IEEE P802.11
Wireless LANs

|  |
| --- |
| Minutes for Task Group (TG) 802.11 beExtremely High ThroughputPHY ad hoc Telephone Conferences, January 30th, 2020 |
| Date: 2020-01-30 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Sigurd Schelstraete | Quantenna/ON Semiconductor |  |  | Sigurd.schelstraete@onsemi.com |
|  |  |  |  |  |

Abstract

This document contains the PHY ad hoc meeting minutes from TGbe telco on January 30th, 2020.

**Thursday January 30th, 2020 19:00 – 22:00 ET**

**Introduction**

1. The Chair (Tianyu Wu, Apple) calls the meeting to order at 19:00 ET.
2. The Chair follows the agenda in 11-20/0240.
3. The Chair goes through the IPR policy and asks if anyone is aware of any potentially essential patents. Nobody speaks up.
4. The Chair reminds everyone to report their attendance by sending an e-mail to the Cochair, Sigurd Schelstraete (Quantenna/ON Semiconductor) or the Chair himself. According to the Webex app, it appears to be around 40 people in the call.

**Contributions**

1. 1579r2–Adapting 11be chan. mod. to modern (Doppler) use cases (Shimi Shilo)

This is revised version of an earlier submission. It addresses several questions that were raised during the earlier presentation. MU-MIMO simulations show the impact of the highly varying channel.

It is suggested to update the TGn channel models to account for more realistic Doppler conditions.

Discussion

C: there should be no expectation that MUI-MIMO works with this type of varying channel.

A: Agreed

C: is channel fixed for duration of the packet

A: No, the channel is varying, but packets are relatively short.

C: seems strange that MU-MIMO performance collapses with 2 msec delay when correlation appears to still be quite high for 2 msec.

A: will check the data

C: Do all taps have the same Doppler?

A: yes

C: is it the proposal to increase Doppler speeds to 2 km from their current values?

A: yes

C: maybe we should also include a model with lower Doppler speed

1. 0065r0–Implicit sounding scheme (Lily Yunping Lyu)

This submission discusses different ways of sounding: SU-based with multi-trigger sounding, SU-based with single-trigger sequential sounding and MU-based sounding. Some of the challenges with implicit sounding are discussed: UL/DL power difference, effect of residual CFO in case of MU-based scheme.

The overhead is of the different schemes id compared in 11 use cases.

Discussion

C: do you have more details about the CFO estimation method

A: details are contained in the backup slides

SP

SP deferred

1. 0090r0–Implicit Feedback, Feasibility and Gains (Roya Doostnejad)

This submission discusses calibration for multi-AP architecture. Both local calibration and STA-assisted calibration are considered. It also revisits network overhead for various sounding schemes to address some earlier questions.

Discussion

C: How is the overhead calculated for different HE-LTF repetitions rates?

A: only the number of HE-LTFs is increased

1. 0089r1–Multi-AP Implicit Channel Sounding (Roya Doostnejad)

This submission discusses some aspects of multi-AP sounding. Two modes are discussed: centralized or sequential. The latter covers the case where not all STAs can hear the initiator AP. Application to both JBF and CBF are considered.

Overheads of explicit vs. implicit sounding are compared. It is concluded that implicit sounding significantly reduces network overhead.

Discussion

C: trigger frame address will be the initiator address?

A: yes

C: If OFDMA is used, RU for channel feedback and data transmission should be the same?

A: yes

C: can sequential be used for JBF?

A: yes, for implicit it can.

Q: calculation of overheads sums the duration of all feedbacks? No UL FDMA is assumed.

A: correct

1. 0072r0–Perf. and EVM Evaluation on 4096-QAM in 11be (Jianhan Liu)

This submission presents simulation results for 4096 QAM with a TX EVM model. Code rates 2/3 and 5/6 are considered, using channel B. Both BF and no BF cases are considered. It is argued that the focus should be on 2 SS. This requires a TxEVM of around -40 dB. It is concluded that 4K QAM is feasible with enhanced EVM requirement.

Discussion

C: what is delay between NDP and BF’ed transmission?

A: no delay, assumed there is no channel variation.

C: What is the Min SNR required for 4096 QAM?

A: will follow up offline

1. 0076r0–Simulation results of 4K QAM (Ron Porat)

This submission presents simulation results for 4096 QAM. Simulations considered various channel models, impairments and code rates. The impact of TxEVM is considered. It is noted that degradation starts at -39 dB.

A TxEVM of -43 dB may be needed.

Discussion

C: -43 dB seems high. Channel estimation will further degrade this by 3 dB.

A: Will check.

C: was smoothing used for BF case?

A: no

Q: Do RF impairments include non-linearity?

A: no

C: is MMSE receiver used?

A: not for 2SS

1. 0111r0–4096 QAM definition (Sigurd Schelstraete)

This submission contains a mapping of bits to constellation points for 4096 QAM and the normalization factor needed for this constellation size. It is suggested that others review the material to confirm this definition.

Discussion

C: normalization constant matches

C: is there a MATLAB script available to generate the mapping

A: will check

**Adjourn**

The call is adjourned at 21:25 ET.