# IEEE P802.15

**Wireless Personal Area Networks**

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| Project | Task Group 15.6ma | |
| Title | **TG15.6ma Meeting Minutes for November 2023** | |
| Date Submitted | November 16th , 2023 | |
| Source | [Ryuji Kohno1,2  Marco Hernandez1  Takumi Kobayashi1,3  Minsoo Kim1,  Daisuke Anzai3  Seong-Soon Joo4  [1; YRP-IAI (YRP International Alliance Institute), Japan,  2; YNU (Yokohama National University), Japan,  3; NiTech(Nagoya Institute of Technology)  4: KPST(Korea Platform Service Technology), Korea] | 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  wowbk@kpst.co.kr |
| 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, November 2023. | |
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**TG15.6ma 1st Session**

**Monday, November 13th, 2023, 1:30 PM- 3:30 PM Local Honolulu Time**

**at Sea Pearl I – Mid Pacific Center, Hilton Hawaiian Village Waikiki - Honolulu, HI with Webex Virtual Room #2**

* 1. Meeting called to order 1:30 PM

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- 23-0556-01-06a

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- 23-0555-02-06a

Þ Approved.

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

Þ Upon no comments on the July meeting minutes, doc. #15-23-0513-00-06a was approved.

**[Review]**

* 1. Basic Consensus in MAC and PHY of Revision of IEEE802.15.6-2012 (IEEE802.15.6ma), *Ryuji Kohno* (YRP-IAI/YNU), doc.#23-0557-00-06a
     + Is this standard’s scope includes animals like dogs and cats? (*Harry Bims*)
       - Yes, this is. This standard can be used for animals such as dogs, cats and cows. (*Ryuji Kohno*)
     + If HARQ used in QoS Level 7, latency is needed to considered carefully. (*Jeong Gon Kim*)
       - High QoS level packets can chose to use contention free period to reduce latency. Also we are solve the latency issues in using HARQ, by optimization of cross-layer of PHY and MAC. (*Ryuji Kohno*)
  2. MAC features for operating coexisting multiple dependable BANs, *Seong-Soon Joo,* doc.#23-0558-00-06a
  3. Overview and convergence of MAC proposals for 15.6ma, *Marco Hernandez*, doc.#23-0408-02-06a
  4. Progress and Action Items for Draft#1 (Draft#1.9), *Marco Hernandez,* doc.#0360-02-06a
  5. Rescheduling Timeline, *Marco Hernandez,* doc.#0361-02-06a
  6. Discussion
  7. Recessed, *Ryuji Kohno*

**Attendees list**

Attendees 11

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Harry Bims Bim's Laboratories
* Jeong Gon Kim Tech University of Korea
* Kamran Sayrafian NIST
* Marco Hernandez YRP-IAI
* Ryuji Kohno YNU/YRP-IAI
* Seong-Soon Joo Korea Platform Service Technology (KPST)
* Sung Hyun Oh Tech University of Korea
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 2nd Session**

**Monday, November 13th, 2023, 4:00 PM- 6:00 PM Local Honolulu Time**

**at Sea Pearl I – Mid Pacific Center, Hilton Hawaiian Village Waikiki - Honolulu, HI with Webex Virtual Room #2**

* 1. Meeting called to order 4:00 PM

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.#23-0555-02-06ma, *Ryuji Kohno*

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

* 1. Draft pre-ballot comment resolution, *Marco Hernandez*, doc.#23-0476-05-06a
     + CID 46-51 have been discussed. Comments and resolutions are added into doc.#0476 and uploaded to IEEE MENTOR as doc.#23-0476-06-06a

**[Discussion]**

* 1. Discussion on MAC Superframe and Function
  2. Discussion on Interoperability and Coexistence with Legacy and New BANs(Class 2)
  3. Discussion on Interoperability and Coexistence with 4ab(Class 4)
  4. Discussion on Interoperability and Coexistence with Others(Class 3,5,6,7)
  5. Discussion on Ranging in All Classes of Coexistence
  6. Confirmation of tomorrow session agenda, doc.#23-0555-02-06a, *Ryuji Kohno*
  7. Recessed

Attendees 12

***Name Affiliation***

* Jeong Gon Kim Tech University of Korea
* Kamran Sayrafian NIST
* Marco Hernandez YRP-IAI
* Masayuki Hirata Osaka University
* Larry Zakaib Spark Microsystems
* Ryuji Kohno YNU/YRP-IAI
* Seong-Soon Joo Korea Platform Service Technology (KPST)
* Sung Hyun Oh Tech University of Korea
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 3rd Session**

**Tuesday, November 14th, 2023, 4:00 PM- 6:00 PM Local Honolulu Time**

**at Sea Pearl I – Mid Pacific Center, Hilton Hawaiian Village Waikiki - Honolulu, HI with Webex Virtual Room #2**

* 1. Meeting called to order 4:00 PM

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.#23-0555-02-06ma, *Ryuji Kohno*
  4. Review of the last session TG6ma, *Ryuji Kohno*
  5. Draft pre-ballot comment resolution, *Marco Hernandez,* doc.#23-0476-07-06a.
     + Discussion on CID 34 – 45 and resolved.
     + CID 52 - 53 have been discussed. Comments and resolutions are added into doc.#0476 and uploaded to IEEE MENTOR as doc.#23-0476-08-06a

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

* 1. Hybrid ARQ Scheme for High QoS Packets in High Class of Coexistence of IEEE 802.15.6ma, *Kento Takabayashi,* doc.#23-0576-00-06a
     + HARQ in specific use cases required highest dependability, retransmission control is very important. As Kento presented, HARQ can achieve the required performance to optimize the parameters such as transmission number and code rate etc. (*Ryuji Kohno*)
  2. ~~Evaluation of IEEE 802.15.6 Ultra-wideband Physical Layer Utilizing Super Orthogonal Convolutional Code,~~ *~~Kento Takabayshi,~~* ~~doc.#23-#######~~
     + Skipped

**[MAC and Ranging]**

* 1. Simulation results for Nagoya I. T. and YRP-IAI MAC proposal Based on TG6ma Channel Model, *Daisuke Anzai,* doc.# 23-0352-02-06a
     + We can discuss about the various channel models case. Current simulation result is comnined different phenomenon together. We would like to find suitable scheme to solve the problems based on different phenomenon. (*Ryuji Kohno*)
     + What kind of result we can get from the results of your simulations? (*Jeong Gon Kim*)
       - Original channel model does not separately discussed antennas characteristics. Today’s presentation is focusing on the result of MAC performance including antenna gain. (*Daisuke Anzai*)
     + Is this only consider about the BAN only existing case? (*Clint Powel*)
       - Yes, it is. We evaluate one by one. (*Ryuji Kohno*)
  2. UWB Positioning in 15.6ma for Multiple BAN Adjacent Scenarios, *Jeong Gon Kim, Sung Hyun Oh,* doc.# 23-0560-01-06a
     + Shadowing and multipath is exist in-door situation. Average you said is includes these effect? (*Ryuji Kohno*)
       - Yes, the results includes them. (*Kim, Sung Hyun Oh*)
     + I am interested in the reason of ranging error. Which effect is dominant and which is not in many reasons like noise, multipath, interference etc. (*Ryuji Kohno*)
  3. Performace Evaluation of Ranging in Coexistence Environment, *Daisuke Anzai,* doc.# 23-0590-00-06a

Recessed  
  
Attendees 17

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Jeong Gon Kim Tech University of Korea
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Larry Zakaib Spark Microsystems
* Libra Xiao NRT
* Marco Hernandez YRP-IAI
* Ryuji Kohno YNU/YRP-IAI
* Seong-Soon Joo Korea Platform Service Technology (KPST)
* Stuart Kerry OK-Brit; Self
* Sung Hyun Oh Tech University of Korea
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Weidong Tang NRT
* Weidong Tang NRT
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 4th Session**

**Wednesday, November 15th, 2023, 4:00 PM- 6:00 PM Local Honolulu Time**

**at Sea Pearl I – Mid Pacific Center, Hilton Hawaiian Village Waikiki - Honolulu, HI with Webex Virtual Room #2**

* 1. Meeting called to order 4:00 PM

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*

**[Summary of Channel Models, Channel Coding, and Interference Mitigation]**

* 1. Comments to Channel-model-document, *Marco Hernandez,* doc.# 15-23-0605-00-06ma
  2. Performance Evaluation of Channel Coding under Various Channel Models in Some Classes of Coexistence in TG6ma, *Kento Takabayashi,* doc.#23-0577-00-06a
  3. Interference Mitigation Schemes in Class 3, 5, 6, and 7 of Coexisitence in TG6ma, *Takumi Kobayashi*, doc.#22-0571-01-06a

**[Summary of MAC Protocol]**

* 1. MAC Protocol Proposal for Multiple BAN Environment (Level 1,2,3), *Marco Hernandez,* doc.# 22-0639-03-06a

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

* 1. Draft pre-ballot comment resolution, Marco Hernandez, *Ryuji Kohno*, doc.#23-0476-09-06a
     + CID 54, 55 and 56 have been discussed.

**[Progress and Timeline]**

* 1. TG6ma draft revision, *Marco Hernandez,* doc.# 23-0407-02-06a and 23-0056-04-06a
  2. Draft discussion, *All*
  3. Any other business?
     + No.
  4. Adjourn

Attendees 17

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Jeong Gon Kim Tech University of Korea
* Kamran Sayrafian NIST
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Matthias Wendt Signify
* Run Chen NRT
* Ryuji Kohno YNU/YRP-IAI
* Seong-Soon Joo Korea Platform Service Technology (KPST)
* Shang-Te Yang
* Stuart Kerry OK-Brit; Self
* Sung Hyun Oh Tech University of Korea
* Sven Zeisberg HTW
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Weidong Tang NRT
* Yasuharu Amezawa Mobile Techno