### IEEE P802.15

**Wireless Personal Area Networks**

<table>
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<tr>
<th>Project</th>
<th>IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)</th>
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<tbody>
<tr>
<td>Title</td>
<td>4z Comment Resolution Group meeting minutes</td>
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<tr>
<td>Date Submitted</td>
<td>08-Oct-2019</td>
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<tr>
<td>Source</td>
<td>[Benjamin Rolfe]</td>
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<td>[Blind Creek Associates]</td>
</tr>
<tr>
<td>E-mail</td>
<td>ben.rolfe @ ieee.org</td>
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</table>

**Re:** Comment Resolution, 802.15.4z

**Abstract**
Minutes of the Comment Resolution Group

**Purpose**
Document meetings

**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.
IEEE Project 802
Working Group 15, Amendment 15.4z
Meeting Minutes: Comment Resolution Group
27-October through 07-November 2019

Task Group 4z

Enhanced Impulse Radio

Task Group Chair, CRG Chair: Tim Harrington (Pro-ID Consulting, UWB Alliance)
Task Group Recording Secretary, Vice Chair: Benjamin A. Rolfe (Blind Creek Associates, UWB Alliance, NXP)
Task Group Lead Technical Editor: Billy Verso (Decawave)
CRG Comment Resolution Editors: Clint Chaplin (Samsung), Billy Verso, Benjamin A. Rolfe
CRG Ballistic Trajectory Advisor: Rocket J. Squirrel

CRG Members:

<table>
<thead>
<tr>
<th>Member</th>
<th>Affiliation</th>
<th>Member</th>
<th>Affiliation</th>
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<tr>
<td>Aditya Padaki</td>
<td>Samsung</td>
<td>Ayman Naguib</td>
<td>Apple</td>
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<td>Benjamin Rolfe</td>
<td>BCA</td>
<td>Billy Verso</td>
<td>Decawave</td>
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<td>Peter Sauer</td>
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<td>Zheda Li</td>
<td>Samsung</td>
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1 See http://www.blindcreek.com/pages/affiliations.pdf for affiliations by 802 activity
Wednesday, October 16, 2019

Agenda
Status
Comment Resolution
Recess
Resumed
Comment Resolution
Recess

Thursday, October 17, 2019

Agenda
Status
Comment Resolution Discussion
Recess
Resumed
Comment Resolution Continued
Recess

Monday, October 21, 2019

Agenda
Status
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Tuesday, October 22, 2019

Agenda
Status and Comment Resolution
Recess

Thursday, October 24, 2019

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Discussion
Motions
  Comment Resolutions Motion
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Recess

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Discussion
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Thursday, October 31, 2019

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Discussion
Recess

Tuesday, November 05, 2019

Agenda
Discussion
Recess
**Meeting Preamble**

The following was presented at the start of each CRG meeting.

**IEEE Patent and Meeting Conduct Presentation**

Chair presents the IEEE patent policy information.

Chair directs attendees to review the meeting preamble slides via the link on the 802.15 home page: https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf.

Chair presents slides 1-5. Attendees are informed that:

- The IEEE’s patent policy is consistent with the ANSI patent policy and is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;

- Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;

- There may be Essential Patent Claims of which the IEEE is not aware. Additionally, neither the IEEE, the WG, nor the WG chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.

At each meeting, the foregoing information was provided. The chair provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard.
Friday September 27 2019

Call to Order
Called to order 0702 PDT by acting chair Benjamin Rolfe.

Meeting Preamble: Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements. Chair presents IEEE Patent and Meeting Conduct Presentation as given in Meeting Preamble.
No disclosures are heard.

Quorum requirement is not met (5/15).

Agenda
Proposed Agenda
1. Review status
2. Editor questions and discussion
3. Any other business

Following neither discussion nor objection, agenda approved by unanimous consent.

Editor Status
Billy Verso is not able to make the call, reported via email. There are several questions he posted to the reflector to take up.

Discussion of Editor Questions
Reviewed the comments marked with ISSUE by Billy and prepared clarifications to provide to the editor.

r1-0191 and r1-0192: As previously discussed, the issue with "should" or "shall" is that the RCM is populated by the higher layer and so normative language defining the behavior of the higher layer is inappropriate. Propose slight change to Billy's suggested wording to be consistent with how this has been handled elsewhere: "In each case, the RCM can be used to indicate the type of ranging that is used."

r1-0196: Propose to change the sentence on page 28, line 26 "However, the responders will respond after fixed reply times FRT1, FRT2, ..., FRTN." to "The ith responder will respond at fixed reply time FRTi shown in Figure 19 where i is from 1 to the number of responders." (Editor to format the i in FRTi as subscript)

r1-0230, r1-0231: Figures have been provided (Aditya).

r1-0447: The resolution is Rejected with detail "The MMRCR field is valid in all ranging rounds."
r1-0448 and r1-0672: The new figures have been provided.
r1-0873: Editorial style question. After removing the redundant text and apply the remaining deletions, the clause has no content. For D3 retain 19.8 showing the deleted text. This conforms to the IEEE Standards Style Manual for an amendment as the correct way to show the content of the sub-clause is to be removed, as confirmed by WG Technical Editor and IEEE Editorial Staff.

**Recess**

Recess at 0758 PDT
Tuesday October 1 2019

Call to Order
Called to order 0709 PDT by acting chair Benjamin Rolfe.

Meeting Preamble: Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements. An opportunity is given for disclosures. No disclosures are heard.

Attendance:
Quorum requirement is met (8/15).

Agenda
Proposed Agenda:
   1. Recirculation plans
   2. AoB

Following neither discussion nor objection, agenda approved by unanimous consent.

Status of Recirculation
Editor reports > 99% done. Working on the MAC SAP ranging parameters reorganization which completes remaining technical comments, and a few editorials. Expect to complete end of today or by early tomorrow AM. Will start the recirculation as soon as possible after draft is completed. Note: recirculation was approved upon completion of edits in the Sept. meeting.

Recess
Recess at 07:21 PDT.
Thursday, October 3, 2019

Called to order 15:32 by acting chair Benjamin Rolfe.

Meeting Preamble: Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements.

**No disclosures are heard.**

Quorum requirement is not met (6/15).

**Agenda**

Proposed Agenda:

1. LB162 Planning
2. AoB

Following neither discussion nor objection agenda is approved by unanimous consent.

**Discussion**

Discussion of schedule. The Ballot was delayed another day and so will close on 18-Oct (the Friday following the BRC face to face meeting scheduled). To complete a third recirculation by the November meeting, comment resolution and editing must be completed in a week following. The strategy is to reach out to LB162 voters who have provide the most comments and request that, if possible, they submit comments early so that the BRC and editor may get a head start.

Given the risk of not having comments received by the start of the face to face (14-Oct) to fill 4 full days, it is suggested that for those who must travel a long distance, virtual attendance is sufficient, and those who are local will attend in person. This minimizes the impact of finishing early. Clint will circulate via the reflector. Ben will reach out to the identified voters.

**AoB**

None.

**Recess**

Recessed at 03:54pm PDT.
Tuesday, October 8, 2019
Called to order at 07:05 PDT by [someone].

Meeting Preamble: Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements.
No disclosures are heard.

Quorum requirement met (10/15).

Agenda
Proposed Agenda:
1. Ballot Status and Plan
2. CRG Meetings next week
3. Discussion
4. AoB

Following neither discussion nor objection agenda [will be] approved by unanimous consent.

Status
Ballot underway. Outreach to solicit early comments completed. Replies from most of CRG received.

CRG Meetings Week of 14-Oct
Plan per last week. Logistics emails should be out later this week. More precise agenda will be put together as we receive comments. Call in will be as last time. Commence 9am Monday.

Discussion
Email discussion on a couple issues found so far are discussed. Regarding email on the resolution to r1-0746, it is noted this is minor and editor will submit a comment to clarify. Regarding negative values of AoA, a proposal is in the works which will be ready for review by the end of the week.

AoB
Planned call for Thursday, Oct 10: The group decides that the call is not needed and so we can recess until 09:00 PDT Oct 14th.

Recess
Recess at 07:42 PDT.
Monday, October 14, 2019

Called to order 09:25 PDT by Chair Tim Harrington.
Meeting Preamble: Chair presents IEEE Patent and Meeting Conduct Presentation as given in Meeting Preamble.
No disclosures are heard.

Quorum requirement met (11/15).

Agenda

Proposed agenda:
1. Getting teleconference link up and running
2. Comment Resolution
3. AoB

Following neither discussion nor objection, agenda approved by unanimous consent.

Comment Resolution

Comments received so far on ballot are captured in doc #15-19-0476-03
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-03-004z-lb162-comments.xlsx

Reviewed and dispatched comments submitted so far, as captured in rev 04.
Discussed comments from top to bottom.

Recess

Recess at 12:15 PDT

Resumed

Called back to order at 13:05 PDT

Comment Resolution

Continued comment resolution. Clint to post results in rev 05.
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-05-004z-lb162-comments.xlsx

Recess

Recess at 05:15 PDT
Tuesday, October 15, 2019

Called to order 09:15 PDT by Chair Tim Harrington.
Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements.
No disclosures are heard.

10/15 Quorum been met

Agenda

Proposed agenda:
1. Editor Status
2. Comment Resolution

Following neither discussion nor objection agenda is approved by unanimous consent.

Editor Status
Editor has gotten through half of the editorials and technical marked as ready.
Billy update comment XLS with progress in rev 06.
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-06-004z-lb162-comments.xlsx

Comment Resolution
Comment resolution continues. Results of morning progress in rev 07.
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-07-004z-lb162-comments.xlsx

Recess
Recess at 12:15 PDT

Resumed
Called back to order at 13:06 PDT

Comment Resolution
Comment resolution continues. Results of morning progress in rev 08.
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-08-004z-lb162-comments.xlsx

Recess
Recess at 17:12 PDT


**Wednesday, October 16, 2019**

Called to order 09:12 PDT by chair Tim Harrington.

Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements. **No disclosures are heard.**

Quorum is met (13/15)

**Agenda**

Proposed agenda:

1. Status
2. Comment Resolution

Following neither discussion nor objection agenda is approved by unanimous consent.

**Status**

Technical editor provides status. Progress captured comment XLS rev 09: [https://mentor.ieee.org/802.15/dcn/19/15-19-0476-09-004z-lb162-comments.xlsx](https://mentor.ieee.org/802.15/dcn/19/15-19-0476-09-004z-lb162-comments.xlsx)

Discussion of items marked ISSUE by TE; results captured in comment XLS. [https://mentor.ieee.org/802.15/dcn/19/15-19-0476-10-004z-lb162-comments.xlsx](https://mentor.ieee.org/802.15/dcn/19/15-19-0476-10-004z-lb162-comments.xlsx)

**Comment Resolution**

Comment resolution continues.

**Recess**

Recess at 12:05 PDT.

**Resumed**

Called back to order at 13:04 PDT

**Comment Resolution**

Comment resolution continues. Results of morning progress in rev 11: [https://mentor.ieee.org/802.15/dcn/19/15-19-0476-11-004z-lb162-comments.xlsx](https://mentor.ieee.org/802.15/dcn/19/15-19-0476-11-004z-lb162-comments.xlsx)

**Recess**

Recess at 17:15 PDT
Thursday, October 17, 2019

Called to order 09:18 PDT by Chair Tim Harrington.
Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements.
No disclosures are heard.

Quorum is met (14/15)

Agenda

Proposed agenda:
1. Status
2. Comment resolution and discussions

Following neither discussion nor objection agenda is approved by unanimous consent.

Status

Editor updated XLS with progress:
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-12-004z-lb162-comments.xlsx
Received additional votes with comment. Billy has looked over the editorials and so far no issues.

Comment Resolution Discussion

Discussed pulse shape comments.
Assigned newly received comments.
Resolved comments.
AM Progress in:
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-13-004z-lb162-comments.xlsx

Recess

Recess at 12:30 PDT

Resumed

Called to order at 13:15 PDT

Comment Resolution Continued

Results captured in r14
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-14-004z-lb162-comments.xlsx

Recess

Recess at 16:55 PDT
Monday, October 21, 2019
Ad Hoc called to order 08:02 PDT by Chair Tim Harrington. Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements. No disclosures are heard.

This is an ad-hoc working call, there is no quorum.

Agenda

Proposed agenda:
1. Status
2. Comment resolution work

Following neither discussion nor objection agenda is approved by unanimous consent.

Status
Work since Thursday meeting by Billy and Clint; progress captured in: https://mentor.ieee.org/802.15/dcn/19/15-19-0476-16-004z-lb162-comments.xlsx

Discussion
Outstanding comments on pulse shape: still working on the language. Comments with editor issues: r2-0334 Billy has applies but disagrees. To discuss on the CRG call tomorrow with all relevant people present.
R2-0454 on defaults for SDS parameters. A proposed resolution was sent to the email list; after discussion, that resolution is recommended.
Results in: https://mentor.ieee.org/802.15/dcn/19/15-19-0476-17-004z-lb162-comments.xlsx

Clint will do clean-up on the XLS before tomorrow’s CRG call.

Recess
Recess at 08:50 PDT
Tuesday, October 22, 2019
Called to order 07:03 PDT by Chair Tim Harrington.
Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements. 
No disclosures are heard.

Quorum requirement met (12/15).

Agenda

Proposed agenda:
1. Status
2. Comment Resolution

Following neither discussion nor objection agenda is approved by unanimous consent.

Status and Comment Resolution
Editor: Applying comments; handed comment XLS pen back to Clint who updated:
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-18-004z-lb162-comments.xlsx
Billy updated with his progress and marked a few new as Issue:
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-19-004z-lb162-comments.xlsx

Discussed comments marked “Issue” by the editor and resolved, captured in r20.
https://mentor.ieee.org/802.15/dcn/19/15-19-0476-20-004z-lb162-comments.xlsx

Recess
Recess at 0759 PDT
Thursday, October 24, 2019
Called to order 1503 PDT by Chair Tim Harrington.
Attendees are reminded of the IEEE Patent Policy and Meeting Conduct requirements.
No disclosures are heard.

Attendance:
Quorum requirement met (9/15).
Other: Kangin.

Agenda

Proposed agenda:
1. Status
2. Comment resolution discussion
3. Comment approval
4. Draft recirculation approval
5. AoB

Following neither discussion nor objection agenda is approved by unanimous consent.

Discussion

Comment requests update of document 15-19-0423 after the draft stabilizes (i.e. sometime in the future), and then a change in the draft to reference the revised version. Editor has a problem with “Accept” as while we agree, the comment is requesting a future action, and we cannot promise or predict the future. Resolution suggested is Reference doc 0423 without version number, instead specify “latest version of”. Agreed with change to the language details as deemed necessary by the editor.

Annex H, RSKD IE: Comment correctly identifies an ordering problem. Assigned to Billy, who after study and thought proposes change figure 61 instead of Annex H. Frank agrees to change field order for “present” flags and V fields so figure matches Annex H, it is a logical order.

Motions

Comment Resolutions Motion
Move to approve comment resolutions content in 15-19-0476-0023.
Moved by: Ben, Second by: Clint
Following neither discussion nor objection, motion carries by unanimous consent.

Recirculation Motion
Move that 802.15 WG start a WG recirculation requesting approval of CA document 15-18-0523-06 and document P802.15.4z-D4 and to forward document P802.15.4z-D4 to Standards Association ballot.
Moved by Clint Chaplin, Second by Frank Leong
Count: 8 yes, 0 no, 0 abstain
Motion carries.

BRC Vote details:

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<td>Yes</td>
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<td>Not in Attendance</td>
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Recess
Recess at 15:49 PDT
Tuesday, October 29, 2019
Called to order *TBD* PDT by TBD.

Agenda

Proposed agenda:
   1. TBD

Discussion

TBD

Recess

Recess at *TBD* PDT
Thursday, October 31, 2019
Called to order *TBD* PDT by TBD.

Agenda

Proposed agenda:
1. TBD

Discussion
TBD

Recess
Recess at *TBD* PDT
Tuesday, November 05, 2019
Called to order *TBD* PDT by TBD.

Agenda
Proposed agenda:
1. TBD

Discussion
TBD

Recess
Recess at *TBD* PDT
Thursday, November 07, 2019
Meeting canceled by notice to the email reflector.

Gratuitous Squirrel Image

Figure 1: CRG Ballistic Trajectory Advisor at Work
### CRG Attendance

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**Attendance**

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**Quorum**

- NO YES NO YES YES YES YES YES YES YES

### Other attendees

- **Tero**
  - - - - -
- **Kangin Yoon**
  - Yes Yes Yes Yes Yes Yes Yes Yes Yes
- **Rich Foster**
  - - - Yes