**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 | [22 Jan 2016] | |
| Source | [Pat Kinney] [<Kinney Consulting LLC>] [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] | |
| Abstract | [IEEE 802.15 Working Group Minutes] | |
| Purpose | [Official minutes of the Working Group Session] | |
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**IEEE 802.15 Interim Meeting – Session #100**

**Hyatt Regency**

**Atlanta, GA USA**

**January 18 - 21, 2016**

**Monday, 18 Jan 2016**

**8:05** 802.11, 802.15, 802.16, 802.18, 802.19, 802.21, and 802.24 Chairs called the joint meeting to order. IEEE 802.15 attendance is included as Annex A.

General announcements:

* No photography, no audio recording
* Social – Reception (courtesy of Hyatt) on Wednesday 18:00 – 19:30
* Lunch is not provided this session
* Don’t forget, book your room and register for March’s session

Straw Poll of new attendees: 0

**8:11**  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: ([**http://standards.ieee.org/board/pat/pat-slideset.ppt**](http://standards.ieee.org/board/pat/pat-slideset.ppt)**)**.

802.15 WG chair read IEEE anti-trust policy.

**8:15** Wireless and IMAT announcements by R Alfvin (Verilan) ([15-16-0045-00](https://mentor.ieee.org/802.15/dcn/16/15-16-0045-00-0000-opening-plenary-information-2016.pptx))

**8:17** Financial report by Jon Rosdahl (Qualcomm) docs [11-15-01525-00](https://mentor.ieee.org/802.11/dcn/15/11-15-1525-00-0000-treasurer-report-January-2016.pptx),   
[15-16-0046-00](https://mentor.ieee.org/802.15/dcn/15/15-16-0046-00-0000)

Total liabilities and equity $665,009.59

**8:20** WG15 Chair informed the group that the Wireless Chairs Standing Committee (WCSC) met yesterday, Sunday. Chair noted that this is an open meeting, all are encouraged to attend.

* Wireless Operations Manual was approved (ec-0028-04)

**8:24** Review future sessions (document # 15-15-0962-03)

* **March 13-18, 2016, Sands Venetian Hotel, Macau, PRC,***802 Plenary Session.*
* **May 15-20, 2016, Hilton Waikoloa Village, Kona, HI, USA,** *802 Wireless Interim Session.\**
* **July 24-29, 2016, Grand Hyatt, San Diego, CA, USA,** *802 Plenary Session*
* **September 11-16, 2016, Marriott Warsaw, Warsaw, Poland,** 802 Wireless Interim Session
* **November 6-11, 2016, Grand Hyatt San Antonio, San Antonio, TX, USA,** *802 Plenary Session.*
* **January 15-20, 2017, Hyatt Regency Atlanta, Atlanta, GA, USA, 802** *Wireless Interim Session.\**
* **March 12-17, 2017, Hyatt Regency Vancouver,** *802 Plenary Session.*
* **May 13-18, 2017, Daejeon Convention Center, Daejeon, Korea (TBC),***802 Wireless Interim Session.*
* **July 9-14, 2017, Estrel Hotel and Convention Center, Berlin, Germany,** 802 Plenary Session**.**
* **September 10-15, 2017, Hilton Waikoloa Village, Kona, HI, USA,** 802 Wireless Interim Session.\*
* **November 5-10, 2017, Caribe Hotel and Convention Center, Orlando, FL, USA,** 802 Plenary Session
* **January 14-19, 2018, Hotel Irvine, Irvine, California, 802 Wireless Interim Session.\***

**8:24 Working Group Updates**

802.11 by Adrian Stephens (Intel), (document 11-15-1486-00)

* 367 voters

802.15 by B Heile (document [15-15-0654-03](https://mentor.ieee.org/802.15/dcn/15/15-15-0654-03-0000-september-2015-802-15-wg-agenda-graphic.xls))

* 103 voters
* 802.15.4 revision is complete (802.15.4-2015)

TG3d: 100G

TG3e: HRCP (High Rate Close Proximity)

TG4n: Chinese Medical Band (CMB) – at RevCom

TG4q: ULP (Ultra Low Power) in WG LB – at RevCom

TG4s: SRU (Spectrum Resource Utilization)

TG4t: High(er) rate amendment

TG4u: India amendment

TG 7r1: Optical Wireless Communications

TG8: PAC (Peer Aware Communications) – finishing draft document

TG9: KMP (Key Management Protocol) – Sponsor Ballot

TG10: L2R (Layer 2 Routing) – finishing WG Letter Ballot

SG12 Upper Layer Interface (ULI) for 802.15.4

IG 6tisch

IG Dependability

IG High Rate Rail Communications

IG THz

IG 15.4 Guide (on hold)

802.18 by M Lynch

* 10 voters
* ITUR- WRC15 has farmed out efforts to other groups

802.19 S Shellhammer

* 3GPP Liaison – at 802 EC
  + Presentations: NIST, ETSI BRAN
* Coexistence in the Automotive Environment – Interest Group
  + Will meet Tuesday this week

802.21 Subir Das

* 22 voting members
* TG21m – revision project – in Letter Ballot
* TG21.1 –use cases and services – in Letter Ballot

802.24 Tim Godfrey (24-16-002)

* Task Groups
  + 802.24.1 Smart Grid TG Tim Godfrey
  + 802.24.2 IoT TG Chris DiMinico
* 34 voters
* 3 meetings this session
* 802.16 and 802.24 are holding a tutorial on the proposed 802.16s Narrowband Project.  This project aims to amend IEEE 802.16 to provide support for channel sizes narrower than currently specified, to facilitate operations in vertical applications such as Smart Grid.
  + The tutorial will be Tuesday evening January 18th at 7:30pm in the Regency V Ballroom

OmniRAN Max Riegel

* getting the specification document together

**AoB**

**8:41** Joint meeting adjourned

**Working group opening plenary**

**9:30** B Heile (WiSUN Alliance), WG chair called the 802.15 WG plenary to order (15-15-0962-03)

Straw Poll of new attendees: 3

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. (<http://standards.ieee.org/board/pat/pat-slideset.ppt>).

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.

Approve/modify joint opening agenda (15-15-0962-03)

* Moved by C Powell, seconded by Ben Rolfe. Following neither discussion nor objection the agenda was approved.

Review and approve 802.15 WG minutes from the Dallas session (15-15-0860-00-0000)

* Moved by Ben Rolfe, seconded by C Powell. Upon neither discussion nor objection the joint minutes were approved.

Network and Attendance tool information by R Alfvin (15-16-0045-00)

**9:52** WG recessed

**Wednesday 20 Jan 2015**

**802.15 mid-session plenary meeting**

**10:30** Bob Heile called the meeting to order.

**Macau update** by Dawn Slykhouse

When arrive in Hong Kong make sure to have time for ferry (~18:00), if not stay in Hong Kong for ferry next morning. Also make sure to arrive in morning at ferry for exit or stay in Hong Kong overnight.

**802.18 liaison** by Jay Holcomb

* Reviewed IEC documents

**TG3d (100G)** by T Kürner

* Progress towards channel modeling document

**TG3e** by Andrew Estrada

* Finishing up efforts necessary to go to WG LB

**TG3m closing report** by J Gilb (15-16-0040-01)

Move *that 802.15 WG authorize a recirculation Sponsor Ballot on document 802.15.3RevA-D01.pdf, edited in accordance with the instructions in document 15-16-0715-02-003m.*

Moved: Gilb, Seconded: Alfvin

Upon neither discussion nor objection the motion carries

Move *that 802.15 WG approve the formation of a Ballot Resolution Committee (BRC) for the WG balloting of the 802.15.3RevA draft standard with the following*

*membership: James Gilb (Chair), Thomas Kürner, Andrew Estrada, Ko Togashi, Pat Kinney, and B Rolfe. The 802.15.3m BRC is authorized to approve comment resolutions and to approve the start of recirculation ballots of the 802.15.3RevA 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 at least 7 days in advance.*

– Moved: Gilb Seconded: Alfvin

Upon neither discussion nor objection the motion carries

**TG4n (CMB)** **Closing Report** by Liang Li (15-16-0073-00)

**TG4s (SRU)** by Shoichi Kitazawa

* Working on mechanisms within MAC to achieve efficient spectrum usage

**TG4t closing report** by Clint Powell (15-16-0054-01)

*Move to affirm Clint Powell as TG4t Chair*

Moved: J Gilb, Second: E Callaway

Upon neither discussion nor objection the motion carries

**TG4u** by Phil Beecher

* Heard 3 proposals that are very similar
* Looking to harmonize them for a quickly prepared draft

*Move to affirm Phil Beecher as TG4u Chair*

Moved: C Powell, Second: B Rolfe

Upon neither discussion nor objection the motion carries

**TG7r1 by Yeong Min**

* Hearing 13 institute’s proposals
* Meeting tonight at 19:00 to discuss a MAC concern

**TG8 (PAC)** by Myung Lee (CUNY)

* Group modes
* Working on draft, estimate March for LB

**TG9 (KMP)** by R Moskowitz

*Move that 802.15 requests unconditional approval from the EC to submit the P802-15-9 D06 Recommended Practice to RevCom.*

Moved by: R Moskowitz, Seconded by: Don Sturek

Upon no discussion the vote was taken with the results of 42/0/0 , motion carries

**TG10 (L2R)** by C Powell

* Finishing WG LB comment resolution

**IG THz closing report** by T Kürner(15-16-0097-00)

* Motion: *request that the*  *text proposal contained in 15-15-0699-05-003d-draft-liaison-statement-to-itu-r-wp1a is forwarded by the WG for further submission to 802.18.*
* Moved by: Thomas Kürner, seconded by C Powell
* Upon no discussion the vote was taken with the results of 42/0/0 , motion carries

**IG dep** by R Kohno

**IG 6tisch** **closing report** by P Kinney (15-16-0089-01)

**SC Maintenance** by P Kinney

* finished the following changes to the Operations Manual:
* Changed TEG to make non-mandatory
* Deleted call announcement period references, they are stated in 802 WG P&P
* Modified ANA external organizations to allow consortiums and alliances
* Added reference to 802 WG P&P in voting rights
* Updated hyperlinks for P&P
* Above changes have been added to the 802.15 Operations Manual draft and uploaded to Mentor as [15-10-0235-16](https://mentor.ieee.org/802.15/dcn/10/15-10-0235-16-0000-802-15-operations-manual.docx).

**SG 802.15.12 ULI** by P Kinney

* discussed the ULI project at the 802.1/802.15 joint meeting, received helpful information on changes to PAR and CSD
* revised the 802.15.12 ULI PAR and CSD and uploaded them to Mentor as [15-15-0760-04-0llc\_802.15.12 PAR Draft](https://mentor.ieee.org/802.15/dcn/15/15-15-0760-04-0llc-802-15-12-par-draft.docx) and [15-15-0768-04-0llc\_15.12-LLC-draft-CSD](https://mentor.ieee.org/802.15/dcn/15/15-15-0768-04-0llc-802-15-12-draft-csd.docx) respectively.

**SC WNG** by P Kinney

* + 15-16-0087-00 Sub-GHz bands for 802.15.4 by K Shah

**AoB**

* + Chair commented on effort in China to create a “copy” of 802.15.6 within the IEC
* Chair suggested that the 802.15.6 be moved to the IEC via the PSDO procedure

**11:48** Recessed until Thursday at 18:30

**Thursday, 21 Jan 2015**

**18:30** 802.15 WG chair called the meeting to order

**18:30** TG 3d closing report by T Kürner (15-16-0101-01)

**18:32** TG 3e(HRCP) closing report by A Estrada (15-16-0123-00)

Move that *802.15 WG start a WG Letter Ballot requesting approval to forward document P802-15-3e\_D01 and 15-16-0118-00 to Sponsor Ballot*.

Moved By Andrew Estrada Seconded By B Rolfe

Upon neither discussion nor objection the motion carries with unanimous consent

**18:37** TG4s (SRU) closing report by S Kitazawa (15-16-0121-00)

**18:41** TG4u (India) closing reportby P Beecher (15-16-0129-00)

**18:46** TG7r1 (OWC) closing report by Yeong Min Jang (15-16-0134-01)

**18:49** TG8 (PAC) closing report by Myung Lee (15-16-0132-00)

**18:51** TG9 closing report by Peter Yee (15-16-0086-02)

Move *that 802.15 TG reaffirm the constitution of a Ballot Resolution Committee (BRC) for the sponsor balloting of the 802.15.9 draft recommended practice with the following membership: Robert Moskowitz, Tero Kivinen, Don Sturek, Peter Yee, Subir Das, Brian Weis, Gary Stuebing. The 802.15.9 BRC is authorized to approve comment resolutions and to approve the start of recirculation ballots of the 802.15.9 draft on behalf of the 802.15 WG. Comment resolution between sessions will be conducted via reflector email and via teleconferences announced to the reflector.*

Moved by P Yee, seconded by D Sturek

Upon neither discussion nor objection the motion carries with unanimous consent

**18:55** TG10 (L2R) closing report by Charley Perkins (15-15-0986-01)

*Move that 802.15 WG approve the formation of a Ballot Resolution Committee (BRC) for the WG balloting of the TG10 draft recommended practice with the following membership: Clint Powell, Verotiana Rabarijaona, Fumihide Kojima, Noriyuki Sato, Kiyoshi Fukui, Soo-Young Chang, Jaehwan Kim, SangSung Choi, Charlie Perkins*. *The TG10 BRC is authorized to approve comment resolutions and to approve the start of balloting the TG10 draft on behalf of the 802.15 WG. Comment resolution on recirculation ballots between sessions will be conducted via reflector email and via teleconferences as announced to the reflector.*

Moved by C Perkins, Seconded by V Rabarijaona

Upon neither discussion nor objection the motion carries with unanimous consent

**19:02** SCclosing report by Pat Kinney (15-15-0049-01)

*Move that 802.15 WG approve the 802.15 WG Operations Manual document 15-10-0235-16.*

Moved by Pat Kinney, seconded by R Alfvin

Upon neither discussion nor objection the motion carries with unanimous consent

**19:11** SG ULI closing report by Pat Kinney (15-16-074-01)

P Kinney reviewed the PAR and CSD documents. Comment made that NesCom requires full titles of standards being included in the PAR text, in this case IEEE Std 802.15.4. Suggestion made that this title be put in section 8.1, however this can be done in March.

WG Motion: *request that the PAR and CSD contained in documents 15-15-0760-06 and 15-15-0768-06, 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 Pat Kinney, seconded by B Rolfe

Vote was taken with the results 31/0/0, motion carries

**19:18** 802.15.4v by K Shah (15-16-0135-00)

K Shah presented Sub-GHz Proposal for 802.15.4 (15-16-87-00-0000) and PAR and CSD (15-16-0130-00 and 15-16-0131-00 respectively) for 15.4 Regional Sub-GHz band.

WG Motion: *request that the PAR and CSD contained in documents 15-16-0130-00 and 15-16-0131-00, 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 K Shah, Seconded by B Rolfe*

Upon no discussion, the vote was taken with the results 29/0/0, motion carries

**19:27** IG dep closing report by B Rolfe (15-16-0095-03)

**19:31** 802.11 liaison report by A Petrick (15-16-0116-00)

**19:38** 802.18 liaison report by J Holcomb (15-16-0109-00)

Questioned as to the future of 802.18, the chair advised the group that the 802 EC will stick with the TAG concept (straw poll 7/2), but will be discussed further at the EC meeting, anticipating that changes will be implemented March 1st.

**19:36** 802.24 by B Rolfe

* Action Items from this session
  + Follow up for Sub-1GHz white paper
  + Follow up for SG Companion Presentation

**AoB**

**19:53** Motion *to adjourn* was made by C Chaplin, seconded by B Rolfe, upon no objection the motion carried, this session is adjourned.

**Annex A** Attendance = 97

|  |  |  |
| --- | --- | --- |
| **Last Name** | **First Name** | **Affiliation** |
| ABDALLAH | MOHAMED | Texas A&M University |
| AKIYAMA | KEIJI | Sony Corporation |
| Alfvin | Richard | Verilan |
| Aoyama | Hideki | Panasonic Corporation |
| BEECHER | PHILIP E | Wi-SUN Alliance |
| Bynam | Kiran | SAMSUNG |
| Callaway | Edgar | ARM, Ltd. |
| Calvert | Chris | Landis Gyr Group Worldwide |
| Cha | Jaesang | SNUT |
| Chaplin | Clint | Imagicon |
| Chasko | Stephen | Landis Gyr Group Worldwide |
| Choi | Jinyong | LG ELECTRONICS |
| Choi | Sangsung | ETRI |
| Das | Subir | Appled Communication Sciences |
| De Ruijter | Hendricus | Silicon Laboratories |
| Dotlic | Igor | NICT |
| Eckert | Edward | Itron Inc. |
| Elgala | Hany |  |
| Estrada | Andrew | Sony Corporation |
| Fricke | Alexander | Technische Universitat Braunschweig |
| Fukui | Kiyoshi | Oki Electric Industry Co., Ltd. |
| Gilb | James | Myself |
| Gillmore | Matthew | Itron Inc. |
| Gorday | Paul | ARM, Ltd. |
| GOTO | YOSHIHO | Panasonic Corporation |
| Hara | Shinsuke | Osaka City University (OCU) |
| Heile | Robert | Wi-SUN Alliance |
| Hernandez | Marco | NICT |
| Hett | Christopher | Landis Gyr Group Worldwide |
| Hiraga | Ken | NTT |
| Holcomb | Jay | Itron Inc. |
| HOSAKO | IWAO | NICT |
| Jang | Yeong Min | Kookmin University |
| JOO | SEONG-SOON | ETRI |
| Jungnickel | Volker | Fraunhofer Heinrich Hertz Institute |
| Kent | Jeritt | Analog Devices Inc. |
| Kim | Jaehwan | ETRI |
| KIM | Jay | LG ELECTRONICS |
| Kim | Young-Hoon | ETRI |
| Kim | Youngsoo | SAMSUNG |
| KINNEY | PATRICK | Kinney Consulting LLC |
| Kitazawa | Shoichi | ATR Wave Engineering Laboratories |
| Kivinen | Tero | INSIDE Secure |
| Kohno | Ryuji | YNU/CWC-Nippon |
| Kojima | Fumihide | NICT |
| Kondou | Keitarou | Sony Corporation |
| Kuerner | Thomas | TU Braunschweig |
| Kumar | Amarjeet | Procubed Inc. |
| Kumar | Subodh | Test |
| Kwak | Byung-Jae | ETRI |
| Laurent | Stephane | Gridbee communications |
| Le | Namtuan | Kookmin University |
| Lee | Jae Seung | ETRI |
| Lee | Moon-Sik | ETRI |
| Lee | Myung | CUNY - City University of NY |
| Li | Huan-Bang | NICT |
| Li | Liang | Vinno Technologies Inc. |
| Li | Qiang | HUAWEI |
| Lynch | Michael | Nortel Networks |
| Ma | Jing | NICT |
| Maekawa | itaru | Japan Radio Co., Ltd. |
| Matsumura | Hiroyuki | Sony Corporation |
| McInnis | Michael | The Boeing Company |
| Mori | Kenichi | Space-Time Engineering |
| Moskowitz | Robert | HTT Consultant |
| Nguyen | Trang | Kookmin University |
| Oshima | Mitsuaki | Panasonic Corporation |
| Oyama | Satoshi | ARIB |
| Park | Chul | KAIST / WiseJet |
| Park | Jaewoo | ETRI |
| Perez | Javier | Intel Corporation |
| Perkins | Charles | Futurewei Technologies |
| Petrick | Albert | Jones-Petrick and Associates, LLC. |
| Powell | Clinton | Powell Wireless Consulting, LLC |
| Rabarijaona | Verotiana | NICT |
| Roberts | Richard | Intel Corporation |
| Rolfe | Benjamin | Blind Creek Associates |
| Ruan | Wei |  |
| Salazar Cardozo | Ruben E | Landis Gyr Group Worldwide |
| Sarikaya | Behcet | Huawei R&D USA |
| Sato | Noriyuki | Oki Electric Industry Co., Ltd. |
| Serafimovski | Nikola | pureLiFi |
| Shah | Kunal | Silver Spring Networks Inc. |
| Shimada | Shusaku | Schubiquist Technologies |
| Stuebing | Gary | Cisco Systems, Inc. |
| Sturek | Don | Silver Spring Networks Inc. |
| Sun | Yanjun | Qualcomm Incorporated |
| Togashi | Kou | TOSHIBA Corporation |
| toshimitsu | kiyoshi | TOSHIBA Corporation |
| TOSHINAGA | Hideki | NTT |
| Tsai | Hsin-Mu | National Taiwan University |
| Uysal | Murat | Ozyegin University |
| Verso | Billy | DecaWave |
| Weis | Brian | Cisco Systems, Inc. |
| Yee | Peter | NSA/IAD |
| Yokota | Hidetoshi | Landis Gyr Group Worldwide |
| Zhang | Junwen | Fudan University |