

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

Submission Title: TG 15.4ab October 2023 Telecon Meeting Slides

Date Submitted: 23 Oct 2023

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

Abstract: Meeting Slides for interim Webex (TC)

Purpose: Continue project progress

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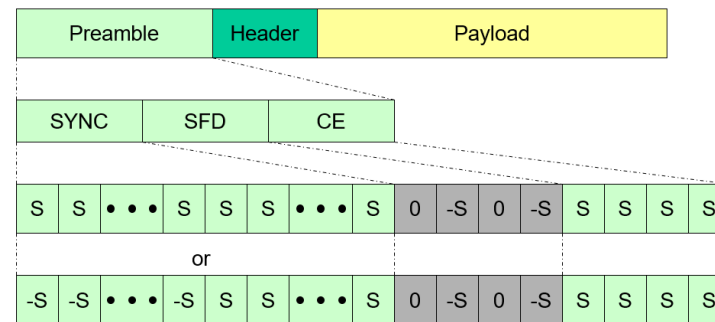
Task Group 15.4ab

Next Generation UWB Amendment

October 24th 2023 Interim Webex

MEETING PREAMBLE

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



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); 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](#)
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 - *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

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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.
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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

- 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

1. Meeting preamble and notices
2. **Consolidated comment work**
3. Editor corner
4. Next steps
5. Any other business
6. Adjourn



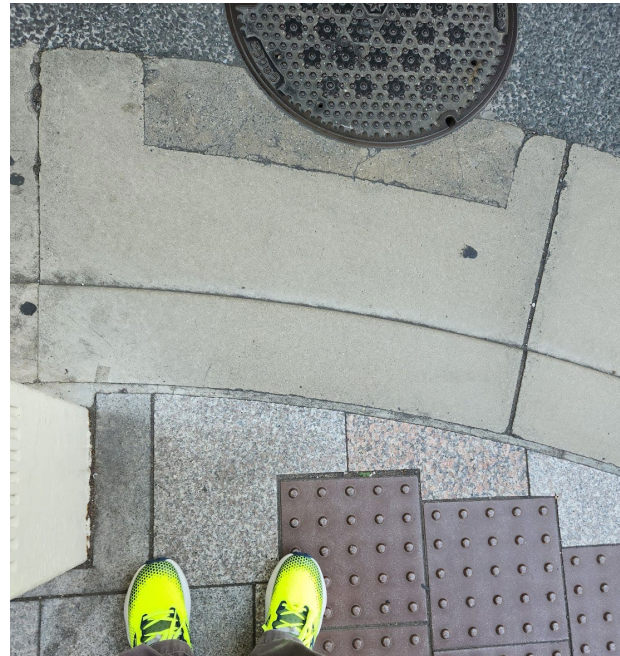
Contributions and Links

1. [15-23-0541-01](#) (Bin Qian)
2. [15-23-0466-01](#) (Chenchen Liu)
3. Consolidated comments xls [15-23-0475-20](#)

Objectives for interim calls (Sept-Oct)

- **Complete the draft**
 - Provide TE with details to update
 - Resolve outstanding comments
- Initiate comment collection on revised draft (post-November meeting)

RECAP



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

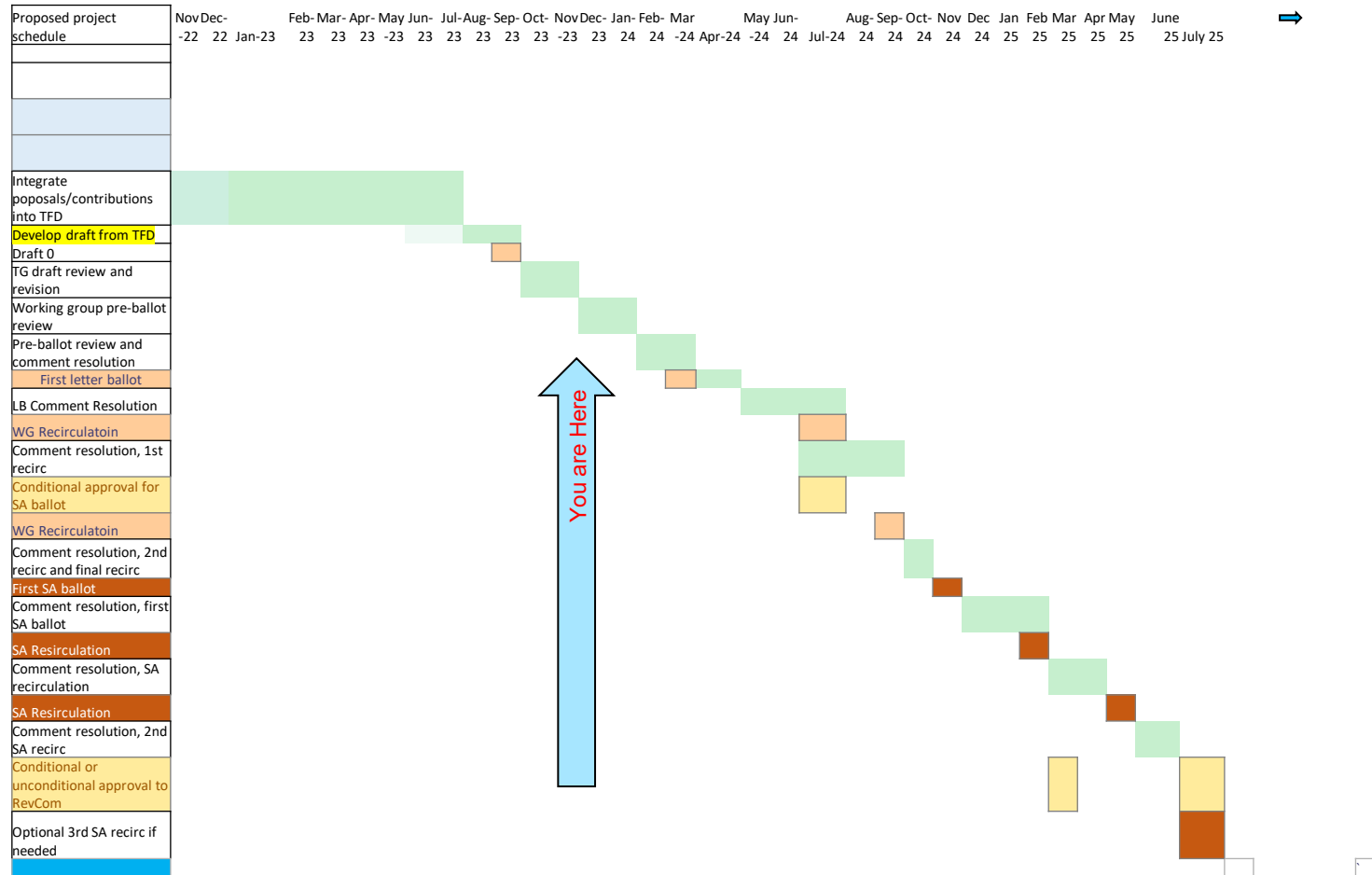
This amendment enhances the Ultra Wideband (UWB) physical layers (PHYs) medium access control (MAC), and associated ranging techniques while retaining backward compatibility with enhanced ranging capable devices (ERDEVs).

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.

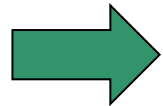
Support for peer-to-peer, peer-to-multi-peer, and station-to-infrastructure protocols are in scope, as are infrastructure synchronization mechanisms. This amendment includes safeguards so that the high throughput data use cases do not cause significant disruption to low duty-cycle ranging use cases.

Project Schedule (working baseline)



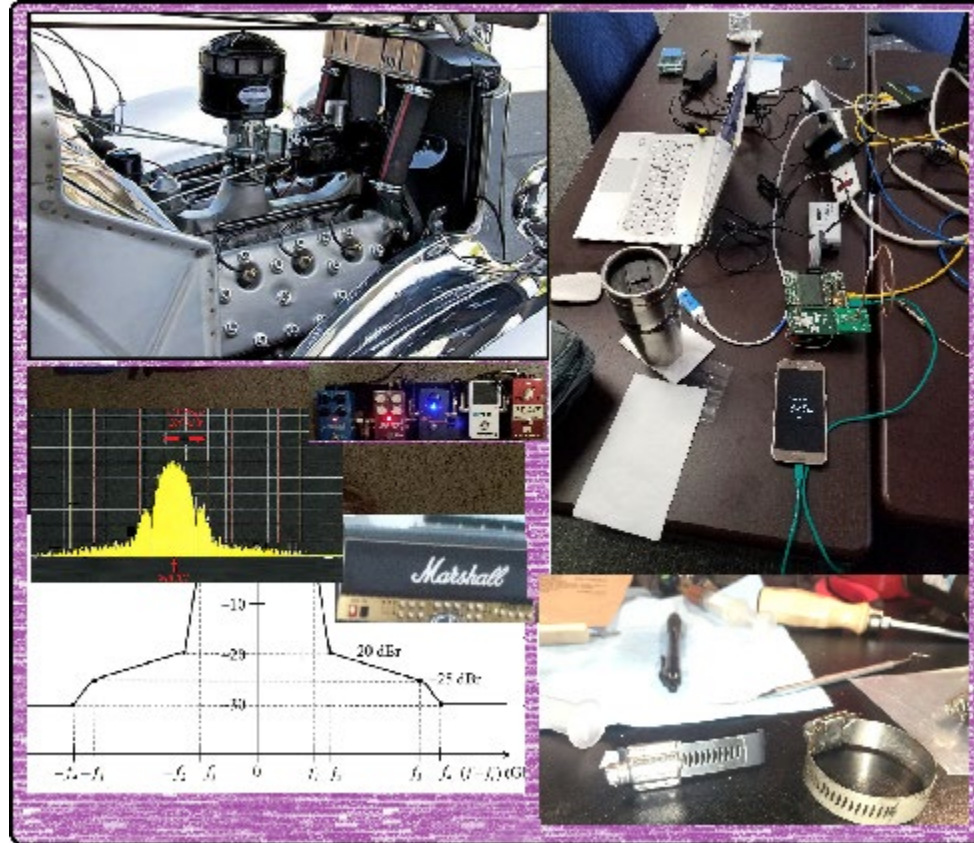
Schedule Major Milestones

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	
Draft 0	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

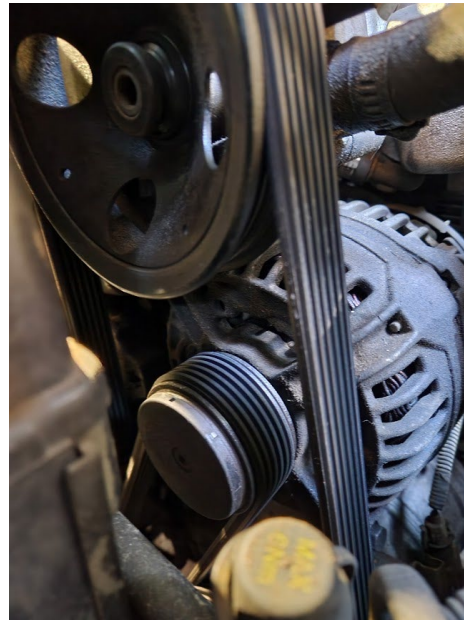
- Pre-draft draft
 - Current draft: P802.15.4ab™/D (pre-ballot) B
 - Next (eventually) P802.15.4ab™/D (pre-ballot) C
- Goal create a **technically complete** draft
 - Complete means NO TBDs or major holes we know about
 - Does not mean perfect
- Method:
 - Resolve remaining **content** to be technically complete
 - Identify and fill holes identified during comment resolution
 - Approve changes to pre-ballot B to create C
- Initiate informal comment collection by [**November December**]
- ~~Initiate comment resolution via TC prior to November~~

Revised Time-line

Current plan:

- We have not started a new comment collection on Draft C by pre-November timeline
 - Continue to work on draft through November session
 - Complete CAD during November session
 - Commence WG comment collection on Draft C Post November meeting
 - **First WG LB starts after January meeting**
- **We can still use the extra time to make the draft better**

Comment resolution reports and drafting contributions



Contributions

1. TBD

Additional Comments

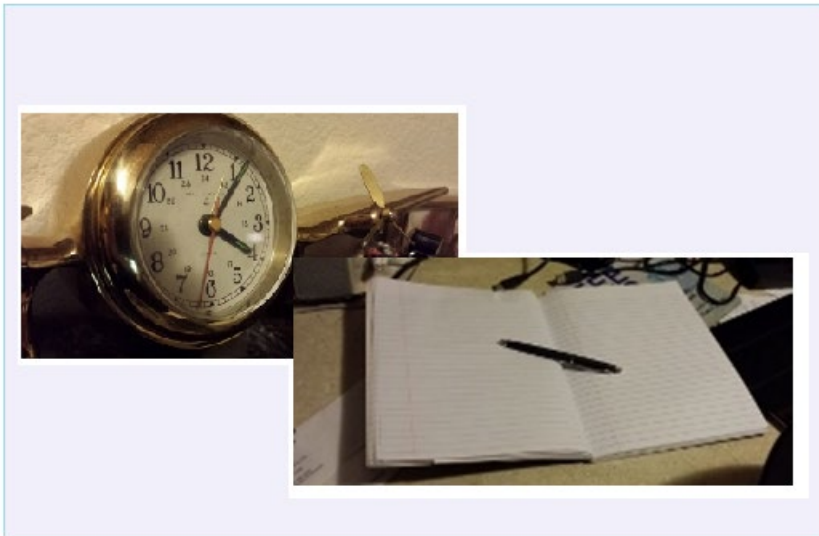
Situation: A number of people have indicated they have comments on Draft B that have not yet been submitted

- Did not do a full comment collection cycle on Draft B
- Not all comments from review of Draft B were submitted
- This is valuable input to the group to improve the draft
 - Still have technical holes identified in Draft B
- Ad-hoc content has been considered and accepted (outside of specific comments in CC XLS)
 - More may be ready for consideration

Moving Draft Forward – Current Situation

- Too late to start CC on Draft C prior to November Session
- Nearing completion of resolutions to CC XLS
- Need a positive plan for a productive session in November
- Goal remains a technically complete draft for LB in January

Editor's Corner



Editor Status	#	Topic	Doc #	Link	Status
IN PROGRESS	1	Consolidated comments with resolutions	15-23-0475-		Pending Update
DONE	2	Resolution proposal for compressed PSDU coexistence	15-23-0481-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0481-01-04ab-resolution-prop	Ready
DONE	3	MMS Ranging Session using public addresses	15-23-0492-03	https://mentor.ieee.org/802.15/dcn/23/15-23-0492-03-04ab-mms-ranging-s	Ready
DONE	4	Resolutions to some comments related to Section 10.36.7	15-23-0496-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0496-01-04ab-proposed-furth	Ready
DONE	5	resolutions for D0-B hyper block comments	15-23-0501-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0501-00-04ab-resolutions-for	Ready
DONE	6	Assigned Comment Resolutions (Mingyu)	15-23-0504-02	https://mentor.ieee.org/802.15/dcn/23/15-23-0504-02-04ab-resolution-prop	Ready
	7	text for ptf report IE	15-23-0505-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0505-00-04ab-text-for-ptf-repo	Pending Update
DONE	8	Comment resolutions	15-23-0509-04	https://mentor.ieee.org/802.15/dcn/23/15-23-0509-04-04ab-comments-on-4	Ready
DONE	9	Updated text, AP message	15-23-0510-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0510-01-04ab-updates-of-ap-	Ready
DONE	10	Revised UWB wake-up radio modulation	15-23-0516-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0516-00-04ab-revised-uwb-wa	Ready
DONE	11	PHY Operating parameter set	15-23-0502-03	https://mentor.ieee.org/802.15/dcn/23/15-23-0502-03-04ab-group-consens	Ready
DONE	12	4ab Device(s) and feature sets	15-23-0308-03	https://mentor.ieee.org/802.15/dcn/23/15-23-0308-03-04ab-4ab-device-s-a	Ready
DONE	13	Text proposal for 15.4ab Secure compressed PSDU	15-23-0335-02	https://mentor.ieee.org/802.15/dcn/23/15-23-0335-02-04ab-text-proposal-f	Ready
DONE	14	UWB based Report in NBA-MMS		https://mentor.ieee.org/802.15/dcn/23/15-23-0372-01-04ab-uwb-based-rep	Ready
	15	NB CCA for UWB channel access		https://mentor.ieee.org/802.15/dcn/23/15-23-0460-00-04ab-clarification-of-f	Pending Update
DONE	16	Proposed updates for 10.36		https://mentor.ieee.org/802.15/dcn/23/15-23-0462-00-04ab-proposed-upda	Ready
DONE	17	Text updates for frequency stitching		https://mentor.ieee.org/802.15/dcn/23/15-23-0463-00-04ab-proposed-upda	Ready
DONE	18	Proposed updates for section 16	15-23-0464-02	https://mentor.ieee.org/802.15/dcn/23/15-23-0464-02-04ab-proposed-upda	Ready
	19	Text for the CIR Report field of AC IE	15-23-0466-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0466-00-04ab-proposed-draft	Pending Update
DONE	20	UWB only MMS	15-23-0468-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0468-01-04ab-text-for-uwb-on	Ready

Pending Update

At 4th Oct meeting, these documents were presented & added to address selected comments

DONE		CID #51 and #56	15-23-0534-00	https://mentor.ieee.org/802.1/dcn/23/15-23-0534-00-04ab-proposed-resolution-for-cid-51-a
DONE		CID #38, #39, #49, and #50	15-23-0536-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0536-00-04ab-proposed-resolution-on-sbp-con
DONE		CID #206, #184, #186, and #185	15-23-0538-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0538-00-04ab-proposed-resolution-on-ac-ie-co
		CIDs 10,146,147,148	15-23-0539-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0539-00-04ab-proposed-resolution-for-10-1
DONE		see doc for CIDs	15-23-0514-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0514-01-04ab-resolution-proposals-preballot-d

At 10th Oct meeting, these docs were presented - but they were not agreed for inclusion, at that time

		Comment ID #'s 43 and 194	15-23-0466-01	https://mentor.ieee.org/802.15/dcn/23/15-23-0466-01-04ab-proposed-draft-text-for-the-c
		Comment ID #'s 45, 203, 34, 42, 48, 47, 46, 61	15-23-0541-00	https://mentor.ieee.org/802.15/dcn/23/15-23-0541-00-04ab-proposed-resolution-for-ac-ie

Next Steps



October 2023						
Su	Mo	Tu	We	Th	Fr	Sa
1	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				

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	22	23	24	25
26	27	28	29	30	1	2

December 2023						
S	M	T	W	T	F	S
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	25	26	27	28	29	30

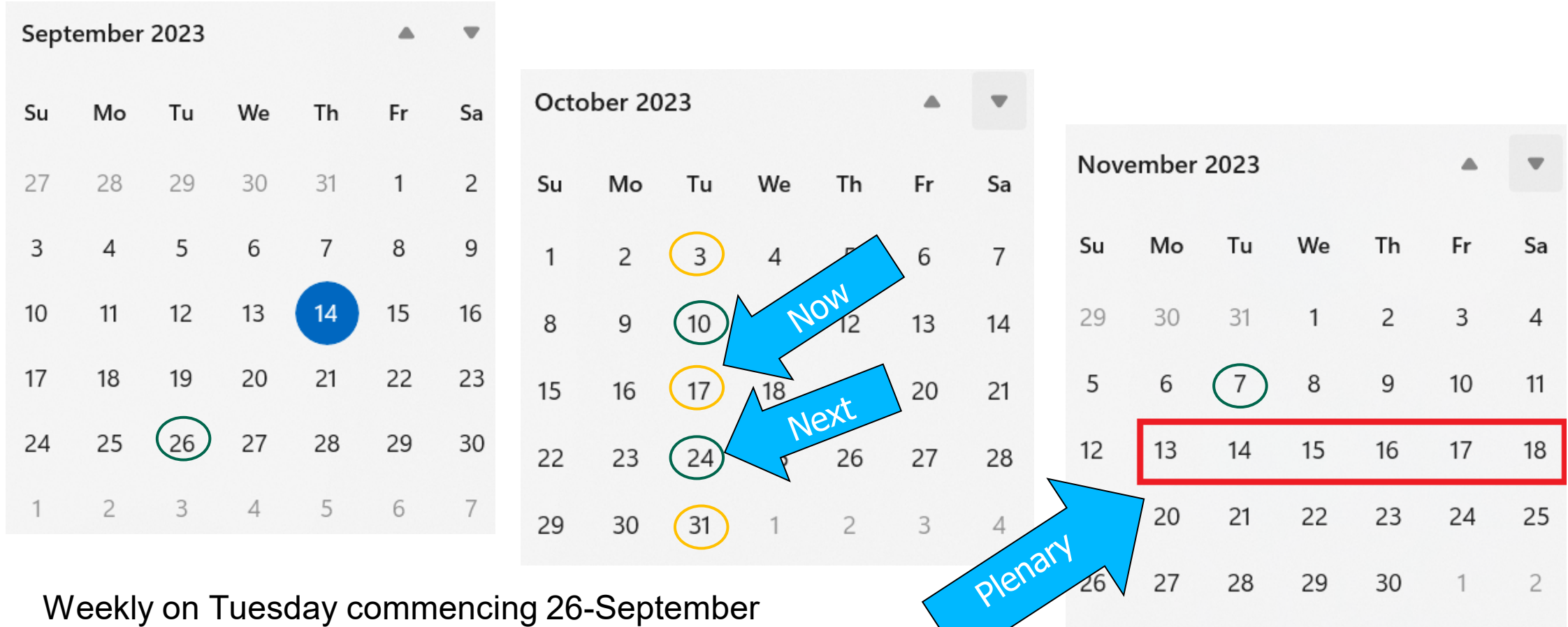
January 2024						
S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Consideration of Time

Comment Collection		Interim telecon/Webex opportunities							
Open	Close	21-Nov	28-Nov	05-Dec	12-Dec	19-Dec	26-Dec	02-Jan	09-Jan
24-Oct	23-Nov	---	CR	CR	CR	CR	CR	CR	CR
31-Oct	30-Nov	---	---	CR	CR	CR	CR	CR	CR
07-Nov	07-Dec	---	---	---	CR	CR	CR	CR	CR
Plenary				13-Nov through 18-Nov					
21-Nov	21-Dec	---	---	---	---	CR	CR	CR	CR
28-Nov	28-Dec	---	---	---	---	---	CR	CR	CR
05-Dec	04-Jan	---	---	---	---	---	---	CR	CR
09-Dec	08-Jan	---	---	---	---	---	---	---	CR

- When we start -> when we can finish (linear concept of time)

Interim telecon/Webex schedule



Weekly on Tuesday commencing 26-September

06:00 PT (Green)

22:00 PT (Orange)

Other Business





Adjourned

Thanks