# IEEE P802.15

**Wireless Personal Area Networks**

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| Project | Task Group 15.6ma | |
| Title | **TG15.6ma Meeting Minutes for September 2023** | |
| Date Submitted | September XXth , 2023 | |
| Source | [Ryuji Kohno1,2  Marco Hernandez1  Takumi Kobayashi1,3  Minsoo Kim1,  Daisuke Anzai3  [1; YRP-IAI (YRP International Alliance Institute), Japan,  2; YNU (Yokohama National University), Japan,  3; NiTech(Nagoya Institute of Technology)] | Voice: +81 90 5408 0611  E-mail: kohno@ynu.ac.jp  marco.hernandez@ieee.org  kobayashi-takumi@yrp-iai.jp  minsoo@minsookim.com  [anzai@nitech.ac.jp](mailto:anzai@nitech.ac.jp) |
| Re: | Meeting Minutes | |
| Abstract | Since PAR and CSD of SG15.6ma as amendment of existing IEEE802.15.6-2012 for WBAN with enhanced dependability was approved by NesCom in November, Task Group TG15.6ma has been drafting technical requirement in cases of WBAN for medical use case for human body(HBAN) and for automotive use case for vehicle body(VBAN) with their connected use cases. In November meeting, to summarize technical requirement TG15.6ma has reviewed focused uses cases necessary for enhanced dependability in which channel propagation and environment of HBAN and VBAN with their mixed use can be categorized and modeled. Particularly to perform enhanced dependability in dense environment coexisting multiple overlaid BANs and different UWB and narrow band WPAN, WSN, WLAN etc. necessary technical requirement has been summarized in PHY and MAC layers. Then technical requirement document(TRD) has been approved by TG motion. Possible solutions to ensure enhanced dependability in PHY and MAC have been presented and discussed. Latest status of ETSI Smart BAN standard has been presented to find a way to make interoperability with IEEE802.15.6 and 6ma. To harmonize activities of TG15.6ma, 15.4ab using UWB PHY, TRD and technical guidance document(TGD) have been reviewed in joint and individual sessions. Next step has been discussed including telco for harmonization with TG15.4ab and change to revision from amendment. | |
| Purpose | Minutes of Dependability Electronic Plenary Session on Webex, September 2023. | |
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**TG15.6ma 1st Session**

**Tuesday, September 11th, 2023, AM 10:30- PM 12:30 Local Atlanta Time**

**at the room Highland 2 in lobby Level, Grand Hyatt at Buckhead, 3300 Peachtree Rd NE, Atlanta, U.S. with Webex Virtual Room #2**

* 1. Meeting called to order AM 10:30

By Chair Ryuji Kohno (YNU / YRP-IAI)

* 1. Roll Call *Ryuji Kohno*

Announcement to attendance by using IEEE Attendance Tool (IEEE IMAT).

Registration information.

By Chair Ryuji Kohno

* 1. Opening Report *Ryuji Kohno (YNU / YRP-IAI)* doc.# 802.15- 23-0469-01-06a

Chair showed IEEE Patent policy.

Chair issued Call for Potentially Essential Patents.

Þ No essential intellectual property in the scope of TG6a was declared.

Chair presented agenda of this meeting doc.# 802.15- 23-0442-03-06a

Þ Approved.

* 1. Approval of previous meeting minutes *Takumi Kobayashi (YNU / YRP-IAI)*

Þ Upon no comments on the July meeting minutes, doc. #15-23-0405-01-06a was approved.

**[Review]**

* 1. Overview of Activity of IEEE802.15 TG15.6ma for Revision of IEEE802.15.6-2012 Wireless BAN with Enhanced Dependability, *Ryuji Kohno* (YRP-IAI/YNU), doc.# 22-0455-01-06ma
  2. Overview and convergence of MAC proposals for 15.6ma, *Minsso Kim*, doc.# 23-0408-01

**[Progress for Draft Documentation]**

* 1. Progress and Action Items for Draft#1, *Marco Hernandez,* doc.# 23-0360-02
  2. Draft pre-ballot comment resolution, *Marco Hernandez, Minsoo Kim, Takumi Kobayashi, Daisuke Anzai and Ryuji Kohno*, doc.# 23-0457-00
     + Comment resolution is expressed on doc.# 23-0476-01-06ma (*Marco Hernandez*)
  3. Rescheduling Timeline, *Marco Hernandez, Ryuji Kohno*, doc.#23-0361-00
  4. Discussion
  5. Recessed, *Ryuji Kohno*

**Attendees list**

Attendees 10

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Masayuki Hirata Osaka University
* Minsoo Kim YRP-IAI
* Ryuji Kohno YNU/YRP-IAI
* Sang-Kyu Lim ETRI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI

**TG15.6ma 2nd Session**

**Tuesday, September 11th, 2023, PM 4:00- PM 6:00 Berlin Local Time**

**at the room Highland 2 in lobby Level, Grand Hyatt at Buckhead, 3300 Peachtree Rd NE, Atlanta, U.S. with Webex Virtual Room #2**

* 1. Meeting called to order AM 8:05

By Chair Ryuji Kohno (YNU / YRP-IAI)

* 1. Roll Call *Ryuji Kohno*Announcement to attendance by using IEEE Attendance Tool (IEEE IMAT).  
     Registration Information, By Chair *Ryuji Kohno*
  2. 802 Mtg. Non-Registration Consequences, by Chair *Ryuji Kohno*
  3. Confirmation of Agenda, doc.#23-0442-04-06ma, *Ryuji Kohno*
  4. Review of the last session TG6ma, *Ryuji Kohno*

**[Presentation and Discussion on MAC Proposals for Revision]**

* 1. Clarification of NB CCA for UWB channel access, *Huan-Bang Li*, doc.# 15-23-0460-00-04ab
     + I think that the discussion on 4ab, CCA Mode 7 is mandatory or optional? *(Ryuji Kohno)*
       - That is optional. This is under considering. *(Huan-Bang Li)*
     + Do you have any simulation results about the coexistence solutions? *(Ryuji Kohno)*
       - Yes, we have and will present near future sessions. (*Huan-Bang Li*)

**[Draft pre-ballot comment resolution]**

* 1. Draft pre-ballot comment resolution, *Marco Hernandez*, doc.#15-23-0476-01-06ma
     + New arrival comments CID.1, 2, 3, 4, 5, 12, 21, 24, 25, 26, 27, 28, 29 and 30 have been discussed. The responses and resolutions are mentioned and will be posted to Mentor document server as “doc.#15-23-0476-02-06ma”.

**[Presentation and Discussion on MAC Proposals for Revision]**

* 1. Simulation results for Nagoya I. T. and YRP-IAI MAC proposal Based on TG6ma Channel Model, *Daisuke Anzai*, doc.#15-23-0352-01-06ma
     + Essentially, performance is quite depending on the length of packet length. If we change the percentage of CAP and CFP, what is happen? (*Ryuji Kohno*)
       - As you said, performance is time slots of CAP and CFP. We are now looking for how to optimize the number of time slots. (*Daisuke Anzai*)
     + Optimization algorithms can be new proposal. (*Ryuji Kohno*)
     + If CFP period is too short, it may causes huge transmission delay. I recommend you to evaluate the performance when too short CFP case. (*Ryuji Kohno*)

**[Draft pre-ballot comment resolution]**

* 1. Draft pre-ballot comment resolution, *Marco Hernandez*, doc.#15-23-0476-01-06ma
     + New arrival comments CID.7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18 and 20 have been discussed. The responses and resolutions are mentioned and will be posted to Mentor document server as “doc.#15-23-0476-02-06ma”.
     + We need to discuss with Minsoo about CID 19. (Marco Hernandez).
     + We will continue to discuss the resolutions. We are welcome to give us comments. (*Ryuji Kohno*)
  2. Confirmation of tomorrow session agenda, doc.#23-0442-04-06ma, *Ryuji Kohno*
  3. Recessed (9:52AM)

Attendees 10

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Huan-Bang Li NICT
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Jörg Robert (TU Ilmenau/Fraunhofer IIS)
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 3rd Session**

**Thursday, September 13th, 2023, AM 9:00- AM 10:00 Local Atlanta Time**

**at the room Highland 2 in lobby Level, Grand Hyatt at Buckhead, 3300 Peachtree Rd NE, Atlanta, U.S. with Webex Virtual Room #2**

* 1. Meeting called to order AM 9:04

By Chair Ryuji Kohno (YNU / YRP-IAI)

* 1. Roll Call *Ryuji Kohno*Announcement to attendance by using IEEE Attendance Tool (IEEE IMAT).  
     Registration Information, By Chair *Ryuji Kohno*
  2. 802 Mtg. Non-Registration Consequences, by Chair *Ryuji Kohno*
  3. Confirmation of Agenda, doc.#23-0442-05-06ma, *Ryuji Kohno*
  4. Review of the last session TG6ma, *Ryuji Kohno*

**[Presentation and Discussion on Channel Coding Proposals for Revision]**

* 1. Overview of FEC proposals for 15.6ma, *Marco Hernandez,* doc.#15-23-0611-05-06ma
     + Why higher classes than class 4,5,6 and 7 uses different FEC? Is there any clar reason? (*Ryuji Kohno*)
       - I will add some explanation. (*Marco Hernandez*)
  2. Error Correcting Scheme for IEEE 802.15.6ma, *Kento Takabayashi,* doc.#15-23-0474-00-06ma
     + In p.6, we are thinking about commonality with 4ab about the outer code. How can we determine the code length and code rate? That should be considered with environment and individual QoS of the packets. Especially in the BCI use case, we need to consider about huge path loss. (*Ryuji Kohno*)
       - As of this moment, we considered about AWGN use cases from the point of view of general evaluations. We understood that needs to consider about each environment for more detailed performance evaluation. (*Kento Takabayashi*)
     + Out TG6ma is focusing on Enhanced dependability. Worst performance is much important than the average performance. (*Ryuji Kohno*)

**[Presentation and Discussion for the Ranging Technologies]**

* 1. Preliminary Performace Evaluation of Ranging in Coexistence Environment, *Daisuke Anzai,* doc.#15-23-0353-01-06ma

**[Presentation and Discussion on Channel Coding Proposals for Revision (Cont.)]**

* 1. Evaluation of IEEE 802.15.6 Ultra-wideband Physical Layer Utilizing Super Orthogonal Convolutional Code, *Kento Takabayashi,* doc.#15-23-0562-05-06ma

Recessed (10:01AM)  
  
Attendees 15

***Name Affiliation***

* Ankur Bansal Samsung
* Daisuke Anzai Nagoya Institute of Technology
* Huan-Bang Li NICT
* Iwao Hosako NICT
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Libra Xiao NRT
* Marco Hernandez YRP-IAI
* Minsoo Kim YRP-IAI
* Norihiko Sekine NICT
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Weidong Tang NRT
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 4th Session**

**Thursday, September 14th, 2023, AM 9:00- AM 10:00 Local Atlanta Time**

**at the room Highland 1 in lobby Level, Grand Hyatt at Buckhead, 3300 Peachtree Rd NE, Atlanta, U.S. with Webex Virtual Room #3**

* 1. Meeting called to order AM 8:00

By Chair Ryuji Kohno (YNU / YRP-IAI)

* 1. Roll Call *Ryuji Kohno*Announcement to attendance by using IEEE Attendance Tool (IEEE IMAT).  
     Registration Information, By Chair *Ryuji Kohno*
  2. 802 Mtg. Non-Registration Consequences, by Chair *Ryuji Kohno*
  3. Confirmation of Agenda, doc.#23-0442-06-06ma, *Ryuji Kohno*
  4. Review of the last session TG6ma, *Ryuji Kohno*

**[Draft pre-ballot comment resolution]**

* 1. Draft pre-ballot comment resolution, *Marco Hernandez,* doc.# 15-23-0476-03-06ma
     + New arrival comments CID.31, 32 and 33 have been discussed. The responses and resolutions are mentioned and will be posted to Mentor document server as “doc.#15-23-0476-04-06ma”

**[Summary of Channel Models and Detection]**

* 1. TG6ma Channel Model Document for Enhanced Dependability, *Takumi Kobayashi, Marco Hernandez and Kamran Sayrafian,* doc.#15-22-0519-04-006a.

**[Presentation of PHY technology and FEC]**

* 1. Preliminary Performance Evaluation of Channel Coding in TG6ma, *Daisuke Anzai,* doc.# 15-23-0521-00-06ma

**[Summary of MAC Protocol]**

* 1. MAC Protocol Proposal for Multiple BAN Environment (Level 1,2,3), *Minsoo Kim*, doc.#15- 22-0639-03

**[Progress and Timeline]**

* 1. Progress report of 802.15.6ma, *Marco Hernandez,* 15-23-0056-03-06ma.
  2. TG6ma draft revision & Timeline and schedules, *Marco Hernandez,* doc.#154-23-0407-01-06ma.
  3. Draft discussion, *All*
  4. Any other business?
     + No.
  5. Adjourn

Attendees 11

***Name Affiliation***

* Ankur Bansal Samsung
* Daisuke Anzai Nagoya Institute of Technology
* Huan-Bang Li NICT
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Masayuki Hirata Osaka University
* Minsoo Kim YRP-IAI
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI