**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **<IEEE802.15 WG minutes>** |
| Date Submitted | [16 May 2019] |
| Source | [Pat Kinney][][Chicago, IL] | Voice: [+1.847.960.3715]Fax: [+1.847.790.3805]E-mail: [pat.kinney@ieee.org] |
| Re: | [802.15 Interim Meeting in Atlanta GA, USA] |
| Abstract | [IEEE 802.15 Working Group Minutes] |
| Purpose | [Official minutes of the Working Group Session] |
| 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. |
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**120th IEEE 802.15 WSN MEETING**

**HYATT REGENCY ATLANTA IN BUCKHEAD**

**BUCKHEAD, GEORGIA, USA**

**May 13-17, 2019**

**Monday, 13 May 2019**

**8:02** 802.11, 802.15, 802.18, 802.19, and 802.21 Chairs called the joint meeting to order. IEEE 802.15 attendance is included as Annex A.

B Heile (Decawave) read the IEEE 802 Wireless Top 10 prepared by the meeting organizer for the attendees of this session.

General announcements:

* No photography, no audio recording
* Don’t forget, book your room and register for July’s session

Straw Poll of new attendees: 0 (although 14 have registered for this session)

**8:10**  IEEE patent policy

802.15 WG chair read the IEEE-SA instructions and displayed the four slides explaining patent policy and informed the attendees that additional information could be found on the PatCom web site: ([**https://standards.ieee.org/about/sasb/patcom/materials.html**](https://standards.ieee.org/about/sasb/patcom/materials.html)**)**.

802.15 WG chair read IEEE anti-trust policy. ([**http://standards.ieee.org/develop/policies/antitrust.pdf**](http://standards.ieee.org/develop/policies/antitrust.pdf))

**8:15** Financial report by J Rosdahl (Qualcomm) doc [ec-19-0066-00](https://mentor.ieee.org/802-ec/dcn/19/ec-19-0066-00-WCSG-wireless-treasurer-report-may-2019-atlanta.pptx)

Total liabilities and equity $695,197.21 (not including this meeting)

The number of people who are currently registered at this meeting is 293

**8:20** Wireless and IMAT announcements by R Alfvin (Linespeed)

* Information can be found at [ieee802.linspeed.io](http://ieee802.linespeed.io/)

**8:21** WG15 Chair informed the group that the Wireless Chairs Standing Committee (WCSC) met yesterday, Sunday at 16:00 local time. Chair noted that this is an open meeting, all are encouraged to attend. Minutes are available at <https://mentor.ieee.org/802-ec/dcn/19/ec-19-0072-00-WCSG-atlanta-may-2019-minutes.docx>

**8:23** Review future sessions

* July 14-19, 2019, Austria Congress Centre, Vienna, Austria, 802 Plenary Session.
* September 15-20, 2019 - Marriott Hanoi, Hanoi, Vietnam
* November 10-15, 2019, Hilton Waikoloa Village, Kona, HI, USA, 802 Plenary Session
* January 12-17, 2020, Hotel Irvine, Irvine, California, USA
* March 15-20, 2020, Hilton Atlanta, Atlanta Georgia, USA, 802 Plenary Session
* May 10-15, 2020, Marriott Hotel, Warsaw, Poland, 802 Wireless Interim Session.\* (TBC)
* Future venues 2020 Lisbon Marriott, Budapest Marriott, Vienna Hilton, Athens Hilton, Sorrento Hilton, JW Bucharest.

**8:30 Working Group Updates**

802.11 by Dorothy Stanley (HPE), ([11-19-0566-00](https://mentor.ieee.org/802.11/dcn/19/11-19-0566-00-0000))

* voters: 329, Nearly 20, Aspirant 110

802.15 by B Heile (Decawave)

* voters: 92, Nearly 7, Aspirant 15
* TG4md 15.4 revision
* TG 15.4w Low Power Wide Area (LPWA)
* TG 15.4y Security Next Generation (SECN)
* TG 15.4z Enhanced impulse radio (EIR)
* TG12 Upper Layer Interface (ULI) for 802.15.4
* TG13 Multi-Gigabit OWC

802.18 by J Holcomb (Itron) ([18-19-0061-00](https://mentor.ieee.org/802.18/dcn/19/18-19-0061-00-0000-agenda-stl-interim-15-17-jan-2019-rr-tag.pptx))

* voters: 42, Nearly 3, Aspirant 18
* focus on FCC ex parte of 5GAA request to forward looking <https://www.fcc.gov/ecfs/search/filings?proceedings_name=18-357&sort=date_disseminated,DESC>

802.19 S Shellhammer (Qualcomm) ([19-19-0030-00](https://mentor.ieee.org/802.19/dcn/19/19-19-0030-00-0000-.pptx))

* Voters 42
* J Rosdahl had request to modify document without changing baseline document

802.21 Subir Das (Perspectalabs) [(21-18-0038-00)](https://mentor.ieee.org/802.21/dcn/19/21-19-0038-00.pptx)

* 11 voters, 1 aspirant

802.24 Tim Godfrey (EPRI) ([24-19-0012-00](https://mentor.ieee.org/802.24/dcn/19/24-19-0012-00-0000-may-2019-meeting-presentation.pptx))

* 26 voters
* White Paper projects:
	+ Application-specific use cases of Sub 1GHz standards 802.15.4g and 802.11ah
	+ Low latency
	+ 'Network Enablers for Seamless HMD-based VR (Virtual Reality)’
* Update on P2413 liaison

**AoB**

**8:43** Joint meeting adjourned

**Working group opening plenary (118th session of 802.15)** (37 attendees)

**9:15** B Heile, Decawave, WG chair called the 802.15 WG plenary to order ([15-19-0204-01](https://mentor.ieee.org/802.15/dcn/18/15-19-0204-01-0000-802-15-waw-2018-graphic-agenda.xlsx))

Announcements:

* IEEE 802 Wireless Top 10
* Social is Wednesday
* Network and projectors are from LineSpeed
* There were 0 first time attendees
* Jay Holcomb (802.18 chair) put out a request for a vice-chair and secretary for 802.18

Chair reminded attendees that highlights of the IEEE-SA Standards Board Bylaws on Patents in Standards. Chair referred those who wished to review these policies that the IEEE-SA patent policy presentation slides 1-5 and reading the instructions for the WG Chair. (<https://standards.ieee.org/about/sasb/patcom/materials.html>**)**.

Chair asked participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) that the participant believes may be essential for the use of that standard:

* There were no responses

Chair reminded participants of IEEE anti-trust rules and obligations.

**Motion:** *Approve/modify joint opening agenda* ([15-19-0204-02](https://mentor.ieee.org/802.15/dcn/19/15-19-0204-02-0000-atl-2019-graphic-agenda.xlsx))

* Moved by R Alfvin (Linespeed)
* Seconded by B Rolfe (Blind Creek Associates)
* Following neither discussion nor objection the agenda was approved.

**Motion:** *Review and approve 802.15 WG minutes from the March session* ([15-19-0125-00-0000](https://mentor.ieee.org/802.15/dcn/19/15-19-0125-00-0000-minutes-from-vancouver-mar-2019.docx))

* Moved by R Alfvin (Linespeed)
* Seconded by B Rolfe (Blind Creek Associates)
* Upon neither discussion nor objection the WG minutes were approved.

**9:29** Network and attendance information by R Alfvin (Linespeed) ([http://ieee802.linespeed.io/)](http://ieee802.linespeed.io/%29)

**9:30** Treasury report by Ben Rolfe (Blind Creek Associates) ([ec-19-0066-00](https://mentor.ieee.org/802-ec/dcn/19/ec-19-0066-00-WCSG-wireless-treasurer-report-may-2019-atlanta.pptx))

**9:34** Chair informed the group that the Wireless Chairs Standing Committee (WCSC) met yesterday, Sunday at 16:00 local time. Chair noted that this is an open meeting, all are encouraged to attend. Minutes are available at <https://mentor.ieee.org/802-ec/dcn/19/ec-19-0072-00-WCSG-atlanta-may-2019-minutes.docx>

**9:38** AoB

Discussion ensued as to procedures for 802.15 WG ballot, specifically the mechanisms to maintain voting rights. reasons for abstaining: lack of time, differences within 802.15, et al

**9:50** 802.22

WG chair explained that 802.22 membership is dropping. There is one project that is ongoing; 802.22.3 modifications to spectrum utilization. Apurva will be presenting at the WNG this week.

**10:02** WG recessed

**Wednesday 15 May 2019**

**802.15 mid-session plenary meeting**

**10:32** Bob Heile (Decawave) called the meeting to order.

Announcements:

* Please don’t use 802.15 as your affiliation
* Reminder to book your room and register for the July plenary
* Straw Poll:
	+ How many would find it acceptable to come back to this hotel? Yes 33, no 0, don’t care 2
	+ OK to meet twice next year in Atlanta (Hilton in March and Buckhead in September)? Yes 18, no 16, don’t care 5

**802.18 liaison** by Jay Holcomb (Itron)

* Discussed:
	+ UWB: amended ECC decisions, updating regulations for future
	+ ACMA comments are going through EC
* focus on FCC ex parte of 5GAA request to forward looking <https://www.fcc.gov/ecfs/search/filings?proceedings_name=18-357&sort=date_disseminated,DESC>

**TG4md (revision)** by G Stuebing (Cisco Systems)

* working through revised draft 02
* expect WG ballot before Vienna

**TG 15.4w** (**lpwan**)by Jörg Robert (University of Erlangen-Nuremberg)

* comments have been resolved
* looking for recirc at end of session

**TG 15.4y (SEC)** closing reportby T Kivinen (Self) (15-19-0210-00)

**TG 15.4z (EIR)** by T Harrington (Pro ID)

* resolving comments

**TG13** by Volker Jungnickel (Fraunhofer Heinrich Hertz Institute)

* Discussion on MAC architecture

**IG10m** by T Kivinen (self)

* Working on PAR and CSD

**TG12 (ULI)** by P Kinney (Kinney Consulting)

* Working on data flows with published modules such as L2R, KMP, etc.

**SC maintenance** by P Kinney (Kinney Consulting)

* No comments received concerning published standards were received. Discussion ensued as to the 802.15 letter ballot process and issues with same.

**SC WNG** by P Kinney (Kinney Consulting)

* There will be one presentation, Tutorial on SCOS for 802.15 (22-19-0026-00) by Apurva N. Mody (BAE Systems, WhiteSpace Alliance), followed by a discussion on 802.15 letter ballot procedures.

**802.19** Liaison by B Rolfe (Blind Creek Associates)

* + Simulation tools discussions
	+ TG 3: Discussion on coexistence recommended practice between 802.15.4 and 802.11ah

**AoB**

* Paul Nikolich (self) asked about reasons for abstaining from voting yes or no?

**11:00** Recessed until Thursday at 18:30

**Thursday, 16 May 2019**

**18:32** 802.15 WG chair called the meeting to order (32 attendees)

Straw Poll: those who would be OK with Istanbul as a venue:13, those who do not want Istanbul to be considered as a venue: 6.

**18:37** TG4md closing report by G Stuebing (Cisco Systems) (15-19-0236-01)

**Motion**: *Move that 802.15 WG approve the formation of a Comment Resolution Group (CRG) for the WG balloting of the P802.15.4-REVd-D03 with the following membership: Gary Stuebing (as Chair), Don Sturek, Kunal Shah, Ruben Salazar, Tero Kivinen, Phil Beecher and Shoichi Kitazawa. The 802.15.4md CRG is authorized to approve comment resolutions and to approve the start of letter ballot of the revised draft on behalf of the 802.15 WG. Comment resolution on ballots between sessions will be conducted via reflector email and via teleconferences announced to the reflector as per the LMSC 802 WG P&P.*

Moved by: Gary Stuebing (Cisco Systems)

Seconded by: Kunal Shah (Itron)

Upon neither discussion nor objection the motion carries with unanimous consent.

*Move that the 802.15 WG start a WG Letter Ballot requesting approval of document P802.15.4-REVd-D03 and to forward document P802.15.4-REVd-D03 to Standards Association Ballot pending the completion and inclusion of the edits stated in document 15-19-0433-31 into the draft.*

Moved by: Gary Stuebing (Cisco Systems), seconded by: Matt Gilmore (Itron)

Upon neither discussion nor objection the motion carries with unanimous consent.

**18:44** TG 4w (LPWAN) closing report by Jörg Robert (University of Erlangen-Nuremberg) (15-19-0243-00)

*Move that 802.15 WG start a WG recirculation requesting approval of CA document 15-19-0165-01-004 and document P802.15.4w\_D2 and to forward document P802.15.4w\_D2, to Standards Association ballot*.

Moved by Jörg Robert (University of Erlangen-Nuremberg), seconded by Hendricus De Ruijter

Upon neither discussion nor objection the motion carries with unanimous consent.

*Move that 802.15 WG approve the formation of a Comment Resolution Group (CRG) for the WG balloting of the P802.15.4w\_D2 with the following membership: Jörg Robert (Chair), Charlie Perkins, Johannes Wechsler, and Hendricus De Ruijter. The 802.15.4w CRG is authorized to approve comment resolutions, edit the draft according to the comment resolutions, and to approve the start of recirculation ballots of the revised draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email and via teleconferences announced to the reflector as per the LMSC 802 WG P&P.*

Moved by Jörg Robert (University of Erlangen-Nuremberg), seconded by Ben Rolfe (Blind Creek Associates)

Upon neither discussion nor objection the motion carries with unanimous consent.

**18:50** TG 4z (ELR) closing reportby T Harrington (Pro-ID) (15-19-0245-01)

*Move that 802.15.4z WG approve the formation of a Comment Resolution Group (CRG) for the WG balloting of the P802.15.4z\_D02 with the following membership: Ayman Naguib (Apple), Seongah Jeong (Samsung), Aditya Padaki(Samsung), Billy Verso (Decawave), Frank Leong (NXP), Tim Harrington (Pro-ID), Ben Rolfe (Blind Creek), David Barras (3dB), Boris Danev (3dB), Brima Ibrahim (NXP), Peter Sauer (Microchip), Jaroslaw Niewczas (Decawave), Zheda Li (Samsung), Clint Chaplin (Samsung), Alejandro Marquez (Apple). The 802.15.4z CRG is authorized to approve comment resolutions, edit the draft according to the comment resolutions, and to approve the start of recirculation ballots of the revised draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email, via teleconferences, and face to face meeting(s) announced to the reflector as per the LMSC 802 WG P&P.*

Moved by Tim Harrington (Pro-ID), seconded by Ben Rolfe (Blind Creek Associates)

Upon neither discussion nor objection the motion carries with unanimous consent.

**18:58** TG13closing report by San-Kyu Lim (ETRI) (15-19-0238-01)

**19:02** IG9m closing report by Tero Kivinen (15-19-0271-01)

*Request that the PAR and CSD contained in documents 15-19-0215-01 and 15-19-0216-01, respectively, be approved by the IEEE 802.15 WG and that the EC be requested to forward the PAR to NesCom. The 802.15 working group chair and technical editor are authorized to make additional modifications to the PAR and CSD as needed to reflect EC discussion at its closing meeting.*

Moved by Tero Kivinen (self), seconded by Kunal Shah (Itron)

Upon no discussion, the vote was taken with the results of 22/0/0, motion carries

**19:03** TG12 ULI closing report by Pat Kinney (Kinney Consulting) (15-19-0201-01)

**19:08** SC closing report by Pat Kinney (Kinney Consulting) (15-19-0202-01)

*Move that 802.15 WG accept responsibility for the 802.22.3 PAR (renamed 802.15.22) for the purposes of conducting the SA Ballot and seeking RevCom and Standards Board approval.*

Moved by Pat Kinney (Kinney Consulting)

Seconded by Ben Rolfe (Blind Creek Associates)

Upon no discussion, the vote was taken with the result of 22/0/0, motion carries

**19:23** 802.11 liaison report by Al Petrick (Jones-Petrick and Associates) (15-19-0230-00)

**19:33** 802.18 liaison report by J Holcomb (Itron) (15-19-0200-00)

**19:37** 802.19 liaison report by B Rolfe (Blind Creek, Mitsubishi Research Labs)

* Discussion on proposed revision of Coexistence Assessment document.
* TG3 looking to put out CFR for 802.11ah and 802.15.4g coexistence strategy

**19:42** 802.24 liaison report by T Godfrey (EPRI)

* Question on IoT metrics
* Started white paper on low latency

**AoB**

**19:47** **Motion** *to adjourn* was made by Tim Harrington (ProId), seconded by B Rolfe (Blind Creek, Mitsubishi Research Labs), upon no objection the motion carried, this session is adjourned.

**Annex A** Attendance = 58

|  |  |  |
| --- | --- | --- |
| **Last Name** | **First Name** | **Affiliation** |
| Ahlendorf | Hendrik | NXP Semiconductors |
| Alfvin | Richard | Linespeed Events LLC |
| Barras | David | 3db Access AG |
| Baykas | Tuncer | Istanbul Medipol University |
| Berens | Friedbert | FBConsulting Sarl |
| Bims | Harry | Bims Laboratories, Inc. |
| Bober | Lennert | Fraunhofer Heinrich Hertz Institute |
| Chang | Soo-Young | California State University, Sacramento (CSUS) |
| Chaplin | Clint | Samsung Research America |
| Danev | Boris | 3db Access AG |
| Delsuc | Julien | Thales Group |
| De Ruijter | Hendricus | Silicon Laboratories |
| Dewberry | Brandon | Apple, Inc. |
| Gillmore | Matthew | Itron Inc. |
| Godfrey | Tim | Electric Power Research Institute, Inc. (EPRI) |
| Guo | Jianlin | Mitsubishi Electric Research Labs (MERL) |
| Harrington | Timothy | Pro-ID |
| Heile | Robert | Wi-SUN Alliance |
| Henry | Jerome | Cisco Systems, Inc. |
| Hett | Christopher | Landis Gyr Group Worldwide |
| Holcomb | Jay | Itron Inc. |
| Holland | Oliver | Advanced Wireless Technology Group, Ltd. |
| Ibrahim | Brima | NXP Semiconductors |
| Ikegami | Tetsushi | Meiji University |
| Jeong | Seongah | Samsung Electronics Co., Ltd. |
| Jungnickel | Volker | Fraunhofer Heinrich Hertz Institute |
| Karthik | S. G. | SAMSUNG ELECTRONICS |
| kim | suh wuk | TOSHIBA Corporation |
| KINNEY | PATRICK | Kinney Consulting LLC |
| Kivinen | Tero | Self Employed |
| LEE | Mingyu | Samsung Electronics Co., Ltd. |
| Lee | Wookbong | SAMSUNG |
| Leong | Frank | NXP Semiconductors |
| Leu | Patrick | ETH Zurich |
| Li | Huan-Bang | National Institute of Information and Communications Technology (NICT) |
| Li | Zheda | Samsung Research America |
| Lim | Sang-Kyu | Electronics and Telecommunications Research Institute (ETRI) |
| Mody | Apurva | BAE Systems |
| Naguib | Ayman | Apple, Inc. |
| Nikolich | Paul | YAS Broadband Ventures, LLC. |
| Perkins | Charles | Futurewei Technologies |
| Polland | Joe | CommScope, Inc. |
| Rhodes | Daniel | DecaWave |
| Robert | Joerg | University of Erlangen-Nuremberg |
| Rolfe | Benjamin | Blind Creek Associates |
| Salazar Cardozo | Ruben E | Landis Gyr Group Worldwide |
| Sarris | Ioannis | u-blox |
| Sasoglu | Eren | Apple, Inc. |
| SAUER | PETER | Microchip Technology, Inc. |
| Seo | Dong Il | JoyFun |
| Shah | Kunal | Silver Spring Networks Inc. |
| Stuebing | Gary | Cisco Systems, Inc. |
| Turner | James | Landis+Gyr AG |
| Verso | Billy | DecaWave |
| Wechsler | Johannes | Fraunhofer Institute for Integrated Circuits IIS |
| Wendt | Matthias |  |
| Yee | Peter | NSA/IAD |
| Yu | Shaun | Apple, Inc. |