IEEE P802.11
Wireless LANs

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| IEEE 802.11Minutes of TGax Teleconference from January to February 2020 |
| Date: 2020-03-03 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yasuhiko Inoue | NTT | * 1. Hikari-no-oka, Yokosuka, Kanagawa 239-0847 Japan
 | +81 46 859 5097 | yasu.inoue.h2k5@gmail.com |
|  |  |  |  |  |

Abstract

This document contains the minutes from the TGax conference calls from January to February 2020.

Revision History:

* R0: Initial version.

Minutes from TGax teleconference on January 30, 2020.

* R1:

Minutes from TGax teleconference on February 20, 2020

* R2:

Included the minutes from TGax teleconference on February 27, 2020

**Thursday, January 30th, 2020, TGax Teleconference (10:00 - 12:00 ET)**

1. **The meeting called to order at 10:03 AM (ET) by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
	1. Introduction of TGax chairperson and secretary.
	2. The agenda document 11-20/0250r0 is on the server.
2. **Agenda Setting**
	1. Proposed agenda for the TGax Teleconference on January 30th, 2020.
		1. Call meeting to order
		2. Attendance Reminder – Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
		3. Comment Assignment – Robert Stacey and All
			1. https://mentor.ieee.org/802.11/dcn/20/11-20-0241-00-00ax-sa1-comments-on-tgax-d6-0.xlsx
		4. AoB
		5. Adjourn
	2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
		1. **The agenda for the TGax teleconference on January 30th, 2020 is approved.**
3. **Announcements**
	1. Chair asked the attendees to announce name and the affiliation when addressing the group for the first time during a meeting slot.
	2. Attendance: Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
	3. Chair asked people to put the cellphone mute of switch off.
4. **IEEE 802 and 802.11 IPR policy and procedure**
	1. Patent Policy:
		1. Participants have a duty to inform the IEEE - done.
			* Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
			* Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims
		2. Ways to inform IEEE: - done
			* 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
			1. Chair asked if anyone in this meeting is aware of any potentially essential patents.
				1. **No potentially essential patent reported.**
		3. Other guidelines for IEEE WG meetings – done
* All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
	+ Don’t discuss the interpretation, validity, or essentiality of patents/patent claims.
	+ Don’t discuss specific license rates, terms, or conditions.
	+ Don’t discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
	+ Don’t discuss the status or substance of ongoing or threatened litigation.
	+ Don’t be silent if inappropriate topics are discussed … do formally object.
		1. Patent-related information – done

The patent policy and the procedures used to execute that policy are documented in the:

* + - *IEEE-SA Standards Board Bylaws* ([http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6](http://standards.ieee.org/develop/policies/bylaws/sect6-7.html%236))
		- *IEEE-SA Standards Board Operations Manual* ([http://standards.ieee.org/develop/policies/opman/sect6.html#6.3](http://standards.ieee.org/develop/policies/opman/sect6.html%236.3))

 Material about the patent policy is available at

 [*http://standards.ieee.org/about/sasb/patcom/materials.html*](http://standards.ieee.org/about/sasb/patcom/materials.html)

* + 1. Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct - done
		2. Participants in the IEEE-SA “individual process” shall act independently of others, including employers - done
		3. IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints - done
1. **Comment Assignment**
	1. Robert Stacey (Intel), the technical editor of TGax, has sent out the initial comment assignment.
		1. The main topic is unassigned comments.

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| --- | --- |
| **Assignee** | **Count of CID** |
| **Abhishek Patil** | **40** |
| Multi-BSS | 11 |
| UORA | 9 |
| BSS color | 20 |
| **Alfred Asterjadhi** | **44** |
| TWT | 20 |
| HE BSS operation | 1 |
| Queue Size | 4 |
| 6 GHz in band discovery | 19 |
| **Bo Sun** | **71** |
| (blank) | 70 |
| UWB coex | 1 |
| **Brian Hart** | **5** |
| PHY HE-SIG-B | 5 |
| **Editor** | **126** |
| Editorials | 126 |
| **George Cherian** | **31** |
| HE ack procedure | 31 |
| **Jarkko Kneckt** | **3** |
| OM Control | 1 |
| TSPEC | 2 |
| **Kaiying Lv** | **4** |
| QTP | 4 |
| **Laurent Cariou** | **25** |
| Spatial Reuse | 4 |
| NDP feedback | 2 |
| OPS | 3 |
| MU EDCA | 11 |
| RNR | 2 |
| 6 GHZ out of band discovery | 3 |
| **Liwen Chu** | **15** |
| A-MPDU operation | 15 |
| **Matt Fischer** | **5** |
| Fragment Flush | 1 |
| Inactive subchannels | 4 |
| **Menzo Wentink** | **12** |
| Sounding protocol | 12 |
| **Ming Gan** | **4** |
| Fragmentation | 4 |
| **Osama Aboul-Magd** | **18** |
| MIB | 12 |
| PICS | 6 |
| **Po-Kai Huang** | **15** |
| MU-RTS/CTS | 4 |
| NAV | 7 |
| SMPS | 4 |
| **Xiaogang Chen** | **3** |
| PHY tx/rx procedures | 3 |
| **Yongho Seok** | **1** |
| UL MU Power Capabilities | 1 |
| **Youhan Kim** | **5** |
| PHY Tx mask | 5 |
| **Zhou Lan** | **2** |
| BQR | 2 |
| **(blank)** | **138** |
| (blank) | 60 |
| HT Control | 5 |
| PHY Intro | 3 |
| HE BSS operation | 5 |
| Annex G | 4 |
| MU cascading | 3 |
| 6 GHz channelization | 13 |
| 6 GHz CCA threshold | 1 |
| Preamble puncturing | 7 |
| MAC intro | 3 |
| 6 GHz capabilities | 23 |
| PHY RX/TXVECTOR | 11 |
| **Jonathan Segev** | **2** |
| FTM | 2 |
| **Grand Total** | **569** |

* 1. Most of the comments are assigned to volunteers.
	2. Robert to share the updated comment sheet.
		1. https://mentor.ieee.org/802.11/dcn/20/11-20-0241-01-00ax-sa1-comments-on-tgax-d6-0.xlsx
1. **AoB**
	1. Chair asked people to make use of the conference call.
	2. TGax CRC Ad hoc meeting:
		1. People agreed that it will be difficult to schedule the ad hoc meeting since TGbe will have one day ad hoc before the March meeting and there will be another meeting of an industry alliance.
2. **Adjourn**
	1. TGax teleconference adjourned @ 11:03 (ET).
3. **List of Attendees**

|  |  |
| --- | --- |
| Name | Affiliation |
| Osama Aboul-Magd | Huawei Technologies |
| Alfred Asterjadhi | Qualcomm |
| Xiaogang Chen | Intel |
| Po-Kai Huang | Intel |
| Yasuhiko Inoue | NTT |
| Youhan Kim | Qualcomm |
| Jarkko Kneckt | Apple |
| Patrice Nezou | Canon Research |
| Abhishek Patil | Qualcomm |
| Al Petrick | InterDigital |
| Mark Rison | Samsung |
| Sigurd Schelstraete | Quantenna |
| Robert Stacey | Intel |
| Bo Sun | ZTE |
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**Thursday, February 20, 2020, TGax Teleconference (20:00 - 22:00 ET)**

1. **The meeting called to order at 20:05 (ET) by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
	1. Introduction of TGax .
	2. The agenda document 11-20/0346r0 is on the server.
2. **Agenda Setting**
	1. Proposed agenda for the TGax Teleconference on February 20, 2020.
		1. Call meeting to order
		2. Attendance Reminder – Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
		3. [**https://mentor.ieee.org/802.11/dcn/20/11-20-0303-00-00ax-cr-for-mu-rts-cts.docx**](https://mentor.ieee.org/802.11/dcn/20/11-20-0303-00-00ax-cr-for-mu-rts-cts.docx)
		4. [**https://mentor.ieee.org/802.11/dcn/20/11-20-0304-00-00ax-cr-for-nav.docx**](https://mentor.ieee.org/802.11/dcn/20/11-20-0304-00-00ax-cr-for-nav.docx)
		5. [**https://mentor.ieee.org/802.11/dcn/20/11-20-0305-00-00ax-cr-for-smps.docx**](https://mentor.ieee.org/802.11/dcn/20/11-20-0305-00-00ax-cr-for-smps.docx)
		6. AoB
		7. Adjourn
	2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
		1. **The agenda for the TGax teleconference on February 20, 2020 is approved.**
3. **Announcements**
	1. Chair asked the attendees to announce name and the affiliation when addressing the group for the first time during a meeting slot.
	2. Attendance: Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
	3. Chair asked people to put the cellphone mute of switch off.
	4. Chair indicated that related motions will be considered during the next teleconference.
4. **IEEE 802 and 802.11 IPR policy and procedure**
	1. Patent Policy:
		1. Participants have a duty to inform the IEEE - done.
			* Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
			* Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims
		2. Ways to inform IEEE: - done
			* 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
			1. Chair asked if anyone in this meeting is aware of any potentially essential patents.
				1. **No potentially essential patent reported.**
		3. Other guidelines for IEEE WG meetings – done
* All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
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	+ Don’t discuss specific license rates, terms, or conditions.
	+ Don’t discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
	+ Don’t discuss the status or substance of ongoing or threatened litigation.
	+ Don’t be silent if inappropriate topics are discussed … do formally object.
		1. Patent-related information – done

The patent policy and the procedures used to execute that policy are documented in the:

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		- *IEEE-SA Standards Board Operations Manual* ([http://standards.ieee.org/develop/policies/opman/sect6.html#6.3](http://standards.ieee.org/develop/policies/opman/sect6.html%236.3))

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* + 1. Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct - done
		2. Participants in the IEEE-SA “individual process” shall act independently of others, including employers - done
		3. IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints - done
1. **11-20/0305r2 – Po-Kai Huang**
	1. Resolutions to 3 CIDs were discussed – 24038, 24044, and 24367
	2. Proposed resolution to CID 24038 needs further discussion and input.
	3. No issues with the proposed resolution to CID 24044
	4. Proposed resolution to CID 24367 is discussed if normative text is needed or the proposed Note is sufficient.
	5. Changes discussed during the call will be included in a new revision.
2. **11-20/0303r1 – Po-Kai Huang**
	1. Resolutions to CIDs 24287, 24292, and 24362.
3. **11-20/0304r2 – Po=Kai Huang**
	1. Resolutions to CIDs 24119, 24120, 24225, 24226, 24232, 24269, 24270 were discussed
	2. No issues with resolutions to CIDs 24119, 24120. 24225, 24226, 24226, and 24259.
	3. CID 24232 is deferred for more discussion.
	4. CID 24270 🡪 need to check if PS-Poll is allowed.
4. **Adjourn**
	1. The teleconference was adjourned at 21:33 ET
5. **Attendance**

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| --- | --- |
| Name | Affiliation |
| Osama Aboul-Magd | Huawei Technologies |
| Alfred Asterjadhi | Qualcomm |
| Po-Kai Huang | Intel |
| Yasuhiko Inoue | NTT |
| Jarkko Kneckt | Apple |
| Abhishek Patil | Qualcomm |
| Chunyu Hu | Huawei Technologies |
| Tomoko Adachi | Toshiba |
| Ross YuJian | Huawei Technologies |
| Sean Coffey | RealTek |

**Thursday, February 27, 2020, TGax Teleconference (10:00 - 12:00 ET)**

1. **The meeting called to order at 10:04 (ET) by Osama Aboul-Magd (Huawei Technologies), the chairperson of 802.11 TGax.**
	1. Introduction of TGax .
	2. The agenda document 11-20/0361r0 is on the server.
2. **Agenda Setting**
	1. Proposed agenda for the TGax Teleconference on February 20, 2020.
		1. Call meeting to order
		2. Attendance Reminder – Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
		3. Motions related to submissions discussed last week:
			1. <https://mentor.ieee.org/802.11/dcn/20/11-20-0303-02-00ax-cr-for-mu-rts-cts.docx>
			2. <https://mentor.ieee.org/802.11/dcn/20/11-20-0304-03-00ax-cr-for-nav.docx>
			3. <https://mentor.ieee.org/802.11/dcn/20/11-20-0305-03-00ax-cr-for-smps.docx>
		4. CR Submissions
			1. <https://mentor.ieee.org/802.11/dcn/20/11-20-0360-00-00ax-proposed-resolutions-to-cids-24003-24005-24006-24008-and-24024.docx> - Osama Aboul-Magd
		5. AoB
		6. Adjourn
	2. Chair asked if there is any objection to proceed with this agenda. 🡪 No objection.
		1. **The agenda for the TGax teleconference on February 20, 2020 is approved.**
3. **Announcements**
	1. Chair asked the attendees to announce name and the affiliation when addressing the group for the first time during a meeting slot.
	2. Attendance: Please send an e-mail to Yasuhiko Inoue (yasu.inoue.h2k5@gmail.com) and/or Osama Aboul-Magd (Osama.aboulmagd@huawei.com)
	3. Chair asked people to put the cellphone mute of switch off.
	4. Chair indicated that related motions will be considered during the next teleconference.
4. **IEEE 802 and 802.11 IPR policy and procedure**
	1. Patent Policy:
		1. Participants have a duty to inform the IEEE - done.
			* Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
			* Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims
		2. Ways to inform IEEE: - done
			* 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
			1. Chair asked if anyone in this meeting is aware of any potentially essential patents.
				1. **No potentially essential patent reported.**
		3. Other guidelines for IEEE WG meetings – done
		4. All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
	* Don’t discuss the interpretation, validity, or essentiality of patents/patent claims.
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	* Don’t discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
	* Don’t discuss the status or substance of ongoing or threatened litigation.
	* Don’t be silent if inappropriate topics are discussed … do formally object.
		1. Patent-related information – done

The patent policy and the procedures used to execute that policy are documented in the:

* + - *IEEE-SA Standards Board Bylaws* ([http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6](http://standards.ieee.org/develop/policies/bylaws/sect6-7.html%236))
		- *IEEE-SA Standards Board Operations Manual* ([http://standards.ieee.org/develop/policies/opman/sect6.html#6.3](http://standards.ieee.org/develop/policies/opman/sect6.html%236.3))

 Material about the patent policy is available at

 [*http://standards.ieee.org/about/sasb/patcom/materials.html*](http://standards.ieee.org/about/sasb/patcom/materials.html)

* + 1. Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct - done
		2. Participants in the IEEE-SA “individual process” shall act independently of others, including employers - done
		3. IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints - done
1. **Motions related to the submissions discussed last week**
	1. **Po-Kai Huang (Intel) presented “11ax D6.0 SM Power Save,” based on the submission 11-20-0305-03.**
		1. Summary
			1. Resolutions for three CIDs are contained, CID 24038, 24044, 24367.
			2. Po-Kai presented updates based on the discussion last week.
		2. Discussion
			1. A participant asked for the changes from the previous version. 🡪 The changes are basically clarification and there is no technical change.
	2. **Po-Kai Huang (Intel) presented “11ax D6.0 MU-RTS/CTS,” based on the submission 11-20-0303-04.**
		1. Summary
			1. Resolutions for three CIDs related to the MU-RTS/CTS procedure are proposed.
				1. Relevant CIDs: 24287, 24292, 24362.
			2. Po-Kai presented updates based on the discussion last week.
		2. Discussion
			1. CID 24287: A participant requested an additional sentence for the resolution.
			2. CID 24362: Another participant asked for an update of the NOTE in the proposed text.
			3. CID 24792: Deferred for more discussion.
	3. **Po-Kai Huang (Intel) presented “11ax D6.0 NAV,” based on the submission 11-20-0304-05.**
		1. Summary
			1. Resolutions for seven CIDs related to the NAV are proposed.
				1. Relevant CIDs: 24119, 24120, 24225, 24226, 24232, 24269, 24270.
			2. Po-Kai presented updates based on the discussion last week.
		2. Discussion
			1. CID 24296: Deferred – need more time to review.
			2. CID 24270: Deferred – need more time to review.
	4. **Motions**
		1. **CR Motion #999: Move to accept resolutions to CIDs 24287, 24362 in doc 11-20/0303r5.**
			1. **Moved by Po-Kai Huang, Seconded by Liwen Chu.**
			2. **Discussion – No discussion.**
			3. **Result: Approved with unanimous consent.**
		2. **CR Motion #1000: Move to accept resolutions to CIDs 24119, 24120, 24225, 24226, 24232 in doc 11-20/0304r5.**
			1. **Moved by Po-Kai Huang, Seconded by Alfred Asterjadhi.**
			2. **Discussion – No discussion.**
			3. **Result: Approved with unanimous consent.**
		3. **CR Motion #1001: Move to accept resolutions to CIDs 24038, 24044, 24367 in doc 11-20/0305r3.**
			1. **Moved by Po-Kai Huang, Seconded by Alfred Asterjadhi.**
			2. **Discussion – No discussion.**
			3. **Result: Approved with unanimous consent.**
2. **Comment Resolution**
	1. **Osama Aboul-Magd (Huawei Technologies) presented “Proposed Resolutions to CIDs 24003, 24005, 24006, 24008, and 24024,” based on the submission 11-20-0360-00.**
		1. Summary
			1. Resolutions for the following CIDs related to the Annex G of the IEEE 802.11ax D6.0 and 802.11ax CA document are proposed.
				1. Relevant CIDs: 24003, 24005, 24006, 24008, and 24024.
		2. Discussion
			1. CID 24003: A participant asked for a clarification whether the resolution is for MU-RTS or basic Trigger. Another participant mentioned that MU BAR Trigger frames only solicit Block Ack frames. Hence can we make sure that is the case in Annex G.
			2. CID 24004: There was a comment that the Annex G does not differentiate subtypes of Block Ack. It should be noted here.
		3. Next Step
			1. Osama asked for the feedback for the proposed resolutions.
			2. Will have a motion to approve the resoltions.
3. **AoB**
	1. No other business.
4. **Adjournment**
	1. TGax CRC conference call adjourned @ 10:56 AM (ET)
5. **List of attendees**

|  |  |
| --- | --- |
| **Name** | **Affiliation** |
| Osama Aboul-Magd | Huawei Technologies |
| Alfred Asterjadhi | Qualcomm |
| Liwen Chu | NXP |
| Po-Kai Huang | Intel |
| Yasuhiko Inoue | NTT |
| Jarkko Kneckt | Apple |
| Abhishek Patil | Qualcomm |
| Al Petrick | InterDigital Communications |
| Mark Rison | Samsung |
| Sigurd Schelstraete | Quantenna Communications |
| Xiaofei Wang | InterDigital Communciations |

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