IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGax Teleconference Minutes, April 14th, 2016 | | | | |
| Date: 2016-04-28 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
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Abstract

This document contains minutes of TGax teleconference on April 14th, 2016.

# Teleconference on Thursday, April 14th, 2016, 10:00 – 12:00 (ET)

1. Meeting called to order by Osama Aboul-Magd (Huawei Technologies) @ 10:05 (ET).
2. IEEE 802 and 802.11 IPR Policy and Procedure
   1. Chair mentioned that we are operating under the IEEE 802 and 802.11 Policy and Procedure.
   2. Relevant documents
      1. IEEE Patent Policy - <http://standards.ieee.org/board/pat/pat-slideset.ppt>
      2. Patent FAQ - <http://standards.ieee.org/board/pat/faq.pdf>
      3. LoA Form - <http://standards.ieee.org/board/pat/loa.pdf>
      4. Affiliation FAQ - <http://standards.ieee.org/faqs/affiliationFAQ.html>
      5. Anti-Trust FAQ - <http://standards.ieee.org/resources/antitrust-guidelines.pdf>
      6. Ethics - <http://www.ieee.org/portal/cms_docs/about/CoE_poster.pdf>
      7. IEEE 802.11 Working Group Operartions Manual – <https://mentor.ieee.org/802.11/dcn/14/11-14-0629-14-0000-802-11-operations-manual.docx>
   3. Chair asked if there is any potentially essential patent that people are aware of.
      1. No potentially essential patent reported.
3. Agenda
   1. Proposed Agenda
      1. Call the meeting to order
      2. IEEE 802 and 802.11 IPR Policy and Procedure
      3. Annoucement
      4. Attendance (Please send an e.mail to Yasuhiko Inoue (inoue.yasuhiko@lab.ntt.co.jp) and/or Osama Aboul-Magd (osama.aboulmagd@huawei.com))
      5. Comment Assignment
      6. AOB
      7. Adjourn
   2. Approval of the agenda
      1. Chair asked if there is any discussion on the agenda.
      2. The agenda was approved.
4. Announcement
   1. Chair asked the attendees to state name and affiliation when speaking for the first tme.
5. Attendance
   1. Chair asked the attendees to send an email to Yasu ([inoue.yasuhiko@lab.ntt.co.jp](mailto:inoue.yasuhiko@lab.ntt.co.jp)) and/or Osama ([osama.aboulmagd@huawei.com](mailto:osama.aboulmagd@huawei.com)) to record attendance.
6. Comment Assignment
   1. Robert Stacy, the editor of TGax leads the discussion and assigned the comments section by section.
      1. Assignments are done by clause to clause.
   2. PHY section (Clause 26)
      1. 26 HE PHY
         1. 26.1 Introduction
            1. **26.1.1 Introduction to the HE PHY(25)**: Sameer Vermani
            2. **26.1.4 PPDU format (3)**: Sameer Vermani
         2. 26.2 PHY service interface
         3. 26.3 HE PHY
            1. 26.3.1 Introduction
            2. **26.3.2 HE PPDU format (20)**: Rui Cao
            3. 26.3.3 Transmitter block diagram
            4. 26.3.4 Overview of the PPDU encoding process
            5. 26.3.5 HE modulation and coding schemes (HE MCSs)
            6. **26.3.6 Timing-related parameters (25)**: Bin Tian
            7. **26.3.7 OFDMA and SU tone allocation (48)**: Jinsoo Choi
            8. 26.3.8 Mathematical description of signals
            9. **26.3.9 HE Preamble**

**26.3.9.3 L-STF (11)**: Rui Cao

**26.3.9.4 L-LTF (6)**: Rui Cao

**26.3.9.5 L-SIG (13)**: Rui Cao

**26.3.9.6 RL-SIG (1)**: Rui Cao

**26.3.9.7 HE-SIG-A (71)**: Ross Jian Yu

**26.3.9.8 HE-SIG-B (54)**: Kaushik Josiam, Rodd Jian Yu

**26.3.9.9 HT-STF (8)**: Eunsung Park

**26.3.9.10 HE-LTF (20)**: Ming Gan

* + - * 1. 26.3.10 Data field

**26.3.10.1 General (3)**: Sriram Venkateswaran

**26.3.10.2 Pre-FEC encoding process (5)**: Rui Cao

**26.3.10.3 SERVICE field (2)**: Ming Gan

**26.3.10.4 Coding (18)**: Sriram Venkateswaran

**26.3.10.5 Stream parser (4)**: Daewon Lee

**26.3.10.6 Segment parser (2)**: Daewon Lee

**26.3.10.7 BCC interleavers (3)**: Daewon Lee

**26.3.10.8 Constellation mapping (7)**: Sriram Venkateswaran

26.3.10.9 Space-time block coding

26.3.10.10 LDPC tone mapper

26.3.10.11 Segment deparser

**26.3.10.12 Pilot subcarriers (12)**: Bin Tian

**26.3.10.13 OFDM modulation (4)**: Rui Cao

26.3.10.14 Dual carrier modulation

**26.3.10.15 Packet extension (13)**: Yun Liu, Meilu Lin

* + - * 1. 26.3.11 Non-HT duplicate transmission
        2. **26.3.12 MU-MIMO (35)**: Sriram Venkateswaran
        3. 26.3.13 Transmit specification
        4. 26.3.14 HE transmit procedure
        5. 26.3.15 HE receive procedure
      1. 26.4 HE PLME
      2. 26.5 Parameters for HE-MCSs
  1. Other clauses
     1. **4 General descrition (10)**: Osama Aboul-Magd
     2. **6 Layer management (32)**: Yasu Inoue
     3. 9 Frame formats
        1. 9.2 MAC frame format
           1. 9.2.4 Frame fields

**9.2.4.6 HT Control field (79)**: Alfred Asterjadhi

* + - * 1. **9.2.5 Duration/ID field (9.2.5.1 and 9.2.5.7) (12)**: Pokai-Huang
      1. 9.3 Format of individual frame types
         1. 9.3.1 Control frames

**9.3.1.9 Block acknowledgment (46)**: George Cherian, Tomo Adachi, Kaiying Lv, Dengyu Qiao, Xiaofei Wang

**9.3.1.23 Trigger Frame format (113)**: Liwen Chu, Reza Hedayat, Yunbo Li, Simone Merlin, Anton Evengy, Po-Kai Huang, Kaying Lv

* + - * 1. 9.3.2 Data frames
        2. 9.3.3 Management frames
      1. 9.4 Management and Extension frame body components
         1. 9.4.1 Fields that are not elements
         2. **9.4.2 Elements**

**9.4.2.196 TWT element (32)**: Matt Fischer

**9.4.2.213 HE Capabilities element (66)**: Matt Fischer

**9.4.2.214 HE Operation element (11)**: Matt Fischer, Alfred Asterjadhi

* + - 1. **9.7 Aggregate MPDU (A-MPDU) (60)**: Yongho Seok, Liwen Chu, John Son, Tomo Adachi
    1. 10 MAC sublayer functional description
       1. 10.3 DCF
          1. 10.3.1 General
          2. 10.3.2 Procedures common to the DCF and EDCA

10.3.2.1 CS mechanism

**10.3.2.4 Setting and resetting the NAV (9)**: Kaying Lv, Po-Kai Huang, Young Hoon Kwon, David Xun Yang, Jeongki Kim, Xiaofei Wang, Anton Evgeny, Liwen Chu, Yuichi Morioka

**10.3.2.8a MU RTS/CTS procedure (45)**: Po-Kai Huang, Young Hoon Kwon, Yunbo Li, Kiseon Ryu, Yuichi Morioka

**10.3.2.11 MU acknowledgment procedure (56)**: Jinjing Jiang, Yongho, Junichi, Jeongki

* + - 1. 10.7 Multirate support
      2. **10.22 HCF**
         1. **10.22.2 HCF contention based channel access (EDCA)**

**10.22.2.9 Truncation of TXOP (15)**: Kaiying Lv, Po-Kai Huang, Young Hoon Kwon, David Xun Yang, Jeongki Kim, Xiaofei Wang, Anton Evgeny, Liwen Chu, Yuichi Morioka

* + - 1. **10.24 Block acknowledgment (17)**: George Cherian, Tomo Adachi, Kaiying Lv, Dengyu Qiao, Xiaofei Wang, Reza Hedayat, Yusuke Tanaka, Kiseon Ryu
      2. **10.44 TWT (66)**: Alfred Asterjadhi, Matt Fischer, Ming Gang, Jae Seung Lee, Jayh(?), Kaiying Lv, Jarkko Kneckt, Jeongki Kim
    1. Clause 25 High Efficiency (HE) MAC specification
       1. 25.1 Introduction
       2. **25.2 Channel Access**
          1. **25.2.1Updating two NAVs (42)**: Kaiying Lv, Po-Kai Huang, Young Hoon Kwon, David Xun Yang, Jeongki Kim, Xiaofei Wang, Evgeny Khorov, Liwen Chu, Yuichi Morioka
       3. **25.3 Fragmentation (53)**: Alfred Asterjahdi, Ming Gang, Mark Rison, Laurent Cariou, Woojin Ahn, Narender Madhavan
       4. **25.4 Block acknowledgment (13)**: George Cherian, Tomo Adachi, Kaiying Lv, Dengyu Qiao, Xiaofei Wang, Reza Hedayat, Yusuke Tanaka, Kiseon Ryu
       5. 25.5 MU operation
          1. 25.5.1 HE DL MU operation
          2. **25.5.2 UL MU operation (47)**: Simone Merlin, Rakesh Taori, Reza Hedayat, Kiseon Ryu, Lei Wang, Tomo Adachi, John Son, Anton Kiryanov

25.5.2.2 Rules for soliciting UL MU frames (4):Kaying Lv, Po-Kai Huang, Young Hoon Kwon, David Xun Yang, Jeongki Kim, Xiaofei Wang, Evgeny Khorov, Liwen Chu, Yuichi Morioka

* + - * 1. **25.5.2.3 STA behaviour (26)**: Simone Merlin, Rakesh Taori, Reza Hedayat, Kiseon Ryu, Lei Wang, Tomo Adachi, John Son, Anton Kiryanov
        2. **25.5.2.4 UL MU CS mechanism (31)**: Simone Merlin, Rakesh Taori, Reza Hedayat, Kiseon Ryu, Lei Wang, Tomo Adachi, John Son, Anton Kiryanov
        3. **25.5.2.5 HE buffer status feedback operation for UL MU (18)**: Simone Merlin, Rakesh Taori, Reza Hedayat, Kiseon Ryu, Lei Wang, Tomo Adachi, John Son, Anton Kiryanov
  1. Rest of the assignment will be done during the next call.

1. Next Call
   1. The next call is scheduled on Thursday, April 21st, 2016 from 20:00 (ET).
2. AOB
   1. No other business to conduct.
3. Adjourn
   1. Meeting adjourned at 12:00 noon (ET).

**List of Attendees**

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| --- | --- | --- |
|  | **Name** | **Affiliation** |
| 1 | Osama Aboul-Magd | Huawei Technologies |
| 2 | Tomoko Adachi | Toshiba |
| 3 | Woojin Ahn | Yonsei Univ. |
| 4 | Alfred Asterjadhi | Qualcomm |
| 5 | Stéphane Baron | Canon |
| 6 | Bin Tian | Qualcomm |
| 7 | Zubeir Bocus | Toshiba |
| 8 | Laurent Cariou | Intel |
| 9 | Minho Cheong | Newracom |
| 10 | George Cherian | Qualcomm |
| 11 | Jinsoo Choi | LG Electronics |
| 12 | Liwen Chu | Marvell |
| 13 | Rui Cao | Marvell |
| 14 | Matt Fischer | Broadcom |
| 15 | Ming Gan | Huawei Technologies |
| 16 | David Halls | Toshiba |
| 17 | Reza Hedayat | Newracom |
| 18 | Guido R. Hiertz | Ericsson |
| 19 | Po-Kai Huang | Intel |
| 20 | Yasuhiko Inoue | NTT |
| 21 | Junichi Iwatani | NTT |
| 22 | Jinjing Jiang | Marvell |
| 23 | Allan Jones | Activision |
| 24 | Kaushik Josium | Samsung |
| 25 | Evgeny Khorov | IITP |
| 26 | Anton Kianov | IITP |
| 27 | Jeongki Kim | LG Electronics |
| 28 | Youhan Kim | Qualcomm |
| 29 | Jarkko Kneckt | Apple |
| 30 | Parag Kulkarni | Toshiba |
| 31 | Young Hoon Kwon | Newracom |
| 32 | Daewon Lee | Newracom |
| 33 | Jae Seung Lee | ETRI |
| 34 | Yunbo Li | Huawei Technologies |
| 35 | Dongguk Lim | LG Electronics |
|  |  |  |
| 36 | Meilu Lin | Huawei Technologies |
| 37 | Yun Liu | Huawei Technologies |
| 38 | Peter Loc | Huawei Technologies |
| 39 | Kaiying Lv | ZTE |
| 40 | Narendar Madhavan | Toshiba |
| 41 | Simone Merlin | Qulcomm |
| 42 | Yuichi Morioka | Sony |
| 43 | Eunsung Park | LG Electronics |
| 44 | Mark Rison | Samsung |
| 45 | Kiseon Ryu | LG Electronics |
| 46 | Dengyu Qiao | Huawei Technologies |
| 47 | Sigurd Schelstraete | Quantenna |
| 48 | Yongho Seok | Newracom |
| 49 | Shoko Shinohara | NTT |
| 50 | John Son | Willus |
| 51 | Robert Stacy | Intel |
| 52 | Yusuke Tanaka | Sony |
| 53 | Rakesh Taori | Samsung |
| 54 | Filippo Tosato | Toshiba |
| 55 | Sriram Venkateswaran | Broadcom |
| 56 | Sameer Vermani | Qualcomm |
| 57 | Lei Wang | Marvell |
| 58 | Xiaofei Wang | InterDigital |
| 59 | David Xun Yang | Huawei Technologies |
| 60 | Ross Jian Yu | Huawei Technologies |
| 61 |  |  |
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There were about 70 attendees on the call.