Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [TG15.6ma Closing Report for July 2024]
Date Submitted: [18th July 2024]
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Abstract: [This document contains closing report for TG15.6ma for Revision of P802.15.6-2012 with Enhanced Dependability July 2024.]

Purpose: [information]

IEEE 802.15 TG6ma
(Revision of IEEE802.15.6-2012)

Closing Report

In Personal and Virtual Hybrid Plenary Session
Montreal, Canada
July 18th, 2024

Ryuji Kohno
Yokohama National University(YNU),
YRP International Alliance Institute(YRP-IAI)

Objectives of TG 6ma – Enhanced Dependability Body Area Network (ED-BAN)

Objective: Enhancements to the BAN Ultra Wideband (UWB) physical layer (PHY) and media access control (MAC) to support enhanced dependability to a human BAN (HBAN) and adds support for vehicle body area networks (VBAN), a coordinator in a vehicle with devices around the vehicular cabin.

Action:

- Update draft#2.3 of Draft Proposals for Pre-Ballot
- Comment resolution for draft#2.3
- Necessary documentation for Letter Ballot such as Coexistence Assurance Document, Progess Report, Project Task List
- Performance Evaluation of Technologies in PHY; Channel Coding According to 8 QoS Levels of Packets and Coexistence Levels, Interference Mitigation, etc.
- Performance Evaluation of Technologies in MAC; Channel Management, CCA, Hybrid Contention Free/Access Protocol According to 8 QoSs and Coexistences.
- Harmonization or Commonality with 4ab in Coexistence and Feasible Implementation of 6ma and 4ab
- Feasibility of TSN of 802.1 in MAC

Next Things to Do :

Finalize draft#2.3 for Letter Ballot

TG15.6ma Plenary Session Schedule for 14–19th, July 2024

TG15.6ma has three own sessions such as

Session1(Virtual RM#2) AM1 8:00-10:00 July 16(TUE) in Montreal time, 21:00 - 23:00 July 16(TUE) in JST/KST
Session2(Virtual RM#2) AM2 10:30-12:30 July 16(TUE) in Montreal time, 23:30 July 16 - 01:30 July 17 in JST/KST
Session3(Virtual RM#2) AM1 9:00-10:00 July 17(WED)in Montreal time, 22:00 - 23:00 July 17(WED) in JST/KST
Session4(Virtual RM#2) AM1 8:00-10:00 July 18(THU)in Montreal time, 21:00 - 23:00 July 18(THU) in JST/KST

R3

151st IEEE 802.15 WSN SESSION
LeCentre Sheraton - Montreal, Canada
The weekly session of the IEEE P802.15 WG on WSN is given in graphic format below. Local Time is meeting location time.

World Time Zones				Local Time	SUNDAY 14-Jul-24	MONDAY 15-Jul-24					TUESDAY 16-Jul-24					WEDNESDAY 17-Jul-24					THURSDAY 18-Jul-24					FRIDAY 19-Jul-24
						WEBEX INFO																				
EDT= UTC-4	PDT= UTC-7	UTC	JST/KST= UTC+9		Virtual Rm 1	Virtual Rm 1	Virtual Rm 2	Virtual Rm 3	Virtual Rm 4	Jnt/Rec See 802 Cal	Virtual Rm 1	Virtual Rm 2	Virtual Rm 3	Virtual Rm 4	Jnt/Rec See 802 Cal	Virtual Rm 1	Virtual Rm 2	Virtual Rm 3	Virtual Rm 4	Jnt/Rec See 802 Cal	Virtual Rm 1	Virtual Rm 2	Virtual Rm 3	Virtual Rm 4	Jnt/Rec See 802 Cal	
7:00	4:00	11:00	20:00	07:00-07:30		CONTINENTAL BREAKFAST					CONTINENTAL BREAKFAST					CONTINENTAL BREAKFAST					CONTINENTAL BREAKFAST					
7:30	4:30	11:30	20:30	07:30-08:00																						
8:00	5:00	12:00	21:00	08:00-08:30		802 LMSC OPENING MEETING					TG4ab NG-UWB	TG6ma BAN/ VAN	TG7a OCC	SC MAINT		802.15 AC Meeting (Virtual Rm 1)						TG6ma BAN/ VAN	TG7a OCC	IG Access	802.18	
8:30	5:30	12:30	21:30	08:30-09:00																						
9:00	6:00	13:00	22:00	09:00-09:30												TG4ab NG-UWB	TG6ma BAN/ VAN	TG7a OCC			TG4me Revison					
9:30	6:30	13:30	22:30	09:30-10:00																						
10:00	7:00	14:00	23:00	10:00-10:30		Break					Break					Break					Break					
10:30	7:30	14:30	23:30	10:30-11:00		802.15 WG Opening Plenary (Virtual Rm 1)					TG4me Revison	TG6ma BAN/ VAN	TG16t LicNB		802.18	802.15 WG Midweek Plenary (Virtual Rm 1)					TG4ab NG-UWB		TG16t LicNB	SC MAINT		
11:00	8:00	15:00	0:00	11:00-11:30																						
11:30	8:30	15:30	0:30	11:30-12:00												SC WNC (Virtual Rm 1)										
12:00	9:00	16:00	1:00	12:00-12:30																						
12:30	9:30	16:30	1:30	12:30-13:00		LUNCH					LUNCH					LUNCH					LUNCH					
13:00	10:00	17:00	2:00	13:00-13:30																						
13:30	10:30	17:30	2:30	13:30-14:00																						
14:00	11:00	18:00	3:00	14:00-14:30	802.15 WG Chair Hr	TG4ab NG-UWB		TG4ac Privacy	SC MAINT		TG4ab NG-UWB	TG4ad NG-SUN PHYs	IG Crypto			TG4ab NG-UWB	IG Crypto	TG16t LicNB	AdHoc - Needs WG15 Chair Approv		TG4ab NG-UWB	TG4ad NG-SUN PHYs	TG4ac Privacy			802 LMSC CLOSING MEETING
14:30	11:30	18:30	3:30	14:30-15:00																						
15:00	12:00	19:00	4:00	15:00-15:30																						
15:30	12:30	19:30	4:30	15:30-16:00		Break					Break					Break					Break					
16:00	13:00	20:00	5:00	16:00-16:30	802.WCSC	TG4ab NG-UWB	TG4ad NG-SUN PHYs	IG Crypto	AdHoc - Reqs. WG15 Chair Approv	802.19			IG NG-OWC	AdHoc - Reqs. WG15 Chair Approv	802 JTC1 802.24		TG4ad NG-SUN PHYs	IG NG-OWC	AdHoc - Needs WG15 Chair Approv	802.24	802.15 WG Closing Plenary (Virtual Rm 1)					
16:30	13:30	20:30	5:30	16:30-17:00																						
17:00	14:00	21:00	6:00	17:00-17:30																						
17:30	14:30	21:30	6:30	17:30-18:00	802.15 AC MEETING (Virtual Rm 1)										Joint .15 /.1											
18:00	15:00	22:00	7:00	18:00-18:30																						
18:30	15:30	22:30	7:30	18:30-19:00	Dinner on your own	Dinner on your own					Dinner on your own				Joint .15 /.11 Coex.	Social					Dinner on your own					
19:00	16:00	23:00	8:00	19:00-19:30																						
19:30	16:30	23:30	8:30	19:30-20:00																						
20:00	17:00	0:00	9:00	20:00-20:30																						
20:30	17:30	0:30	9:30	20:30-21:00																						
21:00	18:00	1:00	10:00	21:00-21:30																						
21:30	18:30	1:30	10:30	21:30-22:00																						
22:00	19:00	2:00	11:00	22:00-22:30																						
22:30	19:30	2:30	11:30	22:30-23:00																						

Agenda items for the week

- TG15.6ma meeting call to order
- Call for essential patents and policies & procedures reminder doc.#15-24-0350-01-06ma
- Approve last meeting minutes: TG 15.6ma Meeting Minutes for March 2024 doc.#15-24-0301-00-06ma
- Agenda of TG15.6ma May Meeting doc.#15-24-0349-07-06ma
- Review and Summary
  1. Overview of IG, SG, TG15.6ma doe Dependable BAN Revision of IEEE802.15.6-2012 doc.#15-23-0455-03-06ma
  2. Basic Consensus in MAC and PHY of Revision of IEEE802.15.6-2012(IEEE802.15.6ma) doc.#15-23-0557-04-06ma
  3. TG6ma Draft Action Items(Progress and Action Items for Draft#2.3 doc.#15-24-0xxx-00-06ma
  4. Review of draft#2.3 for Pre-Ballot WG doc.#15-23-0476-15-06ma
  5. Rescheduling Timeline doc.#15-23-0361-07-06ma
- Presentation
  1.. Performance Evaluation of Channel Coding with Interleaver Based on TG6ma Channel Model for Some Classes of Coexistence doc.#15-24-0247-01-06ma
  2. Ranging Accuracy Evaluation under TG6ma Communication Senarios doc.#15-24-0248-01-06ma
  3. Hybrid ARQ Scheme for High QoS Packets in High Class of Coexistence of IEEE 802.15.6ma #15-23-0576-04-06ma
  4. Evaluation of IEEE 802.15.6 Ultra-wideband Physical Layer Utilizing Super Orthogonal Convolutional 22-0562-10-06ma
  5. Technical editor comments to the P802.15.6ma_D1.18 doc.#15-24-0333-00-06ma
  6. MAC features to be specified doc.#15-24-0352-00-06ma
  7 .MAC Performance Evaluation of Multiple BAN Coexistence Under TG6ma Channel doc.#15-24-0246-01-06ma
  8 Group MAC service features doc.#15-24-0353-00-06ma
  9. 15.6ma MAC compared to 15.4-2020 MAC and 15.6-2012 MAC doc.#15-24-0354-00-06ma
  10. Proposed text for 6ma - MAC Service Features doc.#15-24-0356-00-06ma
  11. TG15.6ma MAC Frame and Function doc.#15-24-0yyy-00-06ma
  12. Theoretical Analysis of System Performance in a Multi-BAN Coexistence Environment (Class 1) 24-0357-00-06ma
  13. TG15.6ma Coexistence Assessment Document doc.#15-24-0348-00-06ma
  14. Joint work with 802.1; Draft PAR and CSD 802.1ACea: Amendment to IEEE Standard 802.1AC-2016 15-24-0396-00
  15..TG6ma Channel Model Document for Enhanced Dependability doc.#15-22-0519-08-06ma
  16. Comments to channel-model-document doc.#15-24-0073-03-06ma
  17. Interference Mittigation Schemes in Class 3, 5, 6, and 7 of Coexisitence in TG6ma doc.#15-24--0073-02-06ma
  18. Progress Report of TG6ma doc.#15-23-0056-07-06ma
  19. Timeline of TG6ma doc.#15.23-0361-07-06ma
  20. TG15.6ma Closing Report for July 2024 doc.#15-24-0404-00-06ma
  21. TG15.6ma Meeting Minutes for July 2024 doc.#15-24-0405-00-06ma

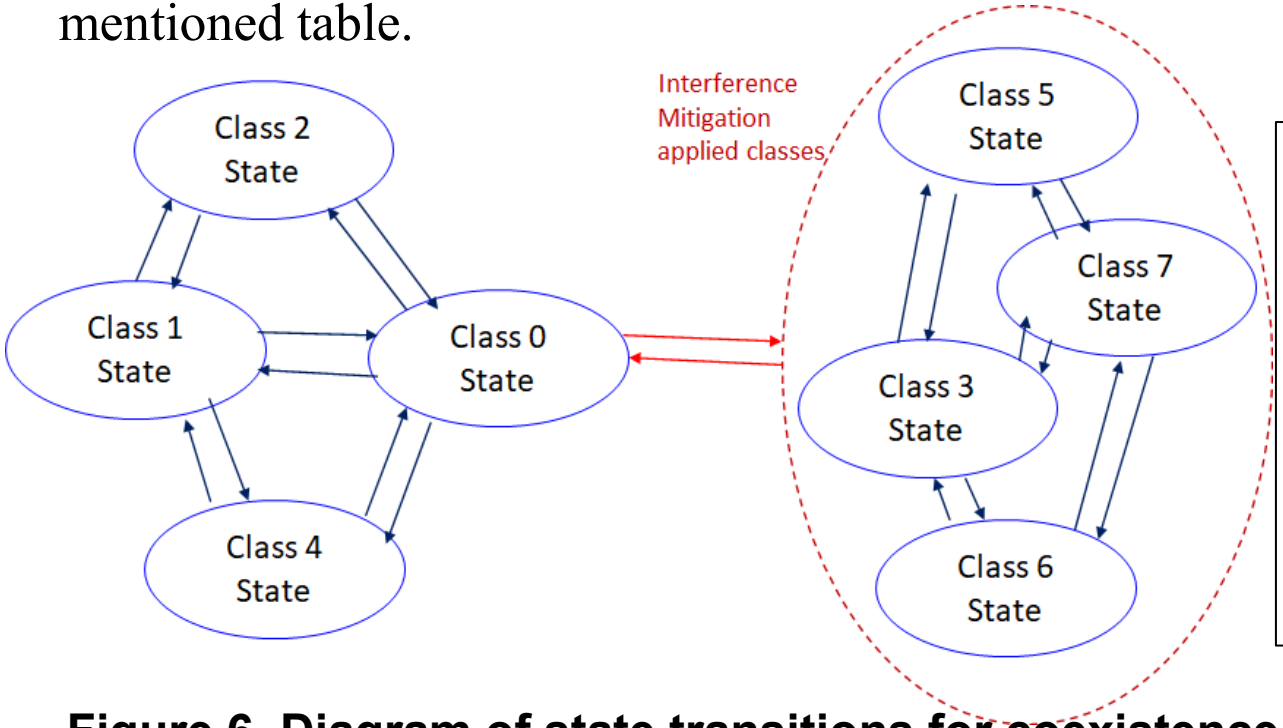
Definition of Coexistence Environment Classes

Coexistence Class	Coexisting system(s)					Category
	802.15.6ma	802.15.6-2012	Non-UWB (ex. Wi-Fi / Unlicensed / 3GPP)	802.15 UWB (ex. 802.15.4)	Non-802.15 UWB (ex. ETSI SmartBAN)	
0	-	-	-	-	-	Single BAN
1 (1a)	✓	-	-	-	-	Multiple 15.6 BANs
2 (1b)	✓	✓	-	-	-	
3	✓	-	✓	-	-	Non-UWB
4 (2a)	✓	-	-	✓	-	Multiple UWB systems
5 (2b)	✓	-	-	-	✓	
6 (2c)	✓	-	-	✓	✓	
7	✓	✓	✓	✓	✓	Final Boss

- The coexistence class has been redefied to 8 levels, which can be represented by 3 bits and would be suitable to include in PHY or MAC headers.

Coexistence Class States Transition(1/2)

- The standard's revision supports BANs operating with high reliability (coexistence class 0) and coexisting in dense environments with intra-interference and inter-interference (coexistence class 1 to 7). Figure 6 shows the state transition between several classes of coexistence environments defined in above – mentioned table.



Class 0: 6ma BAN alone
Class 1: Multiple 6ms BANs
Class 2: 6ma BAN with old 6 BAN
Class 4: 6ma BAN with other 802.15 UWB WSNs e.x. 4z, 4ab

Class 3: 6ma BAN with other narrowband Nets WSNs
Class 5: 6ma BAN with other UWB Nets e.x. ESTI SmartBAN
Class 6: 6ma with 802.15 other WSN
Class 7: 6ma with any frequency shared networks

Figure 6 Diagram of state transitions for coexistence class environments.

Coexistence Class States Transition(2/2)

- The standard's revision focuses on the dependability mechanisms for a single HBAN or VBAN (Class 0) and the scenario with multiple HBANs or VBANS (Class 1).
- Class 2 supports compatibility with legacy BANs (IEEE 802.15.6-2012 Std).
- Class 4 supports coexistence with other IEEE 802.15 UWB Stds, and amendments such as 15.4, 15.8, 15.4z, and 4ab, via the PHY and MAC specification.
- Classes 3, 5, 6, and 7 support coexistence with other wireless systems can result in Class 0, 1, and 2 by mitigation technology to cancel interference from other radios except regacy 15.6 at the receiver side (see clause 4.7.2 of draft#1.11.
- During CCA, a BAN coordinator may analyze the type of synchronization preamble detected from a 15.6ma, 15.6, or 15.4 system.
- In Figure 6, the state transition probabilities are approximated in consecutive superframes. Furthermore, the duration of the CAP and CFP are determined by statistics of various QoS level of packets in previous consecutive superframes for every coming superframe.
- The draft revision #1.11 supports BANs operating with high reliability in dense environments coexisting with intra-interference and inter-interference due to other wireless systems in the same frequency band. Figure 6 shows state transition among several classes of coexistence environment defined in Table 1.

QoS Levels of Packets corresponding to User Priority

- In Std.15.6 WBAN systems, a various data such as vital signs, skin temperature, blood pressure, ECG, EEG, ECoG, and vehicle controlling commons have different QoS levels corresponding to user priority.
- In 15.6ma for dependable WBAN for human and vehicles, data packet transmission should be dependable according to QoS levels even in various classes of coexistence environment.
- Therefore, **appropriate sets of error controlling scheme with FEC and hybrid ARQ** corresponding to QoS levels have been standardized in 15.6ma,

User priority	Traffic designation	Frame type
0	Background (BK)	Data
1	Best effort (BE)	Data
2	Excellent effort (EE)	Data
3	Video (VI)	Data
4	Voice (VO)	Data
5	Medical data or network control	Data or management
6	High-priority medical data or network control	Data or management
7	Emergency or medical implant event report	Data

FEC/HARQ for 64 Combinations of 8 Coexistence Classes × 8 QoS Packet Levels

Coexistence Class	0	1	2	3	4	5	6	7
QoS Level								
0	BCC	BCC+E	BCC+E	BCC+E			HARQ	HARQ
1	BCC	BCC+E	BCC+E	BCC+E			HARQ	HARQ
2	BCC	BCC+E	BCC+E	BCC+E			HARQ	HARQ
3	BCC	BCC+E	BCC+E	BCC+E			HARQ	HARQ
4	BCC	BCC+E	BCC+E	BCC+E			HARQ	HARQ
5	BCC	BCC+E	BCC+E	BCC+E			HARQ/IM	HARQ/IM
6	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	HARQ/IM	HARQ/IM
7	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	CFP/HARQ	HARQ/IM	HARQ/IM

- FEC codes and Hybrid ARQ have been designed for 8 × 8 = 64 combinations for QoS levels and Coexistence classes under various standard of channel models.

FEC in TG6ma

Common with IEEE802.15.4ab

Error-correcting codes corresponding to QoS levels

User priority	Inner code	Outer code	HARQ
0	15.4ab LDPC or BCC (R=1/2)		-
1	15.4ab LDPC or BCC (R=1/2)		-
2	15.4ab LDPC or BCC (R=1/2)		-
3	15.4ab LDPC or BCC (R=1/2)		-
4	15.4ab LDPC or BCC (R=1/2)	(54, 46) shortened RS code	-
5	15.4ab LDPC or BCC (R=1/2)	(54, 38) shortened RS code	-
6	15.4ab LDPC or BCC (R=1/2)	(54, 28) shortened RS code	-
7	15.4ab LDPC or BCC (R=1/2)	(54, 14) shortened RS code	-

- As an outer code, shortened Reed-Solomon (RS) codes with N=54 (original code length N=63) will be selected to correct burst errors due to interference from other WBANs and the coding rates are changed according to each QoS and channel condition
- As an inner code, 15.4ab LDPC (K=324, 648, 972, R=1/2) in mandatory or BCC in optional will be selected for the coexistence of 15.6ma and 15.4ab
- This updated concept table is considered as the first priority

FEC in TG6ma

Table 94—FEC Configuration for coexistence environment class 0

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000000000	0	0	Inner encoder: BCC or LDPC
00000000001	0	1	Inner encoder: BCC or LDPC
00000000010	0	2	Inner encoder: BCC or LDPC
00000000011	0	3	Inner encoder: BCC or LDPC
00000000100	0	4	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000000101	0	5	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000000110	0	6	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000000111	0	7	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC

FEC in TG6ma

Table 95 — FEC Configuration for coexistence environment class 1

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000001000	1	0	Inner encoder: BCC or LDPC
00000001001	1	1	Inner encoder: BCC or LDPC
00000001010	1	2	Inner encoder: BCC or LDPC
00000001011	1	3	Inner encoder: BCC or LDPC
00000001100	1	4	Outer Encoder: shortened RS(200,168), Inner encoder: BCC or LDPC
00000001101	1	5	Outer Encoder: shortened RS(200,168), Inner encoder: BCC or LDPC
00000001110	1	6	Outer Encoder: shortened RS(200,168), Inner encoder: BCC or LDPC
00000001111	1	7	Outer Encoder: shortened RS(200,168), Inner encoder: BCC or LDPC

Table 96 — FEC Configuration for coexistence environment class 2

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000010000	2	0	Inner encoder: BCC or LDPC
00000010001	2	1	Inner encoder: BCC or LDPC
00000010010	2	2	Inner encoder: BCC or LDPC
00000010011	2	3	Inner encoder: BCC or LDPC
00000010100	2	4	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000010101	2	5	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000010110	2	6	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000010111	2	7	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC

FEC in TG6ma

Table 97 — FEC Configuration for coexistence environment class 3

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000011000	3	0	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000011001	3	1	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000011010	3	2	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000011011	3	3	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000011100	3	4	HARQ
00000011101	3	5	HARQ
00000011110	3	6	HARQ
00000011111	3	7	HARQ

Table 98 — FEC Configuration for coexistence environment class 4

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000100000	4	0	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000100001	4	1	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000100010	4	2	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000100011	4	3	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000100100	4	4	HARQ
00000100101	4	5	HARQ
00000100110	4	6	HARQ
00000100111	4	7	HARQ

FEC in TG6ma

Table 99 — FEC Configuration for coexistence environment class 5

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000101000	5	0	Inner encoder: BCC or LDPC
00000101001	5	1	Inner encoder: BCC or LDPC
00000101010	5	2	Inner encoder: BCC or LDPC
00000101011	5	3	Inner encoder: BCC or LDPC
00000101100	5	4	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000101101	5	5	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000101110	5	6	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000101111	5	7	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC

Table 100 — FEC Configuration for coexistence environment class 6

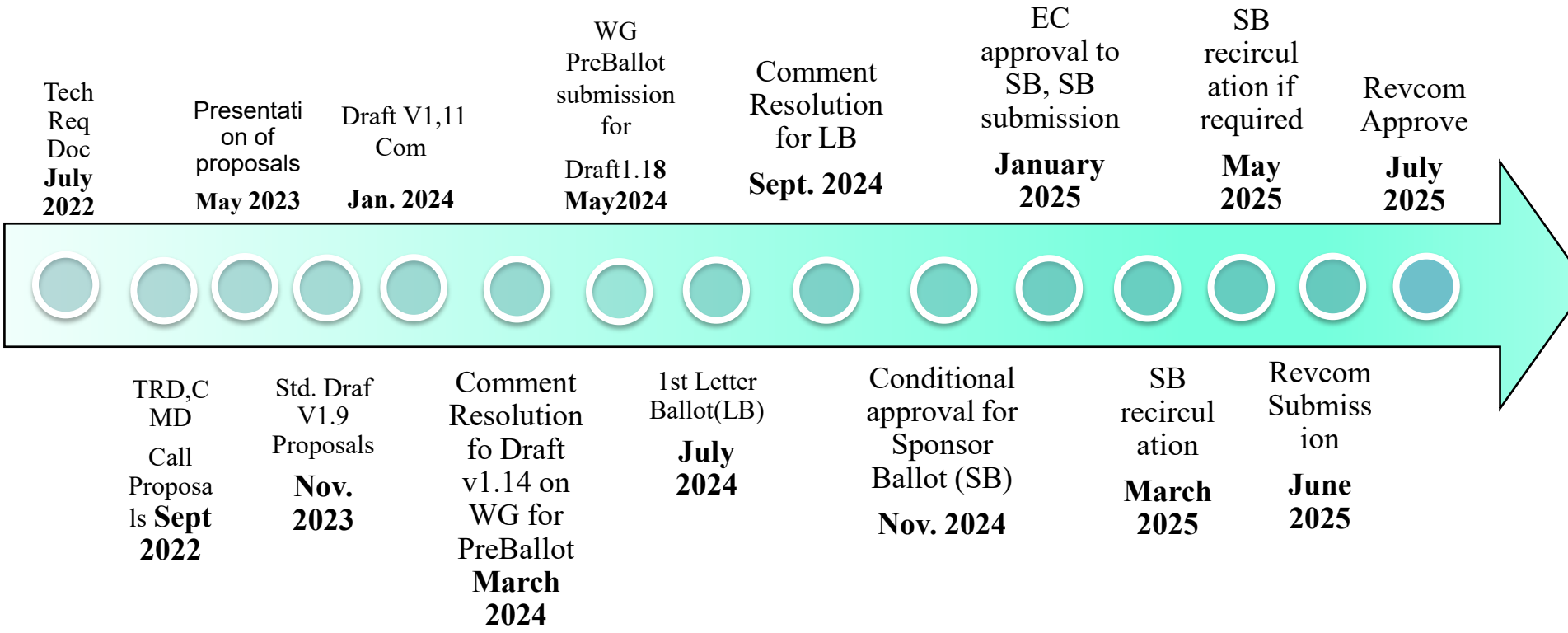
FEC Configuration	Coexistence class	QoS type	FEC configuration
00000110000	6	0	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000110001	6	1	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000110010	6	2	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000110011	6	3	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000110100	6	4	HARQ
00000110101	6	5	HARQ
00000110110	6	6	HARQ
00000110111	6	7	HARQ

FEC in TG6ma

Table 101 — FEC Configuration for coexistence environment class 7

FEC Configuration	Coexistence class	QoS type	FEC configuration
00000111000	7	0	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000111001	7	1	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000111010	7	2	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000111011	7	3	Outer Encoder: shortened RS(200,168). Inner encoder: BCC or LDPC
00000111100	7	4	HARQ
00000111101	7	5	HARQ
00000111110	7	6	HARQ
00000111111	7	7	HARQ

TG 6ma Timeline(expected)



Notes: SASB/RevCom scheduled for 2024 a guess

Expecting Timeline detail

Topic item	Deadline	Action items	Notes
Std Draft D2_3 WG pre-ballot recirculation.	July/2024		Editorial comments from 802.15 technical editor were addressed. Still missing cross-references.
Towards the July 2024 meeting	July/2024	Adding MAC text. Revise PHY text. Editorial revisions.	
Target WG letter ballot (LB) submission: submit draft to TEG	August/2024	Disposition of comments.	1. Based on pre-ballot resolutions, prepare Draft D2_4 2. Request LB submission before the September meeting. Consequently, the July meeting is used to resolve comments.
1st LB recirculation	Sep/2024		Comment-resolutions to LB recirculation.
2nd LB recirculation	Nov/2024		Comment-resolutions to LB recirculation.
Conditional approval for Sponsor Ballot (SB)	Nov/2024		Seek conditional approval for SB by the Executive Committee.
Final LB recirculation.	Jan/2025		WG approval to request SB submission.
Request EC approval for SB	Jan/2025		Request SB approval by the EC (conditional or not)
IEEE SA Sponsor Ballot submission	March/2025		One month for IEEE SA editorial review.
1st SB recirculation	May/2025		Comment-resolutions to SB and recirculation.
2nd SB recirculation	Jun/2025		Comment-resolutions to SB and recirculation.
Request conditional/unconditional approval to RevCom	Jun/2025		Submission to SASB agenda
Final SB recirculation, if required. Submission to RevCom	July/2025		Submission to SASB
RevCom submission	July/2025		RevCom approval

Note: the deadlines are subject to change.

Reference: doc.#15-23-0361-07-06ma

Contributions

- TG15.6ma opening report for July 2024 meeting 15-24-0350-01-06ma
- TG15.6ma Agenda of July Meeting in 2024 15-24-0349-07-06ma
- Progress reort of 802.15.6ma 15-23-0056-07-06ma
- Rescheduling Timeline 15-23-0361-07-06ma
- Overview of IG-DEP, SG6a, TG6a & TG15.6ma BAN with Enhanced Dependability 15-23-0455-03-06ma
- Basic Consensus in MAC and PHY of Revision of IEEE802.15.6-2012 15-23-0557-01-06ma
- Technical-editor-comments-to-the-p802-15-6ma-d1-18 15-24-0333-01-006a
- Propagation Channel Parameters of UWB for Human BAN (HBAN) Use Cases 15-24-0145-03-06ma
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- **Thank You !**
- **Any Questions ?**