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**IEEE P802.15**  
**Wireless Personal Area Networks**

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Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)	
Title	P802.15.4z SA CRG Collected Minutes	
Date Submitted	28-Jan-2020	
Source	[Benjamin Rolfe] [Blind Creek Associates] [Benjamin A. Rolfe] [BCA]	E-mail: [ben.rolfe @ ieee.org ]
Re:	Comment Resolution Group	
Abstract	The minutes for each CRG meeting were published via email reflector per the 802.15 Working Group Operations Manual. This document collects those minutes into a single document for convenience for those who might be interested but were not subscribed to or paying attention to the email reflector.	
Purpose	Assemble the meeting minutes in a single document	
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.	

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**IEEE Project 802**  
**Working Group 15, Task Group 4z**  
**CRG Teleconference Minutes:**  
**January 2020 Through April 2020**

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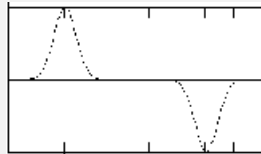
Task Group Chair: Tim Harrington (Pro-ID Consulting, UWB Alliance)

Task Group Recording Secretary, Vice Chair: Benjamin A. Rolfe (Blind Creek Associates, UWB Alliance, NXP<sup>1</sup>)

Task Group Lead Technical Editor: Billy Verso (Decawave)

Task Group Comment Resolution Editor, Acting 2<sup>nd</sup> Vice Chair: Clint Chaplin (Samsung)

# Task Group 4z



## Enhanced Impulse Radio *Ultra-Wideband, the Technology*

*Where ever you go, there you are!*<sup>2</sup>

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<sup>1</sup> See <http://www.blindcreek.com/pages/affiliations.pdf> for affiliations by 802 activity

<sup>2</sup> Knowable with real-time sub-centimeter precision. They didn't have that in the 8<sup>th</sup> dimension.

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## 1 Introduction

The minutes for each CRG meeting were published via email reflector per the 802.15 Working Group Operations Manual. This document collects those minutes into a single document as a convenience for those who might be interested but were not subscribed to or paying attention to the email reflector.



## 2 Jan 28, 2020

### 2.1 Called to Order

Called to order at 07:04 PDT; Chair, Vice Chair and Recording Secretary present. Quorum is met (10/13, see Attendance).

### 2.2 Meeting Preamble

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### 2.3 Agenda

1. Preamble
2. Editor update
3. Remaining discussion items
4. Recirculation
5. AoB

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

### 2.4 Editor Status

Approved comments applied with some suggested changes discovered while editing:

- ◆ i-127 Editorial change, changed from ACCEPT to REVISED, Following little discussion and no objection, approved
- ◆ i-183 Minor technical, data rate, Use PIB to config receiver, use MCPS-Data parameter for TX data rate. Revised table 19-1, Following little discussion and no objection approved.
- ◆ i-184 Minor technical, added information but did not delete signaling rate, following little discussion and no objection, approved.

Motion to approve changes in document 15-20-0005-11:

- ◆ Moved by Clint, Second by Billy
- ◆ Following neither discussion nor objection, approved by unanimous consent.

### 2.5 Remaining Discussion Items

Discussion: Additional data rates

Some discussion on progress in reaching consensus. Converges on two views:

- ◆ This is a topic that needs more discussion to converge than current TG4z schedule can accommodate

- ◆ Might be able to converge in a week or two of discussion

Straw poll:

- ◆ Should we continue discussion of adding lower data rates for 15.4z
- ◆ Result: 4 yes, 4 no, 2 abstain.

Following discussion it is agreed to commence recirculation of draft with approved comment resolutions, without additional data rates.

## **2.6 Recirculation**

Motion to start Standards Associate recirculation ballot for the revised P802.15.4z draft.

- ◆ Moved by Billy; Second by Frank
- ◆ Following neither discussion nor objection, approved by unanimous consent.

Next steps:

- ◆ Billy has completed draft; will provide draft and comparison doc
- ◆ Billy will forward draft to Rick to post in private area
- ◆ Tim to upload comments and initiate recirc when MyBallot returns

Schedule:

- ◆ Edits completed
- ◆ Need MyBallot back on line, expect by 3-Feb
- ◆ Expect ballot to start by 4-Feb
- ◆ Ballot to close by 14-Feb
- ◆ 2nd recirc start by 4-Mar

## **2.7 AoB:**

None heard

## **2.8 Adjourn**

Having reached the end of the agenda adjourned at 07:56 PST.

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## **3 Feb 18, 2020**

### **3.1 Called to Order**

Called to order 0705 PST. Chair, Vice Chair and recording secretary present.  
Quorum is met (10/13, see Attendance).

### **3.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.

- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **3.3 Agenda**

Proposed Agenda

- ◆ Review and resolve comments

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

### **3.4 Comment resolution:**

Comments on normative references: Verify that all are used. Optional requirements are normative; the reference material is essential to understand to implement the optional requirements. The references are properly sited in normative text, with the context etc. (quote style manual)

Same comments on use of "key" in STS text - been explained. Decide if we want to make a change, offer a new explanation, or call it out of scope. Could use different term, and then explain how it maps to the "key" input to the NIST doc (AES generator). Discuss with Frank, also, the "not following NIST" comments. Billy suggests changing the definition of "key" which, in Rev-D, has changed to be more restrictive than 2015. Probably should do that too, as part of re-baseline.

Comments on informative text for ranging: this is needed because ranging is not obvious, as evidenced by prior comments in balloting to explain things. The group disagrees: this informative text makes it easier for implementers to understand how to implement and use the MAC and PHY features defined in the standard.

Comments on header IE that has the same content as payload IE: been explained, do we explain again or out of scope. Discuss with Frank. Would we have both in the same frame? The comment suggestion assumes not in the same frame.

Review editorials: Need to discuss with Billy re-baseline and what impacts it might have (Action: Ben, Billy).

Pulse-shaping description comment, discussion: Jochen takes action to prepare strawman text for discussion on Thursday.

Resolutions captured in <https://mentor.ieee.org/802.15/dcn/20/15-20-0080-03-004z-p802-15-4z-sa-recirc1-comments.xlsx>

### **3.5 Adjourn**

Having reached the end of the agenda adjourned at 08:13 PST.



## 4 Feb 20, 2020

### 4.1 Called to Order

Called to order 1504 PST. Chair, Vice Chair and Recording Secretary present. Quorum is met (12/13, see Attendance).

### 4.2 Meeting preamble

- ♦ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ♦ Chair provides an opportunity for disclosures
- ♦ No disclosures heard.

### 4.3 Agenda

Proposed Agenda

- ♦ Review and resolve comments

### 4.4 Comment Resolution

Comment resolution continues. Results captured in <https://mentor.ieee.org/802.15/dcn/20/15-20-0080-04-004z-p802-15-4z-sa-recirc1-comments.xlsx>

Discussion, Actions:

- ♦ R1-30 Clint copied an old resolution for why we define information exchanges. Start with this and massage it (Ben, Aditya to approve).
- ♦ R1-34 Rename field to application specific, use language that is already used in a standard (Ben, run by Frank and Billy).

### 4.5 Adjourn

Having reached the end of the agenda adjourn at 16:10 PST.

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## 5 Feb 25, 2020

### 5.1 Called to Order

Called to order 07:05 PST. Chair, Vice Chair and Recording Secretary present. Quorum is met (10/13, see Attendance).

### 5.2 Meeting preamble

- ♦ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.

- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **5.3 Proposed Agenda**

- ◆ Review and resolve comments

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

### **5.4 Comment resolution:**

- ◆ Comments on STS "key" terminology: Billy, Frank and Ben have discussed, Billy working on exact edits.
- ◆ Comment on "Validity" field: Billy proposes to rename to further clarify this is provided by the higher layer, associated with the content of the IE.
- ◆ Comment on normative references: Review and fine tune the reason for reject by quoting the PAR scope.
- ◆ Comment on pulse shape specification: Two proposals discussed. Discussion on combining to a single proposal.

Results captured in <https://mentor.ieee.org/802.15/dcn/20/15-20-0080-06-004z-p802-15-4z-sa-recirc1-comments.xlsx>

### **5.5 Adjourn**

Having reached the end of the agenda adjourn at 08:06 PST.

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## **6 Feb 27, 2020**

### **6.1 Called to Order**

Called to order 15:06 PST. Chair, Vice Chair and Recording Secretary present. Quorum is met (10/13, see Attendance).

### **6.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **6.3 Agenda**

Proposed Agenda

- ◆ Review and resolve comments

#### **6.4 Comment Resolution**

Comment resolution continues. Several items are being worked via off-line collaboration. Contributors request additional time to complete, and present proposed resolutions on the next call.

#### **6.5 Adjourn**

Having reached the end of the agenda adjourn at 15:25 PST.

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### **7 March 03, 2020**

#### **7.1 Called to Order**

Called to order at 07:05 PST. Chair, Vice Chair and Recording Secretary present. Quorum is met (10/13, see Attendance).

#### **7.2 Meeting preamble**

IEEE Meeting conduct, IPR and copyright policy slides presented. No discussion and no disclosures heard.

#### **7.3 Agenda**

Proposed Agenda

- ♦ Complete comment resolution

#### **7.4 Comment Resolution**

Comment resolution completed and captured in <https://mentor.ieee.org/802.15/dcn/20/15-20-0080-08-004z-p802-15-4z-sa-recirc1-comments.xlsx>.

#### **7.5 Motions**

**Motion: Move to Approve comment resolutions contained in 15-20-0080-08.**

- ♦ Moved by Clint Chaplin, second Billy Verso
- ♦ Following neither discussion nor objection, approved by unanimous consent.

#### **7.6 Adjourn**

Having reached the end of the agenda adjourned at 07:47 PST.

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### **8 Mar 05, 2020**

#### **8.1 Called to Order**

Called to order 15:06 PST. Chair, Vice Chair and Recording Secretary present. Quorum is met (7/13, see Attendance).

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## **8.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

## **8.3 Agenda**

Proposed Agenda

- ◆ Rogue comment discussion/PAR Title change
- ◆ Approve recirculation ballot

## **8.4 Rogue comment discussion/PAR Title change**

An additional rogue comment was received regarding the PAR title change, which has been delayed due to circumstances beyond the control of the group. The title of the draft is “legal” as it is the same scope of the PAR. However the WG chair would like to make the change. Currently working on how to get this approved by WG and EC. Will go forward with recirculation with the draft title as is, there is no reason to delay.

## **8.5 Recirculation**

Motion: Moved to accept doc 15-20-0080-0011 and apply edits to produce draft 7.

- ◆ Moved by Clint Chaplin, second by Billy Verso.
- ◆ Following neither discussion nor objection motion carries by unanimous consent.

Motion: Moved to initiate Standards Associate recirculation ballot of P802.15.4z Draft 7.

- ◆ Moved by Clint Chaplin, second by Billy Verso.
- ◆ Following neither discussion nor objection motion carries by unanimous consent.

## **8.6 Adjourn**

Having reached the end of the agenda adjourned at 15:34 PST.

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# **9 Mar 17, 2020**

## **9.1 Called to Order**

Called to order at 07:03 PDT. Chair, Vice Chair and Recording Secretary present. Quorum is met (11/13, see Attendance).

## **9.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures

- ◆ No disclosures heard.

### **9.3 Agenda**

- ◆ Review and resolve comments

### **9.4 Comment Review**

Comments in document <https://mentor.ieee.org/802.15/dcn/20/15-20-0098-00-004z-p802-15-4z-sa-recirc2-comments.xlsx> presented and discussed.

Following discussion, resolutions captured in <https://mentor.ieee.org/802.15/dcn/20/15-20-0098-01-004z-p802-15-4z-sa-recirc2-comments.xlsx>

### **9.5 Adjourn**

Having reached the end of the agenda adjourned at 07:59 PDT

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## **10 Mar 19, 2020**

### **10.1 Called to Order**

Called to order at 15:33 PDT. Chair, Vice Chair and Recording Secretary present. Quorum is met (11/13, see Attendance).

### **10.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **10.3 Agenda**

- ◆ Resolve comments
- ◆ Other business

Following neither discussion nor objection agenda approved

### **10.4 Comment Resolution**

Comment resolution continues. Updates captured in document 15-20-0098-02.

<https://mentor.ieee.org/802.15/dcn/20/15-20-0098-02-004z-p802-15-4z-sa-recirc2-comments.xlsx>

- ◆ All but one READY
- ◆ Billy to update draft for READY.
- ◆ Frank and Billy take action to complete outstanding resolution

### **10.5 Other Business**

Call time discussion

Consensus: Stick with 3pm Thursday call time.

### **10.6 Adjourn**

Having reached the end of the agenda, adjourn at 16:40 PDT.

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## **11 Mar 24, 2020**

### **11.1 Called to Order**

Called to order 07:03 PDT. Chair, Vice Chair and Recording Secretary present. Quorum is met (11/13, see Attendance).

### **11.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **11.3 Agenda**

- ◆ Complete comment resolution
- ◆ Editing report
- ◆ Motions
- ◆ AoB

Following neither discussion nor objection agenda approved by unanimous consent.

### **11.4 Comment Resolution**

- ◆ Editor marked several as "issue": Typos in resolution detail, and how to handle MEC comment (correct answer is accept the compliment).
- ◆ Revised Figure 82: Reviewed propose changed figure. No objections, accepted by unanimous consent.
- ◆ Updated comment resolutions posted in Doc # 15-20-0098-04.

### **11.5 Editing report**

- ◆ All "READY" have been applied
- ◆ Expect to complete draft preparation by end of today

### **11.6 Motions**

**Motion: Approve comment resolutions contained in Doc # 15-20-0098-04 and direct the technical editor to apply to P802.15.4z-D07 to create P802.15.4z-D08.**

- ◆ Moved by: Clint Chaplin
- ◆ Second by: Billy Verso
- ◆ Discussion: None
- ◆ Following neither discussion nor objection motion carries by unanimous consent

**Motion: Approve Standards Associate recirculation ballot of P802.15.4z-D08 to be created from P802.15.4z-D07 with comment resolutions in 15-20-0098-04 to be applied to create D08.**

- ◆ Moved by: Benjamin Rolfe
- ◆ Second: Billy Verso
- ◆ Discussion: None
- ◆ Following neither discussion nor objection, motion carries by unanimous consent.

### **11.7 Any other Business**

- ◆ Call schedule: Recirculation should start today or tomorrow. When recirculation has been started, chair will cancel the CRG calls prior to recirculation close. Will resume when recirculation closes.
- ◆ **Expect to resume 7-April.**

### **11.8 Adjourned**

Having reached the end of the agenda, meeting adjourned at 07:43 PDT.

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## **12 Apr 07, 2020**

### **12.1 Called to Order**

Called to order at 07:12 PDT; Chair, Vice Chair and Recording Secretary present. Quorum is met (8/13, see Attendance).

### **12.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

### **12.3 Agenda**

1. Meeting preamble reminder
2. Agree on agenda
3. Comment resolution

4. Motions
5. Editing report
6. Next steps
7. AoB

Following neither discussion nor objection agenda approved by unanimous consent.

#### **12.4 Comment Resolution**

- ◆ Comments posted in document # 15-20-0109-00 yesterday for review
- ◆ <https://mentor.ieee.org/802.15/dcn/20/15-20-0109-00-004z-p802-15-4z-sa-recirc3-comments.xlsx>
- ◆ Discussion on comments and proposed resolutions.
  - Comments are on the resolution to his previous comments:
    - One on unchanged text. Group resolves as out of scope of the recirculation
  - Commenter disagrees with the task group, CRG, and voter pool
    - Proposed a change in an STS specific name (non technical content)
    - Group still finds the name sufficiently clear
  - No changes to the draft proposed.
- ◆ Comment resolutions captured in document # 15-20-0109-01
- ◆ <https://mentor.ieee.org/802.15/dcn/20/15-20-0109-01-004z-p802-15-4z-sa-recirc3-comments.xlsx>

#### **12.5 Motions**

**Motion: Approve comment resolutions contained in Doc # 15-20-0109-01.**

- ◆ Moved by: Clint Chaplin
- ◆ Second by: Billy Verso
- ◆ Discussion: To comfort the Vice Chair that present CRG members are awake and breathing, each member present is queried in sequence of the roll call.
- ◆ Upon polling each CRG member present, Motion carries by unanimous consent.

**Motion: Approve Standards Associate recirculation ballot of (unchanged) P802.15.4z-D08.**

- ◆ Moved by: Clint Chaplin
- ◆ Second: Billy Verso
- ◆ Discussion: Jochen asks for confirmation that this recirculation is of the same draft as the just completed recirculation (it is).
- ◆ Following no further discussion nor objection, motion carries by unanimous consent.

#### **12.6 Editing report**

- ◆ As there are no changes to be made to the draft, the draft is ready.



**12.7 Next steps discussion**

- ◆ There is an EC call later this morning (PDT) where WG Chair will seek the appropriate EC approvals
  - Forward to draft to RECOM
  - PAR Title change to NESCOM
- ◆ There will be a CRG call following close of the recirculation.
- ◆ Assuming no changes result and NESCOM approval, draft will go to publication
- ◆ Publication time varies. Most questions during this process can be handled by TG leadership
- ◆ Following NESCOM approval, and expecting no face to face TG meetings prior to September (or later), TG virtual meetings will be announced as a contingency should questions requiring TG input be received from the IEEE publication staff. Though no TG activity is expected to be required.

**12.8 Any other Business**

None

**12.9 Adjourned**

Having reached the end of the agenda, meeting adjourned at 08:00 PDT

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**13 Apr 21, 2020****13.1 Called to Order**

Called to order at 07:01 PDT. Chair, Vice Chair and Recording Secretary present. Quorum is met (7/13, see Attendance).

**13.2 Meeting preamble**

- ◆ Chair reminds attendees that this is a formal CRG meeting and the IEEE Meeting conduct, IPR and copyright policies remain in effect.
- ◆ Chair provides an opportunity for disclosures
- ◆ No disclosures heard.

**13.3 Agenda**

Proposed agenda:

- ◆ Recirc results
- ◆ Motion requested by WG chair

**13.4 Recirculation results**

Recirc status - no new comments or new no votes. Good to go.

**13.5 Motion**

**Motion: CRG approves requesting unconditional approval to forward P802.15.4z-D08 to REVCOM**

- ◆ Moved by Clint Chaplin, second Billy Verso
- ◆ Following neither discussion nor objection motion carries by unanimous consent

***13.6 Adjourn***

Having reached the end of the agenda, meeting adjourned at 07:05 PDT.

**14 Attendance**

<b>CRG Roll Call</b>	<b>28-Jan</b>	<b>18-Feb</b>	<b>20-Feb</b>	<b>25-Feb</b>	<b>27-Feb</b>	<b>3-Mar</b>	<b>5-Mar</b>	<b>17-Mar</b>	<b>19-Mar</b>	<b>24-Mar</b>	<b>7-Apr</b>	<b>21-Apr</b>
Ayman Naguib	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mingyu Lee	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	Yes
Aditya Padaki	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Billy Verso	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frank Leong	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	No	No
Tim Harrington	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ben Rolfe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
David Barras	No	No	Yes	No	No	No	No	Yes	No	No	No	No
Boris Danev	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No
Brima Ibrahim	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Paul Kettle	No	No	No	No	No	No	No	No	No	No	Yes	No
Clint Chaplin	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jochen Hammerschmidt	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Attendance	10	10	12	10	10	10	7	11	8	8	8	7
Quorum	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>

**Other attendees**

Jarek Niewczas			Yes	Yes	Yes	Yes						
Shang-Te Yang (Apple)				Yes	Yes	Yes	Yes				Yes	Yes
Michael McLaughlin				Yes	Yes	Yes						