IEEE P802.11  
Wireless LANs

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| IEEE 802.11 Technical Interest Group on Full Duplex  May, 2018 Warsaw Meeting Minutes | | | | |
| Date: 2018-05-07 | | | | |
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Abstract

This document contains the meeting minutes of the IEEE 802.11 Topic Interest Group on Full Duplex (FD TIG) sessions in Warsaw, Poland.

Note: Highlighted text are action items.

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# Monday, May 7, 2018, AM2 Session

1. The IEEE 802.11 TIG meeting was called to order at 10:31 am by the Acting Chair, Tuncer Baykas (Istanbul Medipol University).
   * Agenda slide deck: [FD TIG May 2018 Agenda](https://mentor.ieee.org/802.11/dcn/18/11-18-0759-01-00fd-fd-tig-may-2018-agenda.ppt), proposed agenda copied here for reference:

* **Meeting 1**
  + Administrative: Reminders, Rules, Guidelines, Resources, Participation, Announcements
  + Approval of minutes from March 2018.
  + Background/Status
  + Discussion on Use Case Contributions
    - Full Duplex Usage Model, Ming Gan (Huawei) 802.11-18/758r0
* **Meeting 2**
  + Discussion on Other Contributions
    - Self-interference-cancellation-in-full-duplex-for-802-11, Yan Xin, 802.11-18/880r0
    - Full-Duplex based MAC enhancements Sigurd Schelstraete, 802.11-18/864r0
  + Future Sessions planning

1. **Administrative: Reminders, Rules, Guidelines, Resources, Participation, Announcements**
   * The Chair reviewed the Guidelines for IEEE-SA meetings, including meeting guidelines and attendance recording procedures on slides 5 and 6 of the agenda slides.
   * He also reminded attendees to record their attendance.
   * 51 people in room.
2. **Approval of minutes from March 2018**
   * Meeting Minutes uploaded in March ([11-18/574r0](https://mentor.ieee.org/802.11/dcn/18/11-18-0574-00-00fd-fd-tig-meeting-minutes-for-march-2018.docx))
     + Motion to approve meeting minutes
     + Motioned and seconded.
     + Meeting minutes approved
3. **Background/Status**
   * The Chair introduced the schedule for the week and the agenda was approved
   * Recess for 10 minutes based on technical difficulties.
4. **Discussion of Contributions**
   * [11-18/0758r0](https://mentor.ieee.org/802.11/dcn/18/11-18-0758-00-00fd-full-duplex-usage-model.pptx) **Full Duplex Usage Model Ming Gan (Huawei). Presented by Ming Gan.**
     + Comment: Confused as to why we sat through presentation.
       - Question: Should we be looking at what are the benefits of this technology vs what use cases should we discuss?
       - Question: What should be uniquely solved by full duplex technology?
         * Answer: Can double throughput, can help latency, can change the access protocol.
       - Question: Additional usage models needed ?
     + Comment: identify the distinct issues needed to address the usage model.

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* + [**11-18/880r0**](https://mentor.ieee.org/802.11/dcn/18/11-18-0880-00-00fd-self-interference-cancellation-in-full-duplex-for-802-11.pptx) **self-interference-cancellation-in-full-duplex-for-802-11 Yan Xin (Huawei Technologies): Presented by Y. Xin**
    - Question: Slide 15 – why is the mitigation level a function of the signal?
* Includes the interference as well.
* Incorporates an external interference and estimates self-interference in the presence of an interference
  + - Question: why is additional interference added?
      * Tried to estimate in the presence of interference to simulate the worst case
      * 1st stage: linear, and 2nd in non-linear
    - Question: Do we assume non-linear Digital cancellation needed?
      * yes
    - Question: Have you done any work on finding out if antenna separation applicable to 802.11 bandwidths ?
      * Literature shows that it works.
    - Question: how will this work with legacy?
      * Will have FD STAs with half and full duplex capabilities. How it works will depend on type. Will need group to decide the mix of FD STAs.
  + [**11-18/864r0**](https://mentor.ieee.org/802.11/dcn/18/11-18-0864-00-00fd-full-duplex-based-mac-enhancements.pptx) **Full-Duplex based MAC enhancements Sigurd Schelstraete (Quantenna: Presented by Sigurd**
    - Comment: CTS scheme, STAs are not full duplex
    - Question: Do you need the same level of interference cancellation?
      * Have a choice as to what level of interference cancellation needed based on the scheme:
    - Question: how long will it take to cancel ? Will it cause some degradation?
      * Depends on FD MAC and PHY schemes
    - Question: slide 6: How does the receiving STA know the duration of the transmission?
      * CTS is sent after preamble so duration is known.
    - Comment: Goal is to show that FD can be used to address other issues apart from just doubling the throughput.
    - Question: Discussion on reverse problem i.e. AP transmitting then want STAs to access the channel.
      * Problem is not addressed

1. **General Questions**
   * Question: What is the schedule for working on the FD TIG report?
     + July meeting will be working on the report.
     + Can work on it during the next session.
     + Comment: march meeting had an outline of the report.

Adjourned at 12:29

# Tuesday, May 8, 2018, PM1 Session

1. **The IEEE 802.11 TIG meeting was called to order at 1:35 pm by the Acting Chair, Tuncer Baykas (Istanbul Medipol University).**
2. **Updated Agenda**
   * Added new presentation to the Agenda and discuss TIG report.
   * New agenda was motioned and approved.
3. **PSSS\_CDD Full Duplex PHY (Andreas Wolf - Dr. Wolf Wireless GmbH). Presented by Andreas Wolf**
   * Question: Request for understanding of acronyms/abbreviations.
     + PSSS: Parallel Sequence Spread Spectrum
   * Comment: Objection raised on the fact that presentation does not focus on the technology
     + Presenter skipped some slides
   * Question: Explain concept of why need PSSS on top of OFDM ?
     + Use spreading to separate downlink and uplink.
     + What spreading factor : length 2.
     + Does MIMO require a higher spreading factor ? No
     + Why 24 bits for the ADC: calculation based on performing implementation in the digital domain.
   * Is this for a WiFi system ?
     + No,
     + The code used? Yes,
     + Need a special design to solve the multi-path problem.
4. **TIG Report**
   * Need text proposal for the report. Not yet.
   * Provide proposed text for the group.
   * Plan on preparing text before July.
   * Request for template.
     + Framework of report was presented in March
5. **Future Sessions Planning:**

* Conference Calls
  + Request to reserve multiple potential CC times for July
  + If text contributions to the report are received, teleconference(s) may be arranged.
  + Goal of call: Text and figures
* San Diego
  + Finalize Report
  + Make Recommendation

1. The meeting was adjourned at 2:24 pm with no plans for a Thursday meeting
   * Note: closing report can be found here: [FD TIG Closing Report](https://mentor.ieee.org/802.11/dcn/18/11-18-0952-00-00fd-fd-tig-closing-report.ppt)
   * The final Agenda can be found here: [FD TIG Final Agenda](https://mentor.ieee.org/802.11/dcn/18/11-18-0759-02-00fd-fd-tig-may-2018-agenda.ppt)