IEEE P802.11
Wireless LANs

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| UHR SG September October 2022 teleconference minutes |
| Date: 2022-09-26 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Ross Jian Yu | Huawei | Building H3, Huawei Industrial Base, Shenzhen, Guangdong, China |  | ross.yujian@huawei.com |
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Abstract

This document contains the minutes for UHR SG September October 2022 teleconference.

Revision history:

* Rev0: add the minutes for teleconference call on Sep 26th.
* Rev1: add the minutes for teleconference call on Oct 24th. Move the attendance list to the Appendix.

Abbreviations:

* A: Answer
* C: Comment

# 1st Conf. Call: Sep 26 Monday (10:00–12:00 ET)

* The Chair, Laurent Cariou (Intel), calls the meeting to order.
* IEEE 802 and 802.11 IPR policy and procedure
	+ Patent Policy: Ways to inform IEEE:
		- Cause an LOA to be submitted to the IEEE-SA (patcom@ieee.org); or
		- Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or
		- Speak up now and respond to this Call for Potentially Essential Patents

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair. **Nobody speaks/writes up**.

* + Copyright Policy: Participants are advised that
		- IEEE SA’s copyright policy is described in [Clause 7](https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7) of the IEEE SA Standards Board Bylaws and [Clause 6.1](https://standards.ieee.org/about/policies/opman/sect6.html) of the IEEE SA Standards Board Operations Manual;
		- Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy

**Copyright Policy was presented.**

* + **Patent, Participation, Copyright and policy related subclause:** Please refer to Patent And Procedures
* Attendance reminder.
	+ Participation slide: <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>
	+ Please record your attendance during the conference call by using the IMAT system:
		- 1) login to [imat](https://imat.ieee.org/attendance), 2) select “802.11 Telecons (<Month>)” entry, 3) select “C/LM/WG802.11 Attendance” entry, 4) click “<UHR SG > conference call that you are attending.
	+ If you are unable to record your attendance contact Laurent Cariou (laurent.cariou@intel.com) and Ross Jian Yu (ross.yujian@huawei.com) for assistance
	+ Please ensure that the following information is listed correctly when joining the call:
		- "[voter status] First Name Last Name (Affiliation)"
* Agenda
	+ Chair reviews proposed agenda found in [11-22-1655r](https://mentor.ieee.org/802.11/dcn/22/11-22-1655-00-0uhr-uhr-sg-september-october-2022-teleconference-agendas.docx)0
	+ Discussion:
		- C: 1395 is still not ready.
		- The chair moves it out from the agenda.
	+ Agenda approved with unanimous consent.
* Announcements:
	+ None
* Submissions

Technical: M-AP

* + [11-22/1394r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1394-00-0uhr-virtual-bss-and-multi-ap-transmissions.pptx) Virtual BSS And Multi-AP Transmissions Vamadevan Namboodiri (Samsung)
		- C: Is V-BSSID different with BSSID? then need to be defined newly?
		- A: I would say yes. Could be different IDs.
		- C: Slide 5, is the concept similar as MBSSID we currently have. Different APs belong to the same group?
		- A: I would say yes.
		- C: How do you manage the AID assignment?
		- A: same AID within the VBSS or each AP has its own AID, needs further study.
		- C: you mention each STA can connect to one or more achor AP? For me it looks one STA has multi-link.
		- A: you are right. Each STA can be connected to different anchor AP. Can decide the optimum link, can stay with the best.
		- C: the C-AP looks like an AP MLD high-MAC.
		- C: one of the way we implement of course definitely wants to be based on MLO. We can discuss further. We discussed this during 11be. At that time, it is not clear. If we can have a unified framework, that’s better.
		- C: in 11be SFD, we have shared AP and sharing AP. What are the difference?
		- A: Sharing AP is the TXOP holder. Shared AP is the participant of the multi-AP transmission. Here it is different level.
		- C: It collects data in a centralized way. You assume everything would be hidden from the STA?
		- A: AP-to-AP table, for the beacons, some of them will be visiable, some of them will not be visiable.
		- C: will talk offline.
	+ [11-22/1530r1](https://mentor.ieee.org/802.11/dcn/22/11-22-1530-01-0uhr-multi-ap-coordination-for-next-generation-wi-fi.pptx) Multi AP coordination for next-generation Wi-Fi Rubayet Shafin (Samsung Research America)
		- C: slide 6, would it be like the best effort feature? What if AP2 also maintains the schedule to certain pattern?
		- A: If AP1 and AP2, before the TWT schedule, can do some coordination. This is the detail we can work on later.
		- C: In some situation, it cannot be supported by another AP. You have to think about scaling, number of APs.
		- A: they can try to minimize the overlapping.
		- C: does r-twt quiet STAs in its BSS today ? I thought you just stop your tx before the start.
		- A: it is just some initial idea. AP2 may be kind enough to set its quiet interval for its own BSS.
		- C: Related to the same slide, if AP1 sets a TWT, if AP2 already has a TWT. Since AP2 at that time, AP2 is transmitting or receiving at the same time. Is there some way to monitor and force to clear the TWT SP?
		- A: If STA2 can figure out which OBSS it gets interference from. There is existing method to do that. Another way, if AP 1 and AP2 coordinate how they set up the TWT. Then this is also happening. STA2 doesn’t need to report or monitor anything.
		- C: slide 3, if AP1 sends something to its own STA it will cause interference to STA2. My question, this is CSMA/CA in 11 system. If STA2 communites with AP2 in one link, then AP1 will not use the same link?
		- A: The interference power may be below the threshold.
		- C: I assume for this neighbor BSS. We should add some role. Let’s say AP1 has r-TWT SP. AP2 should respect AP1’s r-TWT SP, at lest for some STAs that are near AP1. We need to add some rule.
		- C: Are the APs (e.g., AP1 and AP2) time synchronized to each other or to a common source (C-AP)?
		- A: so far no assumptions.
		- C: it would be interesting to see how you coordinate without time synchronization.
	+ [11-22/1556r1](https://mentor.ieee.org/802.11/dcn/22/11-22-1556-01-0uhr-multi-ap-coordination-for-low-latency-traffic-delivery.pptx) Multi-AP Coordination for Low Latency Traffic Delivery Liuming Lu (OPPO)
		- C: slide 11, for step 1, the STAs obtain the info from inter-BSS PPDU. From this angle, are you assuming the two APs have the same primary channel?
		- A: yes.
		- C: what extent is this already achievable with 11aa?
		- A: maybe current measurement technologies can be used, but further specification needs to be done.
		- C: slide 6, I agree low latency is important. System capacity is also required. You focus on channel access mechanism. If only one latency, AP1 and AP2 can split the channel. If AP1 and AP2 want to improve system capacity, they should use high bandwidth. Do you think of other mechanisms?
		- A: some modes are multi-AP coordination. But the overhead may be high. We can think of a multi-AP coordination with low overhead.
		- A: offline discussion first, will defer the SP.

Use cases and requirements

* + [11-22/1519r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1519-00-0uhr-requirements-of-low-latency-in-uhr.pptx) Requirements of Low Latency in UHR Simon Tongxin Shu (Huawei)
		- C: MLO is not solving all the problem, that’s true. Why CSMA/CA parameter is related with AI and should be standardized?
		- A: In the standard, CSMA/CA has been designed in a simple way and easy to be implemented. However, with AIML, we can dynamically save the channel condition, and find a better value for the contention window.
		- C: not neccesarily. The AP could advertise the EDCA parameters. What do you expect to be standardized?
		- C: this has been discussed in AIML TIG. There could be a set of CWs to choose. Like the research work in slide 9. That’s one possible way.
		- A: we need to be very careful, for the legacy devices. We can discuss offline.
		- C: Slide 5, shows below 1ms latency, if I look at the blue line, it is like below 0.5 ms. If I look at slide 8, it shows like 2~6 ms. If I look at slide 9, it shows 2s latency. I see a big variation in terms of delay numbers.
		- A: the calculation methods are different.
		- C: for AIML technique, we need to look at the overhead of training and complexity.
		- A: like for this research work in slide 8, they simply train the model from the scratch. The overhead will not be an issue. If the tranining is on the fly, yes, need to consider the overhead.
		- C: When you talk about system delay, compard with the other three mechanism? Do they consider all enhanced STAs? Or some are legacy some are enhanced, a mixed?
		- A: they are assuming all the STAs are of the same type. No mixture.
		- C: We have legacy devices. More realistic simulation would be the mixed mode.
		- A: that’s definitely a good point to further look into.
		- C: it seems that three graphs adress 3 different delays - ETE, channel access delay and transmission delay.... which one is the main target for optimization?
		- A: transmission dealy is the main target.
* Adjourned at 11:50 ET

# 2nd Conf. Call: Oct 24 Monday (10:00–12:00 ET)

* The Chair, Laurent Cariou (Intel), calls the meeting to order.
* IEEE 802 and 802.11 IPR policy and procedure
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* Attendance reminder.
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	+ Discussion:
		- C: I also have a proposal on PAR with DCN 11-22/1750r0
		- The chair added it to the agenda.
	+ Agenda approved with unanimous consent.
* Announcements:
	+ None
* Submissions

General views and band support category:

* + [11-22/1395r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1395-00-0uhr-thoughts-on-high-frequency-band.pptx), Thoughts on high frequency band, Myeongjin Kim
		- C: slide 6, agree we need to cover CFO. For slide 8, the subcarrier spacing is correct. During the L-STF, every 4 subcarriers are occupied, so we achieve the goals. The CFO is really not a problem.
		- C: that depends on the implementation algorithm..
		- C: use L-STF to get coarse CFO correction.
		- C: we can further talk offline.
		- C: for legacy device, for mmwave, we don’t need to consider backward compatibility, otherwise, it will complicate the design.
		- C: Should reduce the bandwidth, and should try to reuse the current design. Agree with the previous commenter, need to consider coexistence but not backward compatibility.
		- A: let’s have further discussion on mmwave.
		- C: slide 8, which guard intervals do you think are the appropriate value?
		- A: we need to decide based on simulation. Could be shorter. For example, 11ay consider much shorter guard interval.

SP#1 Do you agree that mmWave operation is a promising feature for UHR?

* This SP is for information gathering.

Result: Y/N/A/Need more information/No answer: 52/18/17/23/40

* + [11-22/1518r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1518-00-0uhr-802-11-uhr-sg-proposed-par.docx), 802.11 UHR SG Proposed PAR, Ming Gan
		- C: regarding latency, in 11be PAR and before, 5ms was an example as a requirement. Is this 10ms higher than before?
		- A: these two number are from RTA report. It elaborates many use cases. As you mentioned, in 11be draft, it has 5ms. I think that is a little bit agreesive. Maybe we can keep the same number. It depends on the group’s opinion. But don’t need to put it in the scope.
		- C: last paragraph about multi-AP, you only mentioned interference reduction in mmwave?
		- A: should add a comma after interference reduction, reducing interference is for all bandwidth.
		- C: regarding page 3 scope, 5.2.b, you mention aggregated Tput, what do you mean by this?
		- A: we don’t have definiation here. In prevous PAR, there exists the same term. That’s the total Tput of a device if it has multiple links.
		- C: the SNR is measured at PHY?
		- A: right.
		- C: page 4, you talk about worst case latency, is that for AP to AP only? Or also between P2P?
		- A: we can still consider them even if we don’t have text in the PAR.
		- C: for scope, you mention at least two times improvement for aggregated throughput, what tech do you think can achieve that? Beamformig with 16 antennas?
		- A: I don’t think beamformig with 16 antennas can achieve. Maybe use larger bandwidth. We don’t exclude other methods.
		- C: that feels questionable to me.
		- C: from the first round discussion of the peer to peer support, it is very important. I don’t think multi-AP coordination can cover that part.
		- A: maybe we can have more offine discussion.
		- C: you metion in your last paragraph, we should consider to improve Tput and latency even for sub 7GHz wave. Maybe we need to make it more.
		- A: yes, should add a comma.
		- C: maybe insert "a)" and "b)".
		- C: it is a good start regarding Tput and latency. We can add further details on the candidate. Or explain it a little bit to reduce the scope.
		- A: this is a start. If people have any comment or contact me. A note would be good to me.

Use cases and requirements category

* + [11-22/1528r1](https://mentor.ieee.org/802.11/dcn/22/11-22-1528-01-0uhr-enhanced-device-connectivity-with-robust-qos-support.pptx), Enhanced Device Connectivity with Robust QoS Support, Rubayet Shafin
		- C: page 3, you mention prevoius shared information to enable fast session setup, do you have any details?
		- A: this is just idea, no detail. You can record what is the SSID, bandwidth etc., to make sure this is the one I was connected before.
		- C: you need to guarantee the other client is also on the same channel? What if the AP does the channel switch? What if the other client is working on the AP’s operating channel.
		- C: do you want to skip discovery steps or setup steps?
		- C: maybe can do offline discussion.
	+ [11-22/1649r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1649-00-0uhr-mimo-interference-suppression-for-enhanced-reliability.pptx), MIMO interference suppression for enhanced reliability, Daniel Verenzuela
		- C: slide 8, the interference is from the OBSS legacy STA is unpredicitble. The curve you show is how much you gain when the interference exists. What’s the loss if the interference doesn’t exist?
		- A: we also take a look at that part but doesn’t show in the slides. There is no loss.
		- C: is the overhead of increasing LTFs, that need to be studied as well in terms of overall Tput.
		- A: yes. It depends on channel conditions.
		- C: slide 8, in case of number of LTFs, are you applying 2 by 6 P matrix to LTF?
		- A: yes
		- C: in the current EHT, we allow up to 4 LTFs for 2SS? So you propose to increase number of LTF to any number? Is that your proposal?
		- A: that would be a way of operating.
		- C: Slide 6, you are saying there could interference from NR-U. In the simulation from slide 7-9, you assume that’s from the legacy.
		- A: yes, I assume 11n. Basically, it could be any signal.
		- C: you assume one source of interfenrece?
		- A: yes.
		- C: do you think more number of LTFs would be good enough if there are multiple sources of interference?
		- A: limited by the number of Rx antennas, number of DoFs. If we allow the device to have larger dimension, should be enough for more sources.
		- C: if there are multiple interference, the interference is not that directional.
		- A: yes, good point.
		- C: which band is used for the simulation?
		- A: 5GHz
		- C: can it be used for mmwave?
		- A: mmwave, you have more directional signals. Should be possible if have large enough number of Rx antennas.
		- C: The Tx has 2SS, 6 LTFs, how does the Rx estimate the channel during LTFs?
		- A: The Rx will estimate the 2SS and decode the data. The other four LTFs are used to estimate the covariance matrix of the interference.
		- C: you need the interference to be present during the LTF symbols.
		- A: need to be present, but not need to be synchronized. May need to have some estimation within the PPDU. That is not part of the simulation results.
		- C (in chat): page 6, difference to MMSE-IRC for MU-MIMO receiver?
	+ [11-22/1790r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1790-00-0uhr-green-ap-and-resilience-requirements-for-home-networks.pptx), Green AP and resilience requirements for home networks, Amelia Andersdotter
		- No comments or questions.
	+ [11-22/1750r0](https://mentor.ieee.org/802.11/dcn/22/11-22-1750-00-0uhr-project-authorization-request-proposal-for-802-11-uhr-sg.docx), Project Authorization Request Proposal for 802.11 UHR SG, Tuncer Baykas (Ofinno)
		- C: similiar as Ming’s contribution. Hopefully we can converge quickly. Whilst I don’t think the PAR should consider potential techs. This is not good in 11be PAR. It gives people feeling we should work on all of them. It also opens discussion on R1 and R2. It is a waste of time. In 11n/ac/ax PAR, no techs were mentioned. We should follow this. We just leave poetenial techs open. Task groups can decide what to be done.
* AoB

Chair: will send an email calling for proposals.

* Adjourned at 11:52 ET

# Appendix

* + Attendee List for 1st Conf. Call: Sep 26 Monday (10:00–12:00 ET)

Breakout Timestamp Name Affiliation

UHR 9/26 Aio, Kosuke Sony Corporation

UHR 9/26 Ajami, Abdel Karim Qualcomm Incorporated

UHR 9/26 Andersdotter, Amelia Sky Group/Comcast

UHR 9/26 Anwyl, Gary MediaTek Inc.

UHR 9/26 Asterjadhi, Alfred Qualcomm Incorporated

UHR 9/26 Cariou, Laurent Intel

UHR 9/26 Carney, William Sony Group Corporation

UHR 9/26 Chen, You-Wei MediaTek Inc.

UHR 9/26 CHENG, yajun Xiaomi Communications Co., Ltd.

UHR 9/26 Chitrakar, Rojan Panasonic Asia Pacific Pte Ltd.

UHR 9/26 Chu, Liwen NXP Semiconductors

UHR 9/26 CHUN, JINYOUNG LG ELECTRONICS

UHR 9/26 Chung, Chulho SAMSUNG

UHR 9/26 Coffey, John Realtek Semiconductor Corp.

UHR 9/26 Dong, Xiandong Xiaomi Inc.

UHR 9/26 Erkucuk, Serhat Ofinno

UHR 9/26 Fan, Shuang ZTE Corporation

UHR 9/26 Fang, Yonggang MediaTek Inc.

UHR 9/26 Fischer, Matthew Broadcom Corporation

UHR 9/26 Fujimori, Yuki Canon Research Centre France

UHR 9/26 Gorthi, Hemamali Infineon Technologies

UHR 9/26 Grigat, Michael Deutsche Telekom AG

UHR 9/26 Gu, Xiangxin Unisoc

UHR 9/26 Hamilton, Mark Ruckus/CommScope

UHR 9/26 Han, Jonghun SAMSUNG

UHR 9/26 Handte, Thomas Sony Group Corporation

UHR 9/26 Henry, Jerome Cisco Systems, Inc.

UHR 9/26 Hervieu, Lili Cable Television Laboratories Inc. (CableLabs)

UHR 9/26 Hu, Shengquan MediaTek Inc.

UHR 9/26 Huang, Lei Huawei International Pte Ltd

UHR 9/26 Huq, Kazi Mohammed Saidul Ofinno

UHR 9/26 Jang, Insun LG ELECTRONICS

UHR 9/26 Kerry, Stuart OK-Brit; Self

UHR 9/26 Kim, Jeongki Ofinno

UHR 9/26 Kim, Myeong-Jin SAMSUNG

UHR 9/26 Kishida, Akira Nippon Telegraph and Telephone Corporation (NTT)

UHR 9/26 Koundourakis, Michail Samsung Cambridge Solution Centre

UHR 9/26 Lanante, Leonardo Ofinno

UHR 9/26 Lee, Wookbong SAMSUNG

UHR 9/26 Li, Yapu Guangdong OPPO Mobile Telecommunications Corp.,Ltd

UHR 9/26 Liu, Der-Zheng Realtek Semiconductor Corp.

UHR 9/26 Liu, Jianhan MediaTek Inc.

UHR 9/26 Lu, Liuming Guangdong OPPO Mobile Telecommunications Corp.,Ltd

UHR 9/26 Lubar, Daniel Relay Services

UHR 9/26 Ma, Yunsi HiSilicon (Shanghai) Technologies Co., LTD.

UHR 9/26 MAO, ZHI Huawei Technologies Co., Ltd

UHR 9/26 Memisoglu, Ebubekir Istanbul Medipol University; Vestel

UHR 9/26 Montemurro, Michael Huawei Technologies Co., Ltd

UHR 9/26 Motozuka, Hiroyuki Panasonic Holdings Corporation

UHR 9/26 Naik, Gaurang Qualcomm Incorporated

UHR 9/26 Namboodiri, Vamadevan SAMSUNG ELECTRONICS

UHR 9/26 Nezou, Patrice Canon Research Centre France

UHR 9/26 Ng, Boon Loong Samsung Research America

UHR 9/26 Ozbakis, Basak VESTEL Electronics Corp.

UHR 9/26 Palayur, Saju Maxlinear Inc.

UHR 9/26 Park, Minyoung Intel

UHR 9/26 Park, Sungjin senscomm

UHR 9/26 Patil, Abhishek Qualcomm Incorporated

UHR 9/26 Patwardhan, Gaurav Hewlett Packard Enterprise

UHR 9/26 Petrick, Albert InterDigital, Inc.

UHR 9/26 Pettersson, Charlie Ericsson AB

UHR 9/26 Qi, Yue Samsung Research America

UHR 9/26 Quan, Yingqiao Unisoc

UHR 9/26 RISON, Mark Samsung Cambridge Solution Centre

UHR 9/26 Rosdahl, Jon Qualcomm Technologies, Inc.

UHR 9/26 Ryu, Kiseon NXP Semiconductors

UHR 9/26 Schelstraete, Sigurd MaxLinear

UHR 9/26 Shafin, Rubayet Samsung Research America

UHR 9/26 Sosack, Robert Molex Incorporated

UHR 9/26 Stanley, Dorothy Hewlett Packard Enterprise

UHR 9/26 Tanaka, Yusuke Sony Group Corporation

UHR 9/26 Taori, Rakesh Infineon Technologies

UHR 9/26 Val, Inaki MaxLinear, Inc.

UHR 9/26 Varshney, Prabodh Nokia

UHR 9/26 Verenzuela, Daniel Sony Corporation

UHR 9/26 Verma, Lochan Apple Inc.

UHR 9/26 VIGER, Pascal Canon Research Centre France

UHR 9/26 Wang, Chao Chun MediaTek Inc.

UHR 9/26 Wang, Hao Tencent

UHR 9/26 Wang, Lei Futurewei Technologies

UHR 9/26 Wullert, John Peraton Labs

UHR 9/26 Yano, Kazuto Advanced Telecommunications Research Institute International (ATR)

UHR 9/26 Yee, James MediaTek Inc.

UHR 9/26 Yi, Yongjiang Spreadtrum Communication USA, Inc

UHR 9/26 Yoon, Kangjin Meta

UHR 9/26 Yu, Jian Huawei Technologies Co., Ltd

UHR 9/26 Zuniga, Juan Carlos Cisco Systems, Inc.

* + Attendee List for 2nd Conf. Call: Oct 24 Monday (10:00–12:00 ET)

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| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| UHR | 10/24 | Aboulmagd, Osama | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Ajami, Abdel Karim | Qualcomm Incorporated |
| UHR | 10/24 | Andersdotter, Amelia | Sky Group/Comcast |
| UHR | 10/24 | Ansley, Carol | Cox Communications Inc. |
| UHR | 10/24 | Anwyl, Gary | MediaTek Inc. |
| UHR | 10/24 | Asai, Yusuke | NTT |
| UHR | 10/24 | Asterjadhi, Alfred | Qualcomm Incorporated |
| UHR | 10/24 | Baek, SunHee | LG ELECTRONICS |
| UHR | 10/24 | Bankov, Dmitry | IITP RAS |
| UHR | 10/24 | Baykas, Tuncer | Ofinno |
| UHR | 10/24 | Bluschke, Andreas | Signify |
| UHR | 10/24 | Bredewoud, Albert | Broadcom Corporation |
| UHR | 10/24 | Carney, William | Sony Group Corporation |
| UHR | 10/24 | Chappell, Matthew | Cox Communications Inc. |
| UHR | 10/24 | CHENG, yajun | Xiaomi Communications Co., Ltd. |
| UHR | 10/24 | Chng, Shi Baw | BAWMAN LLC |
| UHR | 10/24 | Choi, Jinsoo | LG ELECTRONICS |
| UHR | 10/24 | CHUN, JINYOUNG | LG ELECTRONICS |
| UHR | 10/24 | Chung, Chulho | SAMSUNG |
| UHR | 10/24 | DeLaOlivaDelgado, Antonio | InterDigital, Inc. |
| UHR | 10/24 | Dong, Xiandong | Xiaomi Communications Co., Ltd. |
| UHR | 10/24 | Erkucuk, Serhat | Ofinno |
| UHR | 10/24 | Fan, Shuang | ZTE Corporation |
| UHR | 10/24 | Fang, Yonggang | MediaTek Inc. |
| UHR | 10/24 | Ghosh, Chittabrata | Meta |
| UHR | 10/24 | Grigat, Michael | Deutsche Telekom AG |
| UHR | 10/24 | Gu, Xiangxin | Unisoc |
| UHR | 10/24 | Haider, Muhammad Kumail | Facebook |
| UHR | 10/24 | hamidouche, kenza | Apple Inc. |
| UHR | 10/24 | Hamilton, Mark | Ruckus/CommScope |
| UHR | 10/24 | Handte, Thomas | Sony Group Corporation |
| UHR | 10/24 | Henry, Jerome | Cisco Systems, Inc. |
| UHR | 10/24 | Hernandez, Marco | National Institute of Information and Communications Technology (NICT) |
| UHR | 10/24 | Hervieu, Lili | Cable Television Laboratories Inc. (CableLabs) |
| UHR | 10/24 | Hsu, Ostrovsky | Xiaomi Communications Co., Ltd. |
| UHR | 10/24 | Hu, Chunyu | Facebook |
| UHR | 10/24 | Huang, Lei | Huawei International Pte Ltd |
| UHR | 10/24 | Huang, Po-Kai | Intel |
| UHR | 10/24 | Huq, Kazi Mohammed Saidul | Ofinno |
| UHR | 10/24 | Inohiza, Hirohiko | Canon |
| UHR | 10/24 | Jeon, Eunsung | SAMSUNG ELECTRONICS |
| UHR | 10/24 | Jung, Insik | LG ELECTRONICS |
| UHR | 10/24 | Kakani, Naveen | Qualcomm Incorporated |
| UHR | 10/24 | kamath, Manoj | Broadcom Corporation |
| UHR | 10/24 | Kandala, Srinivas | SAMSUNG |
| UHR | 10/24 | Kim, Jeongki | Ofinno |
| UHR | 10/24 | Kim, Myeong-Jin | SAMSUNG |
| UHR | 10/24 | Kishida, Akira | Nippon Telegraph and Telephone Corporation (NTT) |
| UHR | 10/24 | Klein, Arik | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Koundourakis, Michail | Samsung Cambridge Solution Centre |
| UHR | 10/24 | Lalam, Massinissa | SAGEMCOM SAS |
| UHR | 10/24 | Lanante, Leonardo | Ofinno |
| UHR | 10/24 | Lee, Wookbong | SAMSUNG |
| UHR | 10/24 | Levitsky, Ilya | IITP RAS |
| UHR | 10/24 | Li, Yapu | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| UHR | 10/24 | Lorgeoux, Mikael | Canon Research Centre France |
| UHR | 10/24 | Lou, Hanqing | InterDigital, Inc. |
| UHR | 10/24 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| UHR | 10/24 | Lubar, Daniel | Relay Services |
| UHR | 10/24 | Ma, Yunsi | HiSilicon (Shanghai) Technologies Co., LTD. |
| UHR | 10/24 | MAO, ZHI | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Martinez Vazquez, Marcos | MaxLinear Corp |
| UHR | 10/24 | McCann, Stephen | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Memisoglu, Ebubekir | Istanbul Medipol University; Vestel |
| UHR | 10/24 | Montreuil, Leo | Broadcom Corporation |
| UHR | 10/24 | Naguib, Ayman | Apple, Inc. |
| UHR | 10/24 | Naik, Gaurang | Qualcomm Incorporated |
| UHR | 10/24 | Namboodiri, Vamadevan | SAMSUNG ELECTRONICS |
| UHR | 10/24 | Nezou, Patrice | Canon Research Centre France |
| UHR | 10/24 | Ng, Boon Loong | Samsung Research America |
| UHR | 10/24 | Ozbakis, Basak | VESTEL Electronics Corp. |
| UHR | 10/24 | Palayur, Saju | Maxlinear Inc. |
| UHR | 10/24 | Park, Sungjin | senscomm |
| UHR | 10/24 | Patil, Abhishek | Qualcomm Incorporated |
| UHR | 10/24 | Patwardhan, Gaurav | Hewlett Packard Enterprise |
| UHR | 10/24 | Petrick, Albert | InterDigital, Inc. |
| UHR | 10/24 | Pettersson, Charlie | Ericsson AB |
| UHR | 10/24 | Qi, Yue | Samsung Research America |
| UHR | 10/24 | Quan, Yingqiao | Unisoc |
| UHR | 10/24 | Ratnam, Vishnu | Samsung Research America |
| UHR | 10/24 | Ryu, Kiseon | NXP Semiconductors |
| UHR | 10/24 | Sand, Stephan | German Aerospace Center (DLR) |
| UHR | 10/24 | Schelstraete, Sigurd | MaxLinear |
| UHR | 10/24 | Shafin, Rubayet | Samsung Research America |
| UHR | 10/24 | Shen, Andy | Futurewei Technologies |
| UHR | 10/24 | Sosack, Robert | Molex Incorporated |
| UHR | 10/24 | Sun, Bo | ZTE Corporation |
| UHR | 10/24 | Sun, Yanjun | Qualcomm Incorporated |
| UHR | 10/24 | Tanaka, Yusuke | Sony Group Corporation |
| UHR | 10/24 | Taori, Rakesh | Infineon Technologies |
| UHR | 10/24 | Tsodik, Genadiy | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Val, Inaki | MaxLinear, Inc. |
| UHR | 10/24 | Varshney, Prabodh | Nokia |
| UHR | 10/24 | Verenzuela, Daniel | Sony Corporation |
| UHR | 10/24 | Wang, Chao Chun | MediaTek Inc. |
| UHR | 10/24 | Wang, Hao | Tencent |
| UHR | 10/24 | Wu, Kanke | Qualcomm Incorporated |
| UHR | 10/24 | Wullert, John | Peraton Labs |
| UHR | 10/24 | Yamada, Ryota | SHARP CORPORATION |
| UHR | 10/24 | Yan, Aiguo | Zeku |
| UHR | 10/24 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| UHR | 10/24 | Yi, Yongjiang | Spreadtrum Communication USA, Inc |
| UHR | 10/24 | Yu, Jian | Huawei Technologies Co., Ltd |
| UHR | 10/24 | Zaev, Danila | Apple Inc. |
| UHR | 10/24 | Zhang, Jiayi | Ofinno |
| UHR | 10/24 | Zhou, Lei | H3C Technologies Co., Limited |
| UHR | 10/24 | Zuniga, Juan Carlos | Cisco Systems, Inc. |