IEEE P802.15

**Wireless Personal Area Networks**

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| Project | Task Group 15.6ma |
| Title | **TG15.6ma Meeting Minutes for May 2024**  |
| Date Submitted | May 16th , 2024 |
| 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 0611E-mail: kohno@ynu.ac.jp marco.hernandez@ieee.org kobayashi-takumi@yrp-iai.jp minsoo@minsookim.com 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 May, 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 May 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. 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 the sessions.  |
| Purpose | Minutes of Dependability Electronic Interim Session on Webex, May 2024. |
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**TG15.6ma 1st Session**

**Monday, May 13th, 2024, 10:30 AM- 12:30 PM Local Warsaw Time**

**Room#Wawel, 2F, Marriott Warsaw - Warsaw, Poland,**

**with Webex Virtual Room #2**

* 1. Meeting called to order 10:30 AM

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- 24-218-01-06a

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- 24-0210-03-06a

Þ Approved.

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

Þ Upon no comments on the March meeting minutes, doc. #15-24-0186-00-06a was approved.

**[Review]**

* 1. Progress Report and Time Line, *Marco Hernandez,* doc.# 23-056-06-006a & 23-361-03-006a
	2. Overview of IG-DEP, SG6a, TG6a and TG15.6ma for Revision of IEEE 802.15.6-2012 Wireless BAN with Enhanced Dependability, *Ryuji Kohno,* doc.#22-0455-02-006a
	3. Propagation Channel Parameters of UWB Communication Applications for Human BAN (HBAN) Use Cases, *Takumi Kobayashi,* doc.# 24-0145-03-006a
		+ Please clearly describe both BCI and BMI in Channel Model Document. (*Ryuji Kohno*)
	4. Basic Consensus in MAC and PHY of Revision of IEEE802.15.6-2012 (IEEE802.15.6ma), *Ryuji Kohno,* doc.# 23-0557-03-006a
	5. Preliminary Evaluation on Ranging Accuracy with Interference Cancellation in Coexistence Environments, *Takumi Kobayashi,* doc.# 24-0057-00-006a
	6. Discussion

* 1. Recessed at 12:29 PM by chair, *Ryuji Kohno*

**Attendees list**

Attendees 7

***Name Affiliation***

* Huan-Bang Li NICT
* Marco Hernandez YRP-IAI
* Radhakrishna Canchi Kyosera International Inc
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 2nd Session**

**Tuesday, May 15th, 2024, 8:00 AM- 10:00 AM Local Warsaw Time**

**Room#Wawel, 2F, Marriott Warsaw - Warsaw, Poland,**

**with Webex Virtual Room #2**

* 1. Meeting called to order 8:05 AM

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.# 15-24-0210-04-06ma, *Ryuji Kohno*

**[Review and Comment Resolution for PreBallot]**

* 1. Review of draft#1.18 for Pre-Ballot WG, *Marco Hernandez*
		+ Informative document and task list template is on mentor as doc.#15-23-0085-05-0mag (SC MAINTENANCE) and 15-23-0506-02 (for WG&TG motions).
		Also original 15.6 letter ballot document LB79, and doc.#15-11-296-00-0006 can be referred. (*Tero Kivinen*)
	2. Comment-Resolution Database for Pre-Ballot WG, doc.# 23-0476-14, *Marco Hernandez*
	3. MAC Performance Evaluation of Multiple BAN Coexistence Under TG6ma Channel Model, doc.#24-0246-00, *Daisuke Anzai*
		+ We would like to know the performance and what will happen in more uncontrolled nodes exists. (*Ryuji Kohno*)
		+ PER is higher than 0.1 and this is useless in this condition (*Ryuji Kohno*)
			- This simulation was performed in special case with too much offered load to show difference with and without controlled simulation results. (*Daisuke Anzai*)
	4. Performance Evaluation of Channel Coding with Interleaver Based on TG6ma Channel Model for Some Classes of Coexistence, doc.#24-0247-00, *Daisuke Anzai*
		+ What 30% means? (*Radhakrishna Canchi*)
			- 30% of each packet length got burst error. (*Daisuke Anzai*)
	5. Ranging Accuracy Evaluation under TG6ma Communication Scenarios, doc.#24-0248-00, *Daisuke Anzai*
		+ Have you simulated in the case of return signal of TWR arrived at next super frame? (*Ryuji Kohno*)
			- In our simulation, all the signal and ranging procedure should be completed within the same super frame. If too long distance ranging, the situation will be occurred however, we assume that is not realistic situation. From the view point of feasibility, we can reduce the effect of too ling distance ranging and the signal cannot be back in the same super frame, some kind of limitation by using timeout function can be applicable. (*Daisuke Anzai*)
		+ Not so large difference between different code length simulation. I guess that the simulation condition such as distance can be changed to show the difference against code length. (*Ryuji Kohno*)
	6. Hybrid ARQ Scheme for High QoS Packets in High Class of Coexistence of IEEE 802.15.6ma, doc.#23-0576-03, *Kento Takabayashi*
	7. Evaluation of IEEE 802.15.6ma Ultra-wideband Physical Layer Utilizing Super Orthogonal Convolutional Code, doc.#23-00562-09, *Kento Takabayashi*
	8. Recessed (9:59 AM)

Attendees 11

***Name Affiliation***

* Adnan -
* Daisuke Anzai Nagoya Institute of Technology
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Radhakrishna Canchi Kyosera International Inc
* Ryuji Kohno YNU/YRP-IAI
* SH -
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Tero Kivinen Self
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 3rd Session**

**Wednesday, May 13th, 2024, 9:00 AM- 10:00 AM Local Warsaw Time**

**Room#Wawel, 2F, Marriott Warsaw - Warsaw, Poland,**

**with Webex Virtual Room #2**

* 1. Meeting called to order 9:05 AM

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.#24-0210-05-06ma, *Ryuji Kohno*
	4. Review of the last session TG6ma, *Ryuji Kohno*
	5. Necessary Process to LB and Discussion, *Ryuji Kohno*
		+ WG motion will be postponed until July meeting.
			- Approved.
	6. Overview and convergence of MAC proposals for 15.6ma, doc.# 24-0078-01-006a, 23-0408-02-006a and Draft document D1.18, *Marco Hernandez*
		+ How can we decide assumed number of coexisting BANs? (*Ryuji Kohno*)
			- Check the results of simulations and discussion. (*Marco Hernandez*)
		+ How the Reservation time in p.9 can be determined? (*Marco Hernandez*)
		+ Previously we had mode 1 and mode 2 using data channel and control channels. (*Ryuji Kohno*)
			- From the discussion with Dr. Joo, we have decided to use simple MAC using only one frequency channel without control channel as explained in Draft D1.18. (*Marco Hernandez*)
	7. MAC frame formats, doc.#15-24-0034-03-006a and Draft document D1.18, *Marco Hernandez*
		+ How different compared to original IEEE802.15.6-2012? (*Ryuji Kohno*)
			- New MAC is similar with original but not the same. Identifier is included in control field to recognize new and legacy BANs. (*Marco Hernandez*)
	8. Joint work with 802.1; Draft PAR and CSD 802.1ACea: Amendment to IEEE Standard 802.1AC-2016, doc.#15-23-453-02-006a, 15-23-454-02-006a, *Marco Hernandez*

Recessed (10:00 AM)

Attendees 8

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Kento Takabayashi Toyo University
* Marco Hernandez YRP-IAI
* Radhakrishna Canchi Kyosera International Inc
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Yasuharu Amezawa Mobile Techno

**TG15.6ma 4th Session**

**Thursday, May 14th, 2024, 8:00 AM- 10:00 AM Local Warsaw Time**

**Room#Wawel, 2F, Marriott Warsaw - Warsaw, Poland,**

**with Webex Virtual Room #2**

* 1. Meeting called to order 8:00 AM
	2. Roll Call *Ryuji Kohno*
	Announcement to attendance by using IEEE Attendance Tool (IEEE IMAT).
	Registration Information, By Chair *Ryuji Kohno*
	3. 802 Mtg. Non-Registration Consequences, by Chair *Ryuji Kohno*
	4. Confirmation of Agenda, doc.#15-24-0210-05-006a, *Ryuji Kohno*
		+ Anonymously approved.
	5. Review of the last session TG6ma, *Ryuji Kohno*
	6. Preparation for Letter Ballot (LB), doc.#15-23-0083-05-0mag and #15-11-0296-00-0006, *Ryuji Kohno*
		+ As S6.3 mentioned, before TG motion, we need to send the draft to TEG (Technical Expert Group). (*Marco Hernandez)*
	7. Review of draft#1.18 for Pre-Ballot WG, *Marco Hernandez*
		+ How can we think that the tentative code parameters for like *n, k*, and *s* of RS code are fine or needed to be changed? (*Ryuji Kohno*)
			- These parameters are fine in my opinion. (*Daisuke Anzai*)
			- We can continue to discuss to investigate optimal parameters on PHY later. (*Daisuke Anzai*)
		+ Due to the commonality with the other wireless, our HARQ is used in limited QoS and use cases as optional. (*Ryuji Kohno*)
		+ PHY parameters will be determined based on the results of simulations. (*Marco Hernandez*)
		+ How can we decide beacon interval? (*Marco Hernandez*)
			- Let us wait for the results of simulations. (*Ryuji Kohno*)
			- Normally superframe length and beacon period are fixed. However, we can discuss about dynamically changing periods. (*Marco Hernandez*)
		+ Ranging explanations has not completed yet in the standard draft document. (*Ryuji Kohno, Marco Hernandez*)
	8. Comment-Resolution Database for Pre-Ballot WG, doc.#15-23-0476-15, *Marco Hernandez*

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

* 1. TG6ma Channel Model Document for Enhanced Dependability, *Takumi Kobayashi*, doc.#22-0519-07, 24-0179-006a
	2. Comments to channel-model-document, *Takumi Kobayashi*, doc.#23-0605-01
		+ “technology” => “interface” , “the” => “an”. (*Huan-bang Li*)
			- Corrected. Latest version will be uploaded to Mentor as rev.08. (*Takumi Kobayashi*)
	3. ~~Interference Mitigation Schemes in Class 3, 5, 6, and 7 of Coexistence in TG6ma,~~ *~~Takumi Kobayashi,~~* ~~doc.#24-0073-00~~
		+ Skipped due to time limitation.

**[Summary of MAC Protocol]**

* 1. Overview and convergence of MAC proposals for 15.6ma, *Marco Hernandez,* doc.# 23-0056-04

**[Progress and Timeline]**

* 1. Progess report of 802.15.6ma, doc.#15-23-0056-06, *Marco Hernandez*
	2. TG6ma Timeline(Rescheduling Timeline), *Marco Hernandez,* doc.#23-0361-05
		+ “Submission for TEG by July” has been added in the timeline. (*Marco Hernandez*)
		+ Updated version will be uploaded to Mentor immediately. (*Marco Hernandez*)
	3. Any other business?
		+ No.
	4. Adjourn (9:55 AM)

Attendees 9

***Name Affiliation***

* Daisuke Anzai Nagoya Institute of Technology
* Huan-Bang Li NICT
* Iwao Hosako NICT
* Marco Hernandez YRP-IAI
* Menashe -
* Ryuji Kohno YNU/YRP-IAI
* Takafumi Suzuki NICT
* Takumi Kobayashi Nitech/YRP-IAI
* Xiliang Luo Apple
* Yasuharu Amezawa Mobile Techno