IEEE P802.18
Radio Regulatory Technical Advisory Group (RR-TAG)

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| Radio Regulatory Technical Advisory Group MinutesMarch Mixed-Mode 802 Plenary Session 2023 |
| Date: 9 April 2023 |
| Author: |
| Name | Company | Address | Phone | email |
| Amelia Andersdotter | Sky Group/Comcast | Belgium |  | amelia.ieee@andersdotter.cc |
|  |  |  |  |  |

Abstract

This document constitutes the minutes of the IEEE 802.18 Technical Advisory Group from the March IEEE 802 March Mixed Mode 802 Plenary Session 2023, with on-site participants in Atlanta, Georgia, USA and remote participants through Webex. "Local time" in this document means "local time" in Atlanta, Georgia, USA (UTC-4).

**C:** means question or comment from participant.

**Chair:** means statement by the chair as chair.
Highlight means action point.

r0: original version.

r1: updated attendee list after audit.

r2: re-issue of audited attendee list.

Chair: Edward Au (Huawei)

Co-Vice-chairs: Stuart Kerry (OK-Brit/Self) and Al Petrick (Skyworks Solutions)

Secretary: Amelia Andersdotter (Comcast)

IEEE SA Program Manager: Jodi Hassz (IEEE SA)

* IEEE 802.18, RR-TAG website: <https://www.ieee802.org/18/>

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**Opening meeting**

1. Opening formalities
2. Chair calls the meeting to order at 10:31 local time. Quorum is asserted.

Agenda slide deck [18/23-0020r3](https://mentor.ieee.org/802.18/dcn/23/18-23-0020-03-0000-rr-tag-2023-march-plenary-agenda.xlsx) with supplementary materials in [18/23-0021r4](https://mentor.ieee.org/802.18/dcn/23/18-23-0021-04-0000-2023-march-rr-tag-supplementary-materials.pptx)
3. Group officers are presented.
4. This meeting is part of the IEEE 802 mixed mode plenary session in Atlanta, Georgia, USA organized between 12 March and 17 March 2023.
* You **must** pay the registration fee in order to attend
* If you have not already done so, you can register w/Face to Face Events – Registration website at: [**https://cvent.me/AwPbAx**](https://cvent.me/AwPbAx)
* If you do not intend to register for this session you must leave this meeting and, if you have logged attendance on IMAT, please email the 802.18 chair or a vice chair to have your attendance canceled
* At conclusion of each of the 802.18 calls, the Webex log and IMAT will be reviewed.
* No payment, become dead beat and lose voting rights in all groups, after 60-day grace.
1. Chair presents the agenda.

Request to have place in the first session of IEEE 802.18 meeting all items related to 802.15. Chair responds 802.15 items are scheduled for first session already.

No other comments or questions on the agenda.

	* + **Motion #1 (internal):** To approve the agenda as shown in the “RR-TAG Opening” tab of the document 18/23-0020r3

Moved by: Stuart Kerry

Seconded by: Benjamin Rolfe

Discussion? None

Vote: Approved with unanimous consent.

1. Voter list update.

Group officers and voting membership (as of 14 March 2023)

Voters: 53 (8 on LMSC)

Nearly Voters: 0

Aspirant members: 12

[802.18 Voters List](https://www.ieee802.org/18/RRTAG_Voters.pdf)

1. **Policies and procedures**

	1. RR-TAG Policies & Procedures [[802 LMSC WG P&P](https://mentor.ieee.org/802-ec/dcn/21/ec-21-0207-23-0PNP-ieee-802-lmsc-working-group-policies-and-procedures.pdf)]

IEEE 802 meeting and participant’s guidelines and requirements [[link](http://www.ieee802.org/devdocs.shtml)]

IEEE policies and procedures [[link](https://standards.ieee.org/about/policies/opman/)]

* 1. Reciprocal credit with IEEE 802.11 Working Group (WG) is granted for only the two meeting slots scheduled for IEEE 802.18 as per agreement between the 802.11 and 802.18 chairs.
	2. **Reminder that IMAT is being used for attendance**

Online meeting procedures reminder

Walk-through of session schedule.

Chair asks group if there are any questions relating to the IEEE policies. No response, no comments on WebEx Chat window.

1. **General business**

	1. **Minutes**
* Chair presented the meeting minutes from RR-TAG 2023 January Mixed Mode Wireless Interim session. No questions or comment.
 **Motion #2 (internal):** To approve the meeting minutes of the RR-TAG 2023 January wireless interim session as shown in the document [18-23/0010r0](https://mentor.ieee.org/802.18/dcn/23/18-23-0010-00-0000-january-2023-wireless-interim-minutes.docx), with editorial privilege for the 802.18 Chair.

Moved by: Al Petrick

Seconded by: kiwin Palm

Discussion? None.

Vote: Approved with unanimous consent.

* Chair presented the meeting minutes from the RR-TAG Frequency Table Ad-hoc from 27 September 2022. No questions or comments.

**Motion #3 (internal):** To approve the meeting minutes of the 27 September 2022 IEEE 802 Wireless Standards Frequency Table ad hoc meeting as shown in the document [18-22/0121r0](https://mentor.ieee.org/802.18/dcn/22/18-22-0121-00-0000-frequency-table-ad-hoc-minutes-27-september-2022.docx), with editorial privilege for the 802.18 Chair.

Moved by: Stuart Kerry
Seconded by: Al Petrick
Discussion? None
Vote: Approve with unanimous consent.

* 1. **Opening reports**
		+ **Presentation of 802.18 opening report (**[**18/23-0022r1**](https://mentor.ieee.org/802.18/dcn/23/18-23-0022-01-0000-rr-tag-2023-march-plenary-chair-opening-report.ppt)**),** Edward Au (Chair)Chair presented progress since the interim meeting in January 2023.
		+ **Update on IEEE Spectrum Statement (ISUS) Ad-hoc**, Amelia Andersdotter (Ad-hoc leader)

		Ad-hoc leader presents updates since last meeting and announces presentation of LMSC EC letter-ballot outcome during the closing meeting of IEEE 802.18 on Thursday AM1.
		+ **Update on IEEE 802.18 Frequency Table Ad-hoc,** Edward Au (ad-hoc co-leader)

		Ad-hoc leader presents the conclusion of the work of the group.
1. **Status of ongoing consultations and TAG documents for approval (**[**18/22-0035r63**](https://mentor.ieee.org/802.18/dcn/22/18-22-0035-63-0000-status-of-ongoing-consultations-and-tag-documents-for-approval.docx)**),** Edward Au (Chair)Chair presents updates since the last weekly teleconference on 23 February 2023.

	1. **Presentation of EU RSPG consultation on spectrum policy to combat climate change**Chair presents previous work by EU RSPG, EU BEREC and French ARCEP.

	**C:** Many technological advances in wireless technologies are not oriented towards higher through-put. Energy-efficiency is important in IEEE 802.15 because the environments where the technologies are deployed are low-power, low-data-volume, long-life time environments. RFID tags, sensors and energy-harvesting transmit-only devices have already been around for more than a decade. Joules per gigabit may not be a meaningful metric for some of these technologies, since the data volume they need is so low. We should raise awareness around the diversity of wireless technology use-cases. One reason to enter this discussion is to make sure we have a meaningful collection of metrics for different use-cases.
	**Chair:** If we get contact points in each working group that can help synthesize ongoing work from each wireless technology into one document.
	**C:** We could also emphasize that battery-driven devices have different power constraints. We could suggest that a technology being friendly to reusable batteries is a suitable metric for some use-cases, for instance. Or recyclable batteries. We should in either case discuss the toolbox of metrics that we make accessible to regulators around the world.
	**C:** It’s strategically important to produce a response to this consultation, and not let this opportunity to position our technologies in the discussion.
	2. **Report 84 from CEPT on permanent mandate for UWB**Chair presents the contents of the report to the group.
	3. **European Commission exploratory consultation on the future of electronics communications infrastructure**Chair presents the consultation to the group.
2. **Proposed reply to Liaison Statement on the Formation of the ETSI ISG THz** (draft response: [15/23-0134r0](https://mentor.ieee.org/802.15/dcn/23/15-23-0134-02-0thz-draft-response-on-the-liaison-statement-from-etsi-isg-thz.docx), original liaison: [18/23-0024r0](https://mentor.ieee.org/802.18/dcn/23/18-23-0024-00-0000-liaison-from-etsi-isg-thz-re-formation-of-a-new-etsi-isg-for-terahertz-communications-thz.docx)), Thomas Kuerner (TU Braunschweig)

The proposed reply is presented to the group.

**C:** If we propose to provide a revised channel plan, what would be required for it to be listed?
**C:** It would need to be listed and available, not necessarily free of charge but to a broader audience.
Chair: With this information we will await a final version of the liaison response, and we can put it into a template that we motion during the Thursday session for submission to ETSI ISG THz.
3. **Any other business**
	1. **Update from ETSI/BRAN,** Guido Hiertz (ETSI BRAN Chair, Ericsson)

	The goal for the last meeting was to send all ongoing harmonized standards to ENAP. This goal was not met.

	The 6 GHz HS was sent to a second ENAP rather than recirculation. This is due to a procedural issue where recirculation is not possible if non-ENAP comments have been addressed following the first ENAP.

	There was no advancement on resolving the remaining assessment comments on 5 GHz HS. Energy detection thresholds continues to be a controversy.

	The European Commission presented their findings on DFS and radar for 5 GHz equipment on the market. It addressed, among other things, the efficiency of current enforcement of those standards that are already approved.

	There is an ongoing exchange on interference with radar technologies, especially in those cases where IEEE 802.11 may have low energy detection thresholds. Individuals that are interested in working on these topics are invited to get in touch with Guido.

	For a reminder of the role of the assessment in the ETSI harmonized standard development and adoption procedure, please refer to minutes contained in document [18-22-0161r0](https://mentor.ieee.org/802.18/dcn/22/18-22-0161-00-0000-weekly-teleconference-minutes-15-december-2022.docx).
	2. **Recess at 12:12 pm local time**

 **Closing meeting**

1. **Opening formalities**
	1. Chair calls meeting to order at 08:01 local time. Quorum is declared.Agenda slide deck [18/23-0020r5](https://mentor.ieee.org/802.18/dcn/23/18-23-0020-05-0000-rr-tag-2023-march-plenary-agenda.xlsx) with supplementary materials in [18/23-0021r6](https://mentor.ieee.org/802.18/dcn/23/18-23-0021-06-0000-2023-march-rr-tag-supplementary-materials.pptx).
	2. Officer introduction.
	3. Reminder of registration fee was presented.
	4. Agenda review (see slide deck para 7.i).

**Motion #4 (internal):** To approve the agenda as shown in deck 18-23/0020r5

Moved by: Stuart Kerry

Seconded by: Al Petrick

Discussion? None

Vote: Approved with unanimous consent

1. **Policies and procedures**
	1. IEEE 802 required notices
		* Declaration of affiliation
		* Anti-trust notices
		* IEEE 802 WG policies and procedures
	2. Guidelines for IEEE SA meetings were introduced.
		* Reminder to object when inappropriate topics are discussed
		* IEEE 802 Code of Conduct and Code of Ethics were introduced.
		* Reminder of the IEEE SA individual process applied in IEEE 802 Committee.
		* Reminder of IEEE SA board bylaws specifying fair and equitable consideration of all viewpoints.

For links to relevant documents see para 2. above or consult the supplementary chair materials contained in document 18/23-0021r6 (linked under para. 7). Chair asked for comments, questions or concerns. None reported.

* 1. Reminder of housekeeping and meeting decorum.
1. **Proposed response of IEEE 802 to Liaison statement from ETSI ISG THz** ([18/23-0032r0](https://mentor.ieee.org/802.18/dcn/23/18-23-0032-00-0000-response-of-ieee-802-to-liaison-statement-from-etsi-isg-thz.docx)), Thomas Kuerner (TU Braunschweig)Document was presented. See para 5. above for discussion.

	1. **Motion 5 (external):** Move to approve document 18-23/0032r0 in response to the liaison from ETSI on the formation of a new ETSI ISG for Terahertz Communications for review and approval by the IEEE 802 LMSC for submission to ETSI. The IEEE 802.18 Chair is authorized to make editorial changes as necessary.
	 **Moved:** Thomas Kurner

**Seconded:** Tuncer Baykas **Discussion:** None. **Attendees:** 26 **Voters:** 23 **Result:** 19 Yes / 0 No / 2 Abstain **Remarks:** Chair did not vote.

1. **IEEE Spectrum Policy Policy Statement Discussion,** ([18/23-0015r16](https://mentor.ieee.org/802.18/dcn/23/18-23-0015-16-ISUS-isus-clean-version-of-spectrum-statement.docx)), Amelia Andersdotter (ad-hoc leader)

Document was presented with EC review results incorporated. 802 LMSC letter ballot yielded only editorial comments. The document will be discussed and motioned in the IEEE 802 LMSC on their Friday closing session 17 March 2023. If approved, the IEEE-SA Public Affairs team will consult with other IEEE Stakeholders with a final opportunity for review by the IEEE 802 LMSC before the IEEE-SA SPCC and BOG meetings in end-April, early May.

**Discussion:**

**Q:** Did the EC approve the document?

**A:** EC ballot closed on 15 March. Final approval of the document for entering the next stage of the procedure is during the EC closing plenary.

1. **RR-TAG Charter Discussion (**[**18-14-0024r0**](https://mentor.ieee.org/802.18/dcn/14/18-14-0024-00-0000-rr-tag-charter-reaffirmed-2014.docx)**),** Edward Au (Chair)Background on the RR TAG Charter approval in 2002 and updated in 2014. Chair introduces discussion on RR TAG role in responding to liaison statements, developing frequency tables and developing spectrum statements.

**Discussion:**

**C:** The IEEE 802.18 RR-TAG has had weekly meetings where we exchange information on what is happening in different regions. The bandwidth of the group is limited with the one-hour sessions we are organizing.
**C:** If regulatory authorities expand their vision of their remit, this may also impact our activities.
**C:** We should be careful to make a distinction between the formulation of the charter and the priorities of the group. A survey of priorities might be appropriate.
**C:** The IEEE 802.18 RR-TAG activities will be driven by external entities too. The leadership of the group has the responsibility to manage this. Ad-hoc groups is a way of completing more work.

Leadership will start a survey on the priorities of the group.
2. **General discussion items**
	1. **Europe, Middle East and Africa**ETSI BRAN update above, para.

	UK Ofcom has made a decision on amended regulations for wireless communications.
	2. **Americas**Next FCC Open Commission meeting is scheduled for 16 Mar 2023 10:30 AM ET.
	3. **Asia/Pacific**No updates.
	4. **ITU-R**No updates.
	5. **RSPG Climate change consultation**Chair presented a call for contributions.
3. **Closing formalities**
	1. **Future meetings.**The schedule for future meetings was approved. **Motion 7 (internal):** The 802.18 Chair or Chair designee is directed to conduct, as necessary, the following weekly teleconference calls through 22 September 2023

RR-TAG calls on Thursdays at 15:00 ET for 55 mins
ISUS ad-hoc calls on Fridays at 12:00 ET for 60 minutes

 **Moved:** Mike Lynch **Seconded:** Amelia Andersdotter **Discussion:** None **Result:** Approved by unanimous consent.

The new teleconference schedule can be found in document [18/16-0038r30](https://mentor.ieee.org/802.18/dcn/16/18-16-0038-30-0000-teleconference-call-in-info.pptx).

* 1. **Reminder of registration for next meeting**
	2. **Surveying the group on behalf of LMSC

	Strawpoll 1:** If the May 2023 Interim
	Attend in-person: 16
	Attend virtually (remotely): 7
	Will not attend: 2
	Abstain: 0
	 **Strawpoll 2:** If July 2023 Plenary Session were held
	Yes: 19
	No: 6
	Abstain: 1  **Strawpoll 3:** If the July 2023 Plenary Session is held as a mixed-mode meeting, would you a
	Attend in-person: 19
	Attend virtually (remotely): 8
	Will not attend: 0
	Abstain: 0
1. **Any other business**A reminder to register and log in to IMAT.
2. **Final administrative items**
	1. Next weekly teleconference call scheduled for: 23 March 2023, 15h00 ET.
		* 1. Call in info: https://mentor.ieee.org/802.18/dcn/16/18-16-0038-30-0000-teleconference-call-in-info.pptx
			2. Next IEEE 802.18 meeting will be conducted during the IEEE 802 Wireless Interim Session on 14-19 May 2023 in Orlando, Florida, USA. It is an credited session.
			3. Currently, RR-TAG weekly teleconferences are scheduled until 22 September 2023.
			4. All late changes/cancellations will be sent out to the 802.18 list server.
			5. Overall IEEE 802 schedule: <https://ieee802.org/16/cal-temp.html> or only 802.18: [IEEE 802.18 TAG Calendar](https://calendar.google.com/calendar/embed?src=c2gedttabtbj4bps23j4847004@group.calendar.google.com&ctz=America%2FNew_York)
	2. Adjourn:
* Any objection to Adjourn? None heard.
* Adjourn at 09:01 local time

**ATTENDANCE (Plenary Attendance Names and Affiliations) [Report by Stuart Kerry]:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Voting Attendees:** | **14-Mar** | **16-Mar** | **Credit >75%** |
|  |  |  |  |  |  |  |
| 1 | **Andersdotter** | Amelia | Sky Group/Comcast | **x** | **x** | **TRUE** |
| 2 | **Au** | Edward (Kwok Shum) | Huawei Technologies Co., Ltd | **x** | **x** | **TRUE** |
| 3 | **Baykas** | Tuncer | Ofinno | **x** | **x** | **TRUE** |
| 4 | **Boldy** | David | Broadcom Corporation | **x** | **x** | **TRUE** |
| 5 | **da Silva** | Claudio | Meta Platforms, Inc. | **x** | **x** | **TRUE** |
| 6 | **de Vegt** | Rolf | Qualcomm Incorporated | **x** | **x** | **TRUE** |
| 7 | **Eitan** | Alecsander | Qualcomm Incorporated | **x** | **x** | **TRUE** |
| 8 | **Fang** | Yonggang | MediaTek |  | **x** | **FALSE** |
| 9 | **Godfrey** | Tim | Electric Power Research Institute, Inc. (EPRI) | **x** |  | **FALSE** |
| 10 | **Halasz** | Dave | Morse Micro | **x** | **x** | **TRUE** |
| 11 | **Hiertz** | Guido | Ericsson GmbH | **x** | **x** | **TRUE** |
| 12 | **Ikegami** | Tetsushi | Meiji University | **x** | **x** | **TRUE** |
| 13 | **Jeffries** | Timothy | FutureWei Technologies, Inc. | **x** | **x** | **TRUE** |
| 14 | **Jones** | Vincent Knowles IV | Qualcomm Incorporated | **x** |  | **FALSE** |
| 15 | **Kain** | Carl | USDOT, Noblis, Inc. | **x** | **x** | **TRUE** |
| 16 | **Kasher** | Assaf | Qualcomm Incorporated | **x** | **x** | **TRUE** |
| 17 | **Kennedy** | Richard | Bluetooth SIG | **x** |  | **FALSE** |
| 18 | **Kerry** | Stuart | OK‐Brit, Self | **x** | **x** | **TRUE** |
| 19 | **Kürner** | Thomas | TU Braunschweig | **x** | **x** | **TRUE** |
| 20 | **Lansford** | James | Qualcomm Incorporated | **x** | **x** | **TRUE** |
| 21 | **Levy** | Joseph | InterDigital, Inc. | **x** | **x** | **TRUE** |
| 22 | **Lynch** | Michael | MJ Lynch & Associates, LLC. | **x** | **x** | **TRUE** |
| 23 | **Max** | Sebastian | Ericsson AB | **x** | **x** | **TRUE** |
| 24 | **Palm** | kiwin (Stephen) | Broadcom Corporation | **x** | **x** | **TRUE** |
| 25 | **Petranovich** | James | ViaSat, Inc. | **x** |  | **FALSE** |
| 26 | **Petrick** | Al | Skyworks Solutions Inc. | **x** | **x** | **TRUE** |
| 27 | **Pettersson** | Charlie | Ericsson AB | **x** | **x** | **TRUE** |
| 28 | **Pirhonen** | Riku | NXP Semiconductors | **x** | **x** | **TRUE** |
| 29 | **Porat** | Ron | Broadcom Corporation | **x** |  | **FALSE** |
| 30 | **Powell** | Clint | Meta Platforms, Inc.; Powell Wireless Commsulting, LLC | **x** |  | **FALSE** |
| 31 | **Robert** | Joerg | TU-Ilmenau/Fraunhofer IIS | **x** | **x** | **TRUE** |
| 32 | **Rolfe** | Benjamin | Blind Creek Associates | **x** |  | **FALSE** |
| 33 | **Sand** | Stephan | German Aerospace Center (DLR) | **x** |  | **FALSE** |
| 34 | **Sasaki** | Shigenobu | Niigata University, Japan | **x** | **x** | **TRUE** |
| 35 | **Sato** | Naotaka | Sony Group Corporation | **x** | **x** | **TRUE** |
| 36 | **Scott** | Andy | NCTA – The Internet & Television Association | **x** | **x** | **TRUE** |
| 37 | **Sherlock** | Ian | Texas Instruments | **x** | **x** | **TRUE** |
| 38 | **Stanley** | Dorothy | Hewlett Packard Enterprise | **x** | **x** | **TRUE** |
| 39 | **Verso** | Billy | Qorvo | **x** | **x** | **TRUE** |
| 40 | **Wang** | Lei | FutureWei Technologies, Inc. | **x** | **x** | **TRUE** |
| 41 | **Ward** | Lisa | Rohde & Schwarz | **x** | **x** | **TRUE** |
| 42 | **Yaghoobi** | Hassan | Intel Corporation | **x** | **x** | **TRUE** |
|  |  |  |  |  |  |  |
| **Non-Voting Attendees:** | **14-Mar** | **16-Mar** | **Credit >75%** |
|  |  |  |  |  |  |  |
| 1 | **Aldana** | Carlos | Facebook | **x** |  | **FALSE** |
| 2 | **Asai** | Yusuke | NTT ASLabs | **x** | **x** | **TRUE** |
| 3 | **Barras** | David | 3db Access AG | **x** |  | **FALSE** |
| 4 | **Beecher** | Phil | Wi-SUN Alliance | **x** |  | **FALSE** |
| 5 | **Calvert** | Chris | Landis+Gyr AG | **x** |  | **FALSE** |
| 6 | **Chang** | Eason (Chen-Yi) | MediaTek |  | **x** | **FALSE** |
| 7 | **Chen** | Run | New Radio Technologies Co. Ltd. (NRT) | **x** |  | **FALSE** |
| 8 | **Danev** | Boris | 3db Access AG | **x** |  | **FALSE** |
| 9 | **de Ruijter** | Henk | Silicon Labs | **x** |  | **FALSE** |
| 10 | **Granhaug** | Kristian | Novelda AS | **x** |  | **FALSE** |
| 11 | **Grigat** | Michael | Deutsche Telekom | **x** |  | **FALSE** |
| 12 | **Hartman** | Jim | Landis Gyr Group Worldwide | **x** |  | **FALSE** |
| 13 | **Hosako** | Iwao | National Institute of Information and Communications Technology (NICT) | **x** | **x** | **TRUE** |
| 14 | **Juntunen** | Juha | Meteorcomm | **x** |  | **FALSE** |
| 15 | **Kabbinale** | Aniruddh | Samsung | **x** |  | **FALSE** |
| 16 | **Kitazawa** | Shoichi | Muroran Institute of Technology | **x** | **x** | **TRUE** |
| 17 | **Kohno** | Ryuji | YNU/YRP-IAI | **x** |  | **FALSE** |
| 18 | **Kozarev** | Aleksandra | MaxLinear | **x** |  | **FALSE** |
| 19 | **Krieger** | Ann | US DoD | **x** |  | **FALSE** |
| 20 | **Li** | Huan‐Bang | National Institute of Information and Communications Technology (NICT) | **x** | **x** | **TRUE** |
| 21 | **Pakrooh** | Pooria | Qualcomm Incorporated | **x** |  | **FALSE** |
| 22 | **Patel** | Tushar | Teradyne, Inc. | **x** |  | **FALSE** |
| 23 | **Salazar Cardozo** | Ruben E. | SKG Waves | **x** |  | **FALSE** |
| 24 | **Sarris** | Ioannis | Adveos | **x** | **x** | **TRUE** |
| 25 | **Shah** | Kunal | Itron, Inc. | **x** |  | **FALSE** |
| 26 | **Shen** | Andy | Futurewei, U.S. Subsidiary of Huawei | **x** |  | **FALSE** |
| 27 | **Sosack** | Robert | Molex Incorporated | **x** |  | **FALSE** |
| 28 | **Stuebing** | Gary | Cisco Systems | **x** |  | **FALSE** |
| 29 | **Sturek** | Don | Itron, Inc. | **x** |  | **FALSE** |
| 30 | **Wendt** | Matthias | Signify | **x** |  | **FALSE** |
| 31 | **Wilhelmsson** | Leif | Ericsson AB | **x** | **x** | **TRUE** |
| 32 | **Wisland** | Dag T. | Novelda AS | **x** |  | **FALSE** |
| 33 | **Xiao** | Libra | New Radio Technologies Co. Ltd. (NRT) | **x** |  | **FALSE** |
| 34 | **Yang** | David (Xun) | Huawei | **x** |  | **FALSE** |
| 35 | **Yu** | Jian | Huawei | **x** | **x** | **TRUE** |
| 36 | **Zakaib** | Larry | Spark Microsystems | **x** |  | **FALSE** |