IEEE P802.11
Wireless LANs

|  |
| --- |
| IEEE 802.11 Technical Interest Group on Full Duplex July, 2018 San Diego Meeting Minutes |
| Date: 2018-07-10 |
| Author: |
| Name | Affiliation | Address | Phone | Email |
| Kome Oteri | InterDigital Communications | 9276 Scranton Rd, ste 300, San Diego, CA 92121 | +1-858-210-4826 | kome.oteri@interdigital.com |

Abstract

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

Note: Highlighted text are action items.

Contents

[Tuesday, July 10, 2018, PM1 Session 3](#_Toc519591641)

[Thursday, July 12, 2018, PM2 Session 5](#_Toc519591642)

# Tuesday, July 10, 2018, PM1 Session

1. The IEEE 802.11 TIG meeting was called to order at 1:37 pm by the Chair, James Gilb (GA-ASI, GenXComm, Gilb Consulting). He offered his apologies to all the attendees for arriving late.
	* Proposed Agenda slide deck: [FD TIG July 2018 Agenda](https://mentor.ieee.org/802.11/dcn/18/11-18-1052-02-00fd-fd-tig-july-2018-agenda.ppt)
* **Meeting 1**
	+ Administrative: Reminders, Rules, Guidelines, Resources, Participation, Announcements
	+ Approval of minutes from May 2018.
		- 11-18-1008-00, 11-18-1148-00, 11-18-1151-00
	+ Status of FD-TIG report
		- 11-18-1113-01
	+ Contributions for FD-TIG report
		- 11-18-1224r1: FD Architecture in 802.11, Kome Oteri (InterDigital).
		- 11-18-1225r1: Technical Report on Full Duplex for 802.11 - FD Architecture, Kome Oteri (InterDigital)
		- 11-18-1019r1: Improving System Efficiency using Full Duplex Based Collision Detection, Genadiy Tsodik (Huawei).
		- 11-18-1222r0: system-level-simulation-results-of-full-duplex-transmission, Jason Yuchen Guo (Huawei Technologies).
		- 11-18-1242r0: proposed-FD-TIG-report-text-on-self-interference-cancellation Yan Xin et. al. (Huawei).
		- 11-18-1223r0: Proposed FD Functional Requirements, Ming Gan (Huawei).
* **Meeting 2**
	+ Discussion on Other Contributions
	+ Review of current FD-TIG report
		- 11-18-0498-0x
	+ Assignment of tasks
	+ Future Sessions planning

**Meeting 1**

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 4 and 5 of the agenda slides.
	* He also reminded attendees to record their attendance.
	* There were 32 people in room.
	* The Chair reminded everyone that ideally, the procedure would be consensus based and would only resort to voting if there were unresolvable issues.
	* Updated agenda to reflect new contributions
2. **Approval of Current Agenda and Past Minutes**
* Motion to approve agenda
	+ Move: Allen Heberling, Second: Yan Xin: approved
* Motion to approve minutes for [May Meeting](https://mentor.ieee.org/802.11/dcn/18/11-18-1008-00-00fd-fd-tig-meeting-minutes-for-may-2018.docx), [Teleconference 06/28](https://mentor.ieee.org/802.11/dcn/18/11-18-1148-00-00fd-meeting-minutes-for-06282018-teleconference.docx) and [Teleconference 07/03](https://mentor.ieee.org/802.11/dcn/18/11-18-1151-00-00fd-meeting-minutes-for-0703018-teleconference.docx).
	+ Move: Allen Heberling, Second: Kome Oteri; approved
	+ The Chair introduced the schedule for the week and the agenda was approved
1. **Discussion of Contributions**
	* [11-18/1113r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx) **Status of FD TIG Yan Xin (Huawei). Presented by Yan Xin.**
		+ Simple update from r0 presented in teleconference
		+ A new contribution was presented by Allen and updated based on Allen’s input: [New-Text-for-FD-TIG-Report (11-18/1127r1)](https://mentor.ieee.org/802.11/dcn/18/11-18-1127-01-00fd-new-text-for-fd-tig-report.docx)
			- Add FD functional requirements.
			- Add real world implementation of full duplex
			- Add economic feasibility
		+ Q: any major sections missing and is there any section we need to complete?
			- Based on new contributions in this meeting, we will be able to narrow the gap to the ideal report.
			- Also, need to address impacts on OBSS to be submitted by September.
	* [11-18/1224r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx) **FD Architecture in 802.11, Kome Oteri (InterDigital). Presented by Kome Oteri.**
	* [11-18/1225r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx) **Technical Report on Full Duplex for 802.11 - FD Architecture, Kome Oteri (InterDigital). Presented by Kome Oteri**
		+ Q: What about exchanging capabilities?
			- Yes, it should happen.
		+ Q: Is this a new frame format?
			- Yes, likely this will be required.
			- AP sends out a standalone frame to self
			- Second case is AP sends out frame with instructions
			- Not decided at this time
		+ Q: Which stations can transmit?
			- It depends on the interference between stations, in some cases it is OK, in some cases it is not.
		+ Q: Is the interference scenario static? Does it change within a TXOP?
			- This needs to be determined during standards development.
		+ Oteri presented [11-18-1165-01](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx), updates will be made to 02
		+ No objection to adding the text to the FT TIG report.
	* [11-18/1019r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx) **Improving System Efficiency using Full Duplex Based Collision Detection, Genadiy Tsodik  (Huawei). Presented by Genadiy Tsodik**
		+ Understand that FD is not only a throughput multiplier but can be used for different benefits
		+ Q: Agree with conclusions that FD can be used outside realm of doubling the throughput
			- Clarify that you can resolve the throughput but no specific scheme to resolve collisions.
			- Theoretical because not connected to realistic scenarios e.g. no impairment. But have some ideas of how collision resolution can be done but can be obtained with different probabilities
			- Q: useful for dense environments?
				* Yes.
			- Can you get some text to Yan this week ?
				* The key point is throughput is more than 2x throughput increase
	* [11-18/1222r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1113-01-00fd-status-update-of-the-report-of-full-duplex.docx) **system-level-simulation-results-of-full-duplex-transmission, Jason Yuchen Guo (Huawei Technologies). Presented by Jason Yuchen Guo**
		+ Q: is all traffic full duplex or some?
			- Adaptive full duplex, i.e. full duplex only if it is beneficial.
			- It would be great to see what percentage was full duplex
		+ Q: was the link adaptation perfect or not?
			- Genie aided.
		+ Q: why is the comparison with EDCA and not 11ax (OFDMA type).
			- We can also compare with 11ax mode but it is not much different as there are not many nodes. The difference is between 15% and 27% as shown on slide 9
			- Why is the gain more than 100%? Does it have to do with EDCA vs FD?
				* Yes, by combining trigger-based transmission and FD. (60% from trigger based) and SUL boosts it to 200%
			- Q: 110 dB does that include Tx power and Rx sensitivity?
				* No.
			- Q: what section will this be placed in the report and can you put together some text ?
				* Yes, I can. It will be in the “Benefits / Feasibility study” section.
	* [11-18/1223r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1223-00-00fd-proposed-fd-functional-requirements.doc) **Proposed FD Functional Requirements, Ming Gan (Huawei). Presented by Ming Gan (Huawei)**
		+ Comment: consider softening the language by reducing the use “shall”.
		+ @ least twice: suggests going up to 3x….. change to “up to twice” – from PHY 2x and CSMA efficiency.
2. **General Questions**
	* + Q: what is the goal for finishing up the work of the TIG. Should we plan to finish by September or ask for an extension?
			- We prefer see the status of the draft in September then make a decision.
			- We will have a set a set of releases between now and September then finalize in September.
			- We can then take vote to decide on what to do and make a suggestion to the Task Group.
				* Option 1: Can suspend work for a little while.
				* Option 2: Can request to set up a study group.
				* Option 3: Others.

Recess at 3.22 pm till 4 pm on Thursday

# Thursday, July 12, 2018, PM2 Session

The session resumed at 4:05 pm with about 25 people in the room.

**Meeting 2**

1. **Discussion of Contributions**
	* [**11-18/1242r0**](https://mentor.ieee.org/802.11/dcn/18/11-18-1242-00-00fd-proposed-fd-tig-report-text-on-self-interference-cancellation.docx) **proposed-FD-TIG-report-text-on-self-interference-cancellation Yan Xin et. al. (Huawei). Presented by Yan Xin.**
		+ Q: is 30 dB down the correct number?
			- Yes. Based on the publications
		+ Q: how will the filters change for the non-linear part change given that they are dependent on the signal transmitted?
			- Will be the same as the method for estimating the filter for the linear part.
2. **Future Plans:**
	* Questions to Yan Xin (Huawei) as Interim Editor:
		+ What sections are we missing based on the framework?
			- OBSS and latency
			- Effective throughput for all devices in a fully saturated BSS.
			- Clause for recommendation
		+ Can we get this resolved before September?
			- Will leave open for now
		+ When can we get a draft together or do you need some help?
			- Can make first cut based on the current submissions?
			- Kome’s contribution is stable and I am working with Allen and Ming.
			- Jason’s needs some additional work
	* Future Plans
		+ First draft distributed, 8/2
		+ Conference call 8/9, 7 am PDT.
			- Overview of draft and collection of comments.
			- Discuss NGV and EHT requirements
		+ Second draft distributed 8/24
		+ Conference call 8/30, 7 am PDT
			- Continue draft improvement
			- Prepare recommendations and presentation
			- Planning for September.
		+ Third draft distributed 9/5.
		+ Press release write-up in September
	* Recommendation Discussion
		+ Discussion on forming a SG to create a PAR and 5C
		+ Decide on a fixed set of scenarios to go after.
		+ Both EHT TIG and NGV have opportunities for FD to address some of the challenges/goals. How will the FD TIG/SG interact with them ?
		+ Suggestions:
			- Opportunity in NGV but need to take a look at the report
			- Talk/socialize with people in EHT and see if there is support as well.
		+ Review document, review recommendations
		+ Allen Heberling to do research on NGV documents and EHT documents and bring to conference call.
3. The meeting was adjourned at 4:43 pm
	* Note: closing report can be found here: [FD TIG Closing Report](https://mentor.ieee.org/802.11/dcn/18/11-18-1336-00-00fd-fd-tig-closing-report.ppt)
	* The final Agenda can be found here: [FD TIG Final Agenda](https://mentor.ieee.org/802.11/dcn/18/11-18-1052-02-00fd-fd-tig-july-2018-agenda.ppt)