

## **Project: IEEE P802.15 Working Group for Wireless Specialty Networks (WSN)**

**Submission Title:** TG 15.4ab September 2023 Meeting Slides

**Date Submitted:** 13 November 2023

**Source:** Benjamin A. Rolfe (Blind Creek Associates)

**Contact:**

**Voice:** +1 408 395 7207, **E-Mail:** ben.rolfe @ ieee.org

**Re:** **Task Group 4ab: 802.15.4 UWB Next Generation**

**Abstract:** Meeting Slides for the July 2023 802 Plenary Session

**Purpose:** Continue project progress

**Notice:** This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

**Release:** The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.



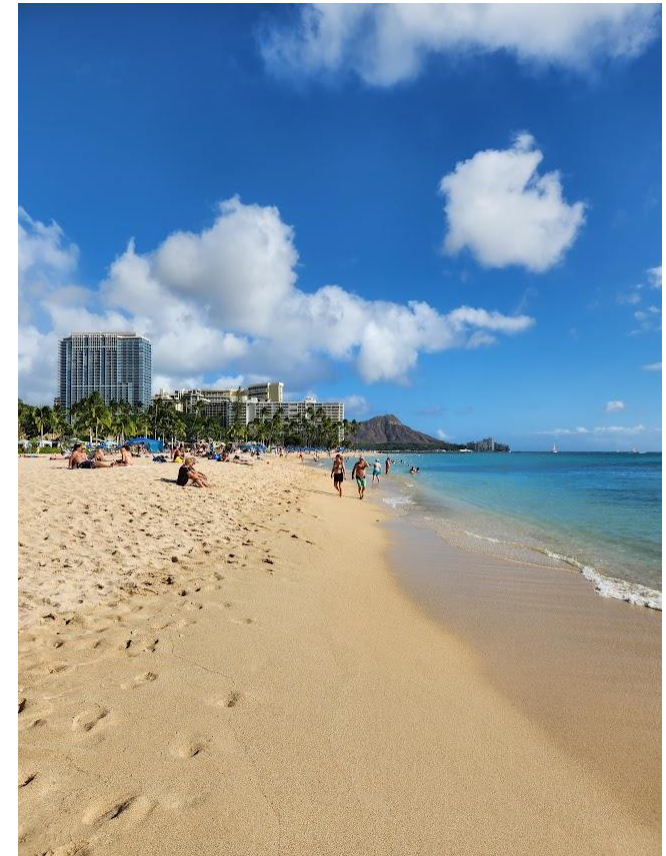
# Task Group 15.4ab

## Next Generation UWB Amendment

November 2023 802 Plenary Session

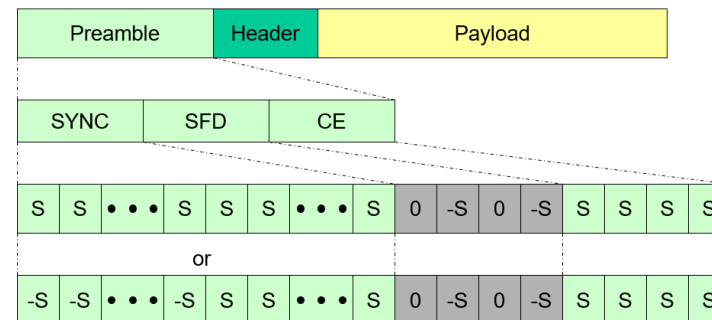
Mixed Mode

Live from Honolulu, Hi, USA



# MEETING PREAMBLE

Stuff you need to know before we get to the meeting content



# Mixed Mode Logistics

1. Head table will project (one computer all day)
2. Local: queue to speak a microphone; remember remote attendees will hear you only if you use the microphone!
3. Remote attendees please queue via chat window
4. Local attendees **do not need to join WebEx** except to present
5. Local attendees when joining WebEx **connect without audio!**  
**In-room Webex with audio enabled will disrupt the meeting!**
  1. **Presenters, both local and remote, will present via WebEx**
  2. For those Remote Attendees connecting to Webex, Configure Webex Audio to use “Music Mode”.
  3. Makes sure “mute on entry” is set in WebEx
  4. Please do not turn on video.

# Registration for **802 LMSC Plenaries** and 802 Wireless Interims

- **This 802.15 meeting is part of the IEEE 802 plenary session**
- You must pay the registration fee in order to attend virtually or in person
- If you have not already done so please register:

**Session Information & Registration Website:**

[Registration Link](#)

**If you do not intend to register for this session you must leave this meeting and, if you have logged attendance on IMAT, email the appropriate WG chair or vice chairs to have your attendance cancelled**

# Deadbeat Consequences

(Deadbeat: in default of paying registration fee for a prior mtg.)

1. No participation credit will be granted for said session.
2. Any participation credit acquired before said session toward membership in any IEEE 802 LMSC group is revoked.
3. Membership in any IEEE 802 LMSC group is terminated.
4. No participation credit will be granted for attendance at any subsequent IEEE 802 LMSC session until the individual has complied with the registration requirements for all previously attended IEEE 802 LMSC sessions by the start of said subsequent session.

# Task Group Rules

- Discussion: Everyone present is welcome
- Straw polls: Everyone present may vote
- Formal motions: WG voters
  - To make, second and vote
- Patent policy for PAR activities applies
- All the usual rules of conduct

Please identify yourself on first contact with name and affiliation

# IEEE-SA Patent, Copyright, and Participation Policies

See: <https://grouper.ieee.org/groups/802/sapolicies.shtml>

IEEE-SA Patent Slides for Standards Development Meetings (.pdf)

<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>

IEEE-SA Standards Board Patent Committee (PatCom) home page

<https://standards.ieee.org/content/ieee-standards/en/about/sasb/patcom/index.html>

IEEE-SA Participation Policy meeting slide set - individual method (.pdf)

<https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/Participant-Behavior-Individual-Method.pdf>

Working Group Copyright Materials

<https://standards.ieee.org/ipr/copyright-materials.html>

<https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ieee-sa-copyright-policy-2019.pdf>



# Participants have a duty to inform the IEEE

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**

# Ways to inform IEEE

- **Cause an LOA to be submitted to the IEEE SA ([patcom@ieee.org](mailto:patcom@ieee.org)); or**
- **Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or**
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

# Other Guidelines for IEEE Working Group Meetings

- All IEEE SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
  - Don't discuss specific license rates, terms, or conditions.
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - Technical considerations remain the primary focus.
  - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
  - Don't discuss the status or substance of ongoing or threatened litigation.
  - Don't be silent if inappropriate topics are discussed. Formally object to the discussion immediately.

-----  
For more details, see *IEEE SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

---

## Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct

- All participants in IEEE-SA activities are expected to adhere to the core principles underlying the:
  - [IEEE Code of Ethics](#)
  - [IEEE Code of Conduct](#)
- The core principles of the IEEE Codes of Ethics & Conduct are to:
  - *Uphold the highest standards of integrity, responsible behavior, and ethical and professional conduct*
  - *Treat people fairly and with respect, to not engage in harassment, discrimination, or retaliation, and to protect people's privacy.*
  - *Avoid injuring others, their property, reputation, or employment by false or malicious action*
- The most recent versions of these Codes are available at <http://www.ieee.org/about/corporate/governance>

---

## Participants in the IEEE-SA “*individual process*” shall act independently of others, including employers

- The [IEEE-SA Standards Board Bylaws](#) require that “*participants in the IEEE standards development individual process shall act based on their qualifications and experience*”
- This means participants:
  - **Shall act & vote** based on their personal & independent opinions derived from their expertise, knowledge, and qualifications
  - **Shall not act or vote** based on any obligation to or any direction from any other person or organization, including an employer or client, regardless of any external commitments, agreements, contracts, or orders
  - **Shall not direct** the actions or votes of other participants or retaliate against other participants for fulfilling their responsibility to act & vote based on their personal & independently developed opinions
- By participating in standards activities using the “*individual process*”, you are deemed to accept these requirements; if you are unable to satisfy these requirements then you shall immediately cease any participation

## IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints

- The [IEEE-SA Standards Board Bylaws](#) (clause 5.2.1.3) specifies that *“the standards development process shall not be dominated by any single interest category, individual, or organization”*
  - This means no participant may exercise *“authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints”* or *“to hinder the progress of the standards development activity”*
- This rule applies equally to those participating in a standards development project and to that project’s leadership group
- Any person who reasonably suspects that dominance is occurring in a standards development project is encouraged to bring the issue to the attention of the Standards Committee or the project’s IEEE-SA Program Manager

# IEEE SA COPYRIGHT POLICY

---

**By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

# IEEE SA COPYRIGHT POLICY

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
  - IEEE SA Copyright Policy, see
    - Clause 7 of the IEEE SA Standards Board Bylaws  
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
    - Clause 6.1 of the IEEE SA Standards Board Operations Manual  
<https://standards.ieee.org/about/policies/opman/sect6.html>
  
- IEEE SA Copyright Permission
  - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
  
- IEEE SA Copyright FAQs
  - <https://standards.ieee.org/faqs/copyrights/>
  
- IEEE SA Best Practices for IEEE Standards Development  
[http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best\\_practices\\_for\\_ieee\\_standards\\_development\\_051215.pdf](http://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/best_practices_for_ieee_standards_development_051215.pdf)
  
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
  - <https://standards.ieee.org/about/policies/opman/sect6.html>



# IEEE 802 Ground Rules

Respect ... give it, get it

NO product pitches

NO corporate pitches

NO prices

NO restrictive notices – (no confidentially notices in email)

Presentations must be openly available

# AGENDA



Document:

<https://mentor.ieee.org/802.15/dcn/23/15-23-0546-02-04ab-tg4ab-agenda-november-2023.xlsx>

# Agenda

Motion to approve agenda contained in document 15-23-0546-04.

- Moved by Clint Chaplin (SRA)
- Second by Harry Bims (Bims Labs)
- Discussion:

# Approvals of Minutes

Motion to approve minutes contained in documents 15-23-0528-00 and 15-23-0564-00

Moved by: David Xun Yang (Huawei)

Second by: Clint Chaplin (SRA)

September Interim session minutes:

<https://mentor.ieee.org/802.15/dcn/23/15-23-0528-00-04ab-tg4ab-sep-interim-mins.docx>

Interim telecon minutes:

<https://mentor.ieee.org/802.15/dcn/23/15-23-0564-00-04ab-tg4ab-conf-call-mins-sep-to-nov-2023.docx>

# Session Objectives

- **Complete the draft**
- **Resolve collected comments**
- **Provide TE with details to update**
- **Commence WG comment collection following the plenary session**

# Hybrid Meeting Conduct: Other

In room breakouts:

- We have the TG4ab Meeting rooms (physical and virtual)
- We have a 2<sup>nd</sup> breakout room (physical and virtual)
- In may be difficult for remote attendees – keep them in mind.
- Loop in remote attendees in inconvenient time zones when able (email reflector, etc)
- We will do the best we can and keep learning as we go!

# Reminders

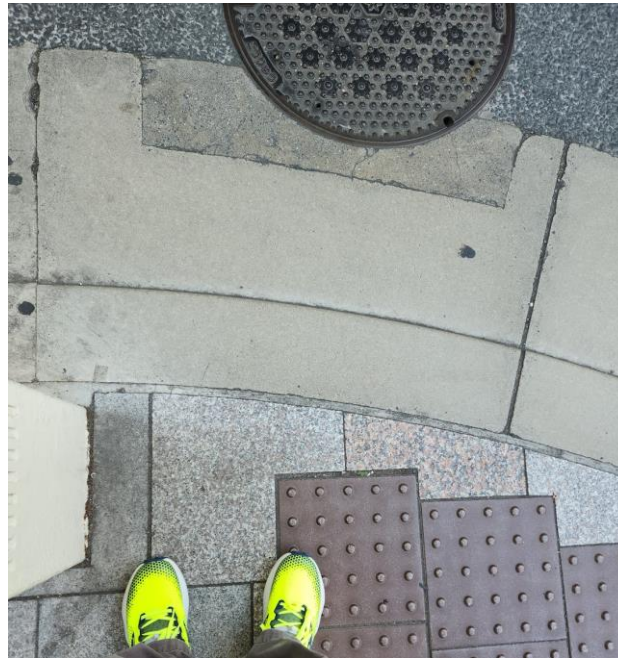
- **You are reminded NOW that all the 802 and IEEE rules you heard at the opening plenary apply to every meeting. This is your final reminder!**
- Meetings will start ON TIME as shown on the schedule – arrive early, finish nesting, get comfortable
- Questions and discussions time may be limited: **Use the email reflector to continue discussion!**
- **Take advantage of coffee breaks and other ad hoc time as well as the reflector, and**
- **Don't forget about remote attendees!**

# Time Management

- We will need to stay within the allocated time to get through everything
- If less than the allocated time is used in a time slot, we'll start the next time slot (accumulate any unused time to the end of the meeting)
- Accumulated time will be used to continue discussion where needed



# RECAP



## 5.2.b Scope of the project (As approved):

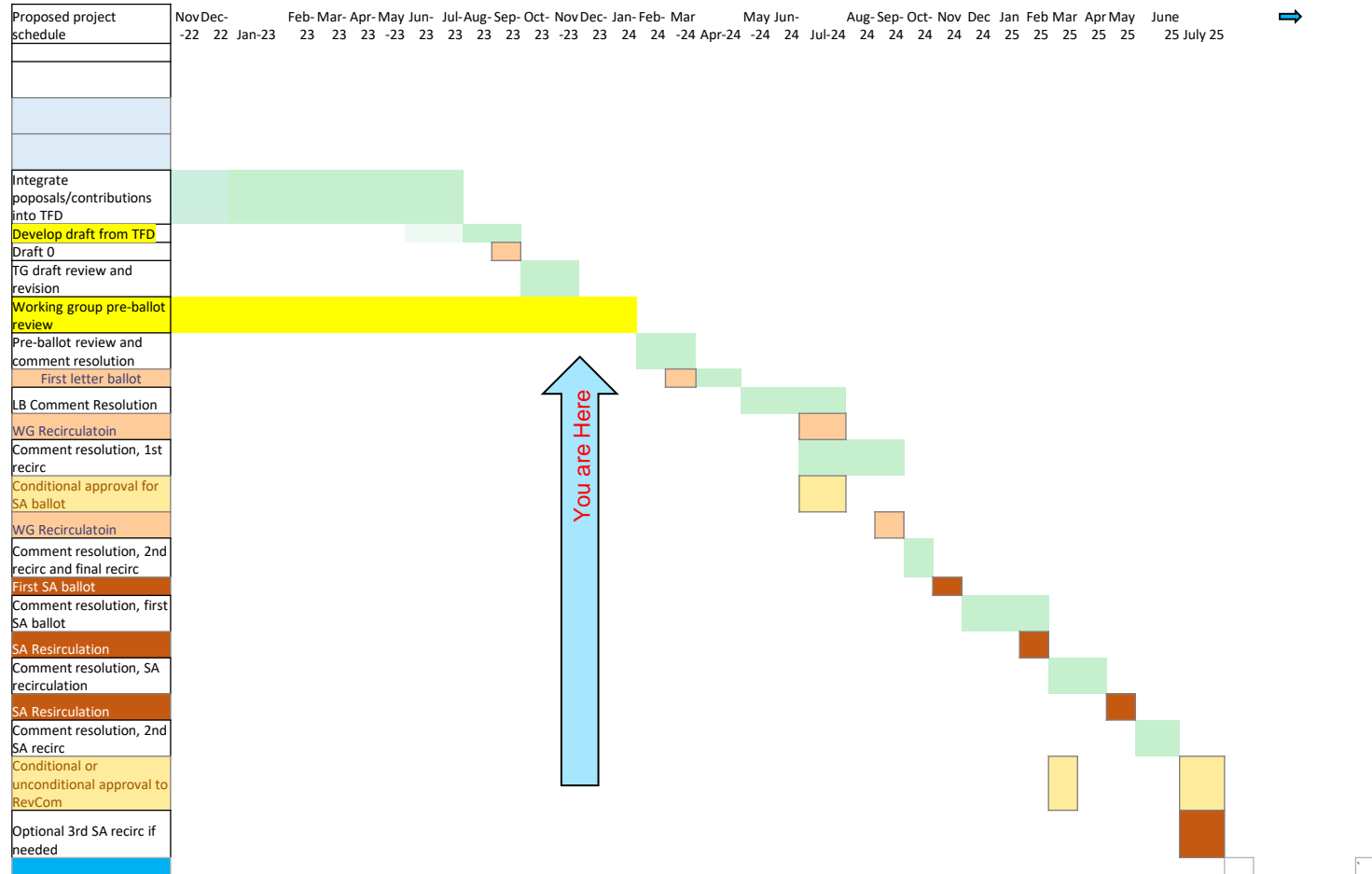
This amendment enhances the Ultra Wideband (UWB) physical layers (PHYs) medium access control (MAC), and associated ranging techniques while retaining backward compatibility with enhanced ranging capable devices (ERDEVs).

Areas of enhancement include:

- additional coding, preamble and modulation schemes to support improved link budget and/or reduced air-time relative to IEEE Std 802.15.4 UWB;
- additional channels and operating frequencies;
- interference mitigation techniques to support greater device density and higher traffic use cases relative to the IEEE Std 802.15.4 UWB;
- improvements to accuracy, precision and reliability and interoperability for high-integrity ranging; schemes to reduce complexity and power consumption;
- definitions for tightly coupled hybrid operation with narrowband signaling to assist UWB;
- enhanced native discovery and connection setup mechanisms;
- sensing capabilities to support presence detection and environment mapping;
- and mechanisms supporting low-power low-latency streaming as well as high data-rate streaming allowing at least 50 Mb/s of throughput.

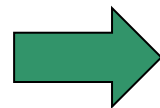
Support for peer-to-peer, peer-to-multi-peer, and station-to-infrastructure protocols are in scope, as are infrastructure synchronization mechanisms. This amendment includes safeguards so that the high throughput data use cases do not cause significant disruption to low duty-cycle ranging use cases.

### Project Schedule (working baseline)



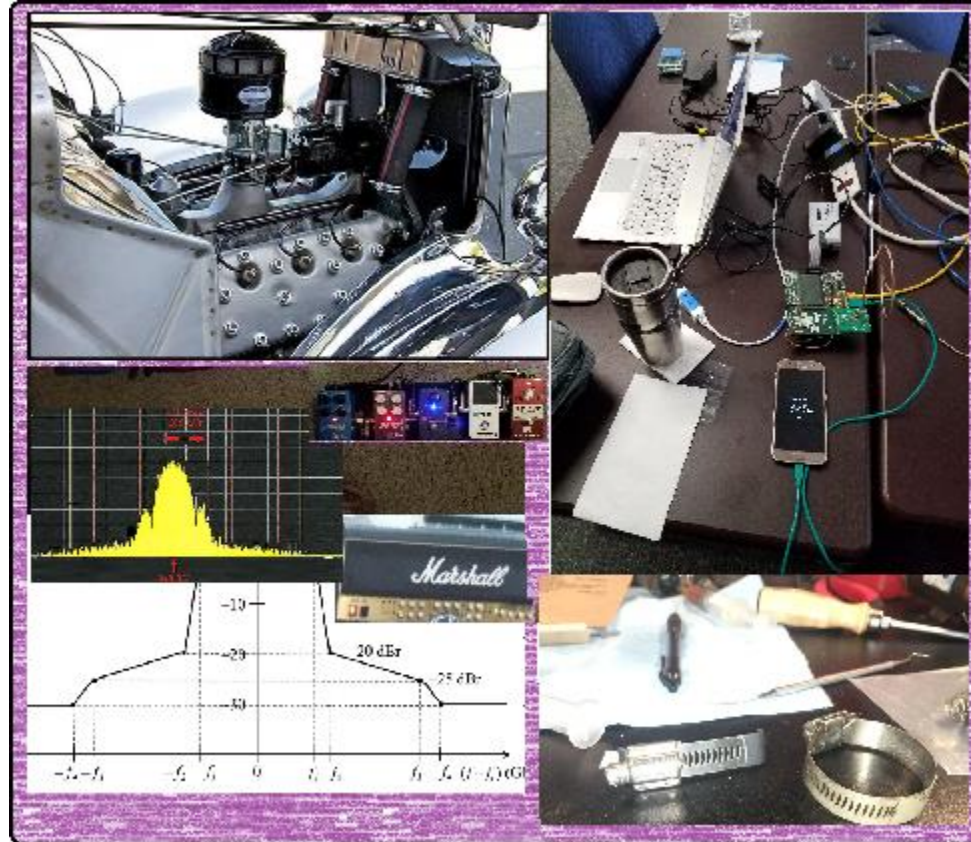
# Schedule Major Milestones

## Near Term Working Milestones



	Original Schedule	Current Schedule
Call for proposals	November 2021	
Cut-off for new features (high level feature set), PHY	May 2022	
Cut-off for new features (high level feature set), MAC	July 2022	
<b>Draft 0</b>	Post-January 2023	Post March July Sept 2023
TG draft review and revision complete	February - March 2023	Mar-June 2023 Sept 2023 - Oct 2023
Working group pre-ballot review commence	March - May 2023 (following March meeting)	July August Sept Nov 2023
First letter ballot	June 2023 (following meeting)	Oct Nov 2023 Jan 2024
...		

# Completing the Draft



# Overview

- Pre-draft draft
  - Current draft: P802.15.4ab™/D (pre-ballot) B
  - **Following this session:** Will create (pre-ballot) C
- Goal create a **technically complete** draft
  - Complete:
    - NO TBDs
    - Not perfect
  - Identify and fill holes
  - Resolve remaining content to be technically complete
  - **Approve changes to pre-ballot B to create C**

# Comment resolution reports and drafting contributions



# Motion

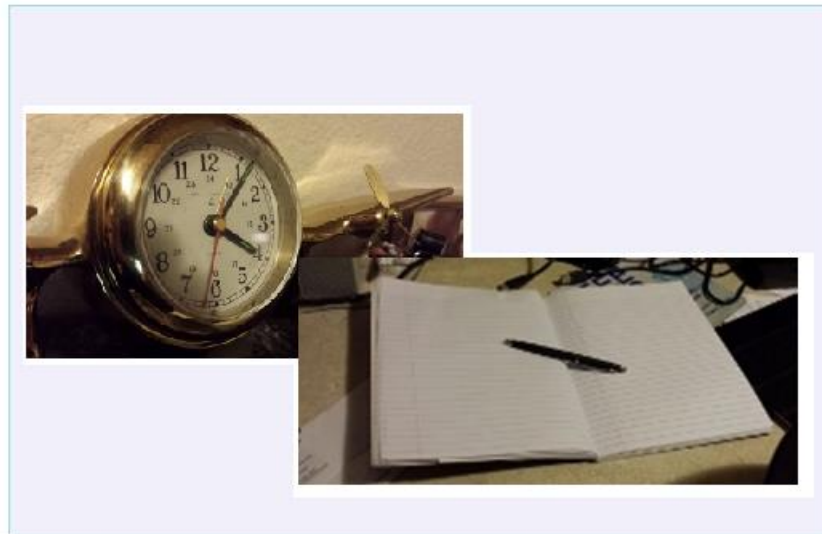
Adopt the comment resolutions in 15-23-0475-31 and instruct the technical editor to apply to produce pre-ballot draft C. Direct the TG chair to request WG chair initiate working group comment collection on pre-ballot draft C as soon as possible.

Moved by: Clint Chaplin (SRA)

Second by: Billy Verso (Qorvo)



# Editor's Corner



# Next Steps



# INTERIM TELECON/WEBEX SCHEDULE

November 2023

Su	Mo	Tu	We	Th	Fr	Sa
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	<del>22</del>	23	24	25
26	27	28	<del>29</del>	30	1	2

December 2023

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	<del>25</del>	26	27	28	29	30
31	1	2	3	4	5	6

January 2024

Su	Mo	Tu	We	Th	Fr	Sa
31	<del>1</del>	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

**Weekly on Tuesday commencing 4-December 06:00 PT**

If no agenda items by COB Friday before, call will be cancelled



# Other Business





**Adjourned**

**Thanks**