rick: Reflector, basically anybody who might be interested. Can be outside of 802 even out of IEEE.

TRD: Key technical parameters like Data rate, bit error rate etc. will be decided based on CFA Responses.

Rojan: What is difference between Revision and Amendment? Revision will be a completed version; we can use 802.15.7-2011 as the base and bring over whatever is required to the new specification.

Mike: 802.15.7-2011 is available for free.

Rojan: Is there possibility of starting with SFD instead of proposal.

Mike: This is the first time I am involved in a TG that started with a Revision, so it is going to be interesting.

Rick: Original 2011 spec title was short range communication by **visible** light. **New specification involves inclusion of infrared and ultra-violet**, as a result it had to be a Revision.

Aoyama: There are many methods to achieve OCC; can they all be accommodated (included as optional methods)?

Rick: Yes, there can be multiple methods.

Chair: Is there any way to speed up the process?

Rick: We could send out the CFA in this meeting instead of March ’15.

Nikola: How much effort is required to draft the CFA?

Rick: We already have draft CFA from the Study Group that we can reuse and can be done in 2 hours.

Mike: We already have some CFA responses in the Study Group. Are we trying to get more companies to responses?

Rick: Some companies might not have responded to the Study Group, they might respond now that we are a Task Group.

Mike: May be we should re-approach the people who previously submitted the responses.

Chair re-visited the agenda to add details for Thursday sessions.

Mike: We could go over the original 802.15.7-2011 documents (CFA, TRD etc.)

Chair: May be people can make a presentation about their area of interest or the technical aspects to be solved.

Nikola: May be it is better to review the Use Case documents first.

**Item1.2:** Mike went over 09/0115r8 (TG7 Technical Consideration Document (TCD)) and suggested that we could email the people listed in the “List of Contributors” and ask for their inputs.

Discussions:

Rick: There are people who are interested at data rate as high as 1 Gbps while some applications only require very low data rates. We could issue several CFAs e.g. one for High Data rate, one for OCC etc. Rick urged people to come up with a catchy name for the High Data Rate version.

Nikola suggested “LiFi”.

Chair suggested Nikola to present on LiFi at Thursday session.

Chair re-capped the agenda for Thursday.

Chair declared the TG recessed till Thursday AM1.

**Session 2 (15 January 2015 – AM1)**

Chaired by Yeong Min Jang (Kookmin University)

Chair called the meeting to order at 8.10 and directed the group to the patent policy slides.

Chair went through the agenda document (15/0022r1)

**Item 2.1**: Prof Murat Uysal (Ozyegin University) presented OPTICWISE (15/0057)

- OWC (Optical Wireless Communication) for mm to thousands of KM range communication.

Discussions:

Rick: On Page 6, which group looks into deployment scenarios, user experience etc.?

Murat: We do not have a particular Working Group for the purpose but we have many individuals looking into different usage scenarios. We do not limit to any particular application but are open to any European companies that want to collaborate with us. We always invite people from different industry to our meetings.

Rick: Is there a deadline for the funding for this project?

Murat: We have assurance of funding till 2018.

Rick: What are the criteria to gauge the success of the research project?

Murat:

Chair: What is the amount of funding for this?

Murat: 500,000 Euro for 4 years. But we also get funding from National institutes.

Jaesang: Is your area of research only focused on communication? Since our group is concerned with camera receiver, low rate applications are important.

Murat: We would like to see a revision to 802.15.7 with High Rate Data Rate, our expertise is on High Data Rate. We can also contribute to Indoor Positioning.

**Item 2.2:** Nikola (PureLiFi) presented 15-15-0070-00-0007-li-fi-definition.pptx (r1).

LiFi is just a play on the term WiFi with the implication that LiFi offers similar user experience as WiFi but using Visible Light Communication.

Discussion:

Rick: Few years earlier I attended a conference call with LiFi consortium and wanted to know difference between LiFi and BLC? Challenge here is to get it to be used widely.

Rojan: Is the term LiFi trademarked or used for any commercial product?

Nikola: The term is not trademarked or copyrighted. It is free to be used by anybody.

Jaesang: A bit of background: VLC was started by a Japanese company who came to Korean where it was subsequently renamed to LED ID. Later Camera Communication was introduced by Rick and other participants. A clear background of LiFi would be good.

Rick: Any feedback from WiFi regarding the use of the term LiFi?

Nikola: Well, WiFi could be said to a be play on the word Hi-Fi, we can say LiFi came from Hi-Fi.

Murat: I think there is a lighting company that has trademarked LiFi:

Nikola: Yes, but it is LIFIX. I will check it out.

Rick: I would hate to have issues come up after we have used the term on a number of our documents.

Rojan: Is there a need for such a term? WiFi is a certification alliance.

Rick: It could be used for High Rate Use Case. For Low Data Rate use, we have the term OCC. Let’s bring this issue up when we issue the CFA.

**Item 2.3:** Rick presented 15/0056r1 (**Suggested Webpage Text**)

- Task Group title has been put as “Wireless Optical Communications” in the PAR, it should have been “Optical Wireless Communication.” It is probably a typo, we need to bring this to Bob Heile’s attention for rectification.

- Rojan: OCC is defined as Optical Communication for Camera in the PAR.

- Chair: It was changed in the November meeting to Optical Communication for Camera.

Rick: Straw Poll: Optical Communication for Camera versus Optical Camera Communication:

Optical Communication for Camera: 0

**Optical Camera Communication: 8**

- Jaesang: LED ID term is not included in this. High Rate OFDM is good, but there are many other high rate modulation schemes, why are we limited to OFDM? It sounds a bit restrictive. May be it is better to change it to High Rate Solutions.

- Each term as LED Identification, LiFi etc. will be explained in a separate submission to be put up on Mentor. Nikola will write for LiFi, Jaesang and Panasonic will work on LED Identification, Rick will submit for OCC.

- It was decided that each term will be defined as bullet points in the overview section with link provided for the details of each term. Participant to send a short sentence to Rick: Jaesang for LED Identification, Nikola for LiFi, Rick for OCC.

Chair declared recess till AM2.

**Session 3 (15 January 2015 – AM2)**

Chaired by Yeong Min Jang (Kookmin University)

Chair called the meeting to order at 10.50am.

**Item 3.1:** Rick presented the Call For Application (CFA) used for the Study Group (15-14-0060-00-007a-call-for-applications-on-optical-camera-communications.doc)

Rick went through the draft of the new CFA.

Discussion:

Jason: In the list of characteristics, instead of White Light Source can we say LED ID or light pattern.

Nikola: QR Code can be considered as light pattern, I don’t think we want to put that in.

Rick: Smartphone is essentially bunch of LEDs.

Consensus is that White Light Source is good enough.

Chair asked Rick to clarify the meaning of term “High Rate”

Aoyama agreed that “High Rate” is misleading.

Rick: Would people think that 802.15.7r1 is the same as LiFi?

Nikola: LiFi is a concept; there are no particular technical details.

There was discussion if OFDM is required to be mentioned in the list of characteristics. **Rick called straw poll to remove the work OFDM:** **Consensus was to remove the word OFDM**.

The list of characteristics was re-ordered and merged into 2 bullets. Keyboard MIMO was removed.

“Non-visible light” was added to bullet 4.

There was discussion on inclusion of YouTube videos in the CFA. The topic was deferred for discussion in PM2.

Chair called the TG to recess till PM1.

**Session 4 (15 January 2015 – PM1)**

Chaired by Yeong Min Jang (Kookmin University)

Chair called the meeting to order at 1.40pm.

**Item4.1:** Soo-Young Chang (CSUS) presented 15/0073 (**Some Issues for OWC**)

Rick mentioned that we need to add Dimming as well since lots of good schemes get affected by dimming.

Nicola asked if there is a way to improve the relative response of the Silicon PD.

Rick mentioned that it is limited due to the physical property of the lights at different wavelengths.

**Item4.2:** Rick went through the 802.15.7-2011 tutorial.

Rick pointed to few papers on IEEE Xplorer:

- 802.15.7 Modulation schemes and dimming support.

- 802.15.7 Physical layer summary

Rick mentioned that there should be a tutorial paper on 802.15.7 MAC as well.

Rojan asked about the Normative Reference to 802.15.4-2006 in Section 2.

Rick: 802.15.4 MAC was chosen due to its light weight.

Optical Clock rate = chipping rate

Rick mentioned that VLC is also being standardized by IEC but they do not support dimming. Dimming was important in the original 802.15.7-2011 specs.

**Item4.3:** Aoyama (Panasonic) presented 5/0076r1 (Performance elements)

Rick: We need to come up with similar list in the TRD.

Jaesang: What is the difference between Video camera and a normal camera?

Aoyama: It is almost same.

**Item4.4:** Chair went through 15/0080 (Use Cases of Optical Wireless Communication)

Presentation explained new use cases that are not covered by 802.15.7-2011.

Rick: Do we want to go into UV modulations? That could take years.

Murat agreed that if that is a right direction for the group.

Consensus was that we wait till we receive the CFA responses and then we will decide which to include and which not to. If there are very new area of research, that can lead to the formation of a new Interest Group.

Rick: Non-constant frame rate could be an issue for smart phone cameras due to Operating System interruption i.e. it may be a software problem and not a Physical problem to be solved by this committee.

**Item4.5:** Jaesang presented 15/0082 ([OWC Use Cases: LED Patch based Use Cases for Facility Signage)

Nikola: Why not use QR code/barcode etc.?

Rick: This can already be done today using say a LCD TV, why do we need to put this in the standard?

Jaesang: It can be expanded to color codes.

Murat: Can this be used for underwater VLC too? The Channel model will be much more challenging.

Jaesang: Yes.

Chair declared recess till PM2.

**Session 5 (15 January 2015 – PM2)**

Chaired by Yeong Min Jang (Kookmin University)

Chair called the meeting to order at 4.10pm.

**Item5.1**: Rick explained the need for change in the PAR title to Bob Heile.

Bob: this is administrative work and suggested that we do this at the May/July meeting.

Rick: There is a similar issue with OCC, committee prefers to use Optical Camera Communication.

Bob: You can go ahead and use whichever is more appropriate.

**Item5.2**: Officer Appointments:

Chairman: Yeong Min Jang

Rick (Intel): Chief Technical Editor, Assistant editors: Jaesang (Seoul Tech), Murat (Ozyegin University)

Vice-Chairs: : Rick Roberts (Intel), Ziang Yu (China Telecom)

Aoyama (Panasonic) indicated that he would be interested in the Vice-chair position and will confirm in the March meeting.

Koji (Toshiba) also indicated that he would be interested in the Vice-chair position and will confirm in the March meeting.

Secretaries: Nikola (PureLiFi) and Rojan (Panasonic).

**Item5.3**: Rick went over the Task Group website document (15/0056r2).

**Item5.4**: Rick went over the Call For Application (15/0088r1):

**Straw Poll: Removing the reference to YouTube video and replacing with Keywords.**

**Passed with unanimous consent.**

Rick will replace the reference to the video section with a list of the relevant keywords.

March meeting agenda: 8 slots will be requested for 802.15.7r1.

Rick went over the Call for slides for tutorial for the March meeting.

Chair adjourned the meeting till the March Plenary session.