IEEE P802.11
Wireless LANs

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| IEEE 802.11 HEW SGMarch 2014 Beijing Meeting Minutes |
| Date: 2014-03-31 |
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Abstract

HEW SG meeting minutes from the IEEE 802.11 Beijing session, March 17th – 21st, 2014.

**IEEE 802.11 High Efficiency WLAN Study Group**

**March 2014 Beijing Meeting**

**China World Hotel, Beijing, China**

**March 17th – 21st, 2014**

**Monday, March 17th, 2014, PM2 Session (16:00-18:00)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chairperson of the HEW SG, @16:00
	1. About 200 people are in the room.
2. Agenda Doc.11-14/219r0 on the server.
	1. Rev 1 is the working document
	2. Chair asked to state name and affiliation when speaking for the first time.
	3. Chair reminded attendance.
3. The chair reviewed the mandatory 5 slides of P&P.
	1. Call for potentially essential patents
		1. Chair asked if anyone is aware of potentially essential patents.
		2. No potentially essential patents reported
4. Agenda items for the week
	1. Approve minutes from January meeting and telecons.
	2. Review progress from the previous meetings.
	3. Address EC comments related to the PAR and the CSD.
	4. Reaffirmation of the PAR and the CSD docuemnts.
	5. Motion for SG extension.
	6. Presentations and consolidation of documents.
	7. Schedule Telecon times.
5. General Flow of the meeting
	1. Slide 13 of the 14/219r1 contains general flow of the meetings this week.
	2. There are nine meeting slots for HEW SG as contained in slide 14 of 14/219r1.



1. Tentative Agenda for Monday, March 17th, 16:00 – 18:00.
	1. Proposed Agenda
		1. Call meeting to order
		2. Patent policy, etc.
		3. Call for submissions
		4. Set and approve agenda
		5. SG motions
		6. Approve minutes from the November meeting and Telecons
		7. Summary from November 2013 meeting
		8. Review of SG progress
		9. PAR Discussion
		10. Recess
	2. Chair asked if there are any other items – No items proposed. Meeting will be conducted based on this order.
2. Call for submissions – we have about 30 submissions.
	1. 13/1359r1, “HEW-Evaluation-Methodology” Ron Porat (Broadcom)
	2. 14/0111, “Which will be the first between 11ac optionals and new features?”, Minho Cheong (NEWRACOM)
	3. 14/0112, “Wi-Fi interference measurements in Korea - part II”, Minho Cheong (NEWRACOM)
	4. 14/0113, “Modeling of additional channel loss in dense WLAN environments”, Minho Cheong (NEWRACOM)
	5. 14/0301, “Multicast Considerations for HEW”, Eisuke Sakai (Sony Corporation)
	6. 14/0306, “Discussions on HEW Functional Requirements”, Lei Wang (Marvell)
	7. 14/0307, “PHY Calibration Results”, Nihar Jindal (Broadcom)
	8. 14/0328, “Dense Apartment Complex Throughput Calculations”, Graham Smith (DSP Group)
	9. 14/0294r2, “DSC Channel Selction and Legacy Sharing” Graham Smith (DSP Group)
	10. 14/0329, “Channel Models for different links in Simulations”, Samsung
	11. 14/0330, “HEW PHY Abstraction”, Sameer Vermani (Qualcomm)
	12. 14/0331, “Simulation Methodology and Calibation”, Gwen Barriac (Qualcomm)
	13. 14/0335, “Instantaneous SINR Calibration for System Simulation”, Yakun Sun (Marvell)
	14. 14/0336, “Calibration of Long-Term SINR for System Simulator” Yakun Sun (Marvell)
	15. 14/0339, “A simplified STR Mechanism”, Raja Banerjea (CSR)
	16. 14/0340, “A simplified STR Mechansim – MAC”, Raja Banerjea (CSR)
	17. 14/0342, “Short Packet Optimizations”, Naveen Kakani (CSR, Inc)
	18. 14/0345, “Joint Coding and Modulation Diversity with RBD pre-coding for next generation WLAN”, Zhanji Wu (BUPT)
	19. 14/0350, “Suggestion on Evaluation Methodology”, Jinyoung Chun
	20. 14/0352, “Discussion on power save mode for real time traffic”, Giwon Park (LG Electronics)
	21. 14/0353, “Suggestion on PHY Abstraction for Evaluation Methodology”, Dongguk Lim (LG Electronics)
	22. 14/0355, “Simulation Scenario 1 Revised”, Simone Merlin (Qualcomm)
	23. 14/0356, “Calibration of System Level Simulators”, Jarkko Kneckt(Nokia)
	24. 14/0357, “Utilizing Unused Resources for Simultaneous Transmissions”, ”, Jarkko Kneckt(Nokia).
	25. 14/0365, “Extended Intra-Vehicle Channel Model”, Igal Kotzer (General Motors)
	26. 14/0372, “System level simulations on increased spatial reuse”, Liwen Chu (Marvell)
	27. 14/0373, “Energy Efficiency in HEW”, Pingping Xu; Wei Wang(Southeast University )
	28. 14/0381, “Stadium scenario for HEW”, Johan Soder, Filip Mestanov (Ericsson AB)
	29. 14/0383, ” Considerations on evaluation methodology for candidate HEW PHY&MAC techniques”, Le Liu (Huawei)
	30. 14/0386, “Discussions on MCS selection” , Tianyu Wu (MediaTek)
	31. Jianhan Liu (MediaTek)
	32. 14/0392, “Traffic Separation Scheme for Optimizing WLANs using PHY and MAC options”, Takayuki Nishio (Kyoto University)
	33. 14/0393, “Possible Indoor Channel Models for HEW System Simulations”, Leif Wilhelmsson (Ericsson AB).
	34. 14/0419, “802.11ax Spec Development Process Proposal”, Rolf de Vegt (Qualcomm)
3. Summary from January 2014 Meeting
	1. PAR and CSD documents were approved by the SG and the WG during the January 2014 interim meeting.
		1. <https://mentor.ieee.org/802.11/dcn/14/11-14-0165-00-0hew-802-11-hew-sg-proposed-par.docx>
		2. <https://mentor.ieee.org/802.11/dcn/14/11-14-0169-00-0hew-ieee-802-11-hew-sg-proposed-csd.docx>
	2. IEEE 802.11ax was agreed to as the name of the project.
	3. Presentations
	4. Volunteers prepared an overview presentation and the document was reviewed by the SG over two teleconferences.
		1. <https://mentor.ieee.org/802.11/dcn/14/11-14-0214-02-0hew-overview.pptx>
4. Approval of minutes (January 2014 Meeting Minutes and Teleconferences)
	1. Relevant documents
		1. <https://mentor.ieee.org/802.11/dcn/14/11-14-0199-00-0hew-january-2014-los-angeles-meeting-minutes.doc>
		2. <https://mentor.ieee.org/802.11/dcn/14/11-14-0229-02-0hew-teleconference-minutes-20140206.docx>
		3. <https://mentor.ieee.org/802.11/dcn/14/11-14-0242-00-0hew-teleconference-minutes-20140213.docx>
	2. **Motion: Approve HEW SG minutes of meetings and teleconferences from January 2014 interim meeting to today:**
		1. **https://mentor.ieee.org/802.11/dcn/14/11-14-0199-00-0hew-january-2014-los-angeles-meeting-minutes.doc**
		2. **https://mentor.ieee.org/802.11/dcn/14/11-14-0229-02-0hew-teleconference-minutes-20140206.docx**
		3. **https://mentor.ieee.org/802.11/dcn/14/11-14-0242-00-0hew-teleconference-minutes-20140213.docx**
		4. **Moved by Phillip Barber (Huawei), seconded by Rakesh Taori (Samsung)**
		5. **No Discussion on this motion.**
		6. **Chair asked if there are any objections to accept those minutes.**

**Motion accepted with no objections**

1. Presentations:
	1. Lei Wang (Marvell) presented “Discussions on HEW Functional Requirements” based on 14/0306r0
		1. Summary
			1. Intension is to stimulate the discussions on functional requirements. Have no motion or straw poll for this presentation.
			2. Reviewed functional requirements of 802.11n and 802.11ac.
			3. Recommendations of some performance measures for functional requirements.
		2. Discussions
			1. Minho Cheong (NEWRACOM): Good summary. Asked if there are any additional requirements that were not mentioned in the PAR. 🡪 A: It is up to the discussions of the task group.
	2. Graham Smith (DSP Group) presented “Dense Apartment Complex Throughput Calculation”, based on 14/0328r1.
		1. Summary
			1. Looked at the Dense Apartment scenario and calculated the throughputs.
			2. When estimating the per STA throughput for the dense apartment complex, it is important to include the channel selection and the resulting apartment sharing scenario.
			3. The system level simulation should include Channel Selection, BW use and MCS relationship.
		2. Discussions
			1. Q: Asked for clarifications on the conditions for throughput calculation.
			2. C: Details of channel selection and channel bandwidth including conditions to change them discussed.
			3. Q: Consideration on the effect of adjacent channels asked. 🡪 A: It is not considered here.
	3. Igal Kotzer (General Motors) presented “Extended Intra-Vehicle Channel Model”, based on 14/0365r0.
		1. Summary
			1. The RX power of an intra-vehicle WLAN system is strong relative to indoor scenarios.
			2. The variance of the path loss shadowing in the 5GHz band is larger than the 2.4GHz band.
			3. Intra-vehicle delay spread is shorter than current WLAN indoor channel models.
		2. Discussions
			1. Q: Clarifications asked such as the measurement conditions and antenna configurations.
			2. Q: What is the recommendation? 🡪 A: Measurements inside the vehicle and comparison with other scenarios recommended.
			3. Q: A question asked about the delay spread. 🡪 A: Resolution is 5 ns.
	4. Simone Merlin (Qualcomm) presented “Simulation Methodology and Calibration” based on 14/0385r0.
		1. Summary
			1. Proposal:
				1. To unify the description of MAC and Integrated simulator and define a phased approach for the development and calibration.
				2. To define simplified simulation scenarios for calibration
				3. To have phased calibration steps.
		2. Discussions
			1. C: Need to consider path loss, shadowing, etc. It’s too much.
			2. C: Do not understand why we should have such a detailed channel conditions for calibration purpose.
			3. C: Identified some issue in PHY abstraction.
		3. Additional presentation
			1. Simone briefly gone through the new version of the simulation scenario document (14/0355).
		4. Discussions
			1. Q: Asked about the difference of channel models between current and previous version.
			2. C: Confused by the document – too many things are included here. In addition to the TGac Channel Model, path loss model is proposed here. 🡪 Can be fixed.
			3. Q: Asked if the proposal is just for the calibration purpose or for entire simulation scenarios. 🡪 Intension is modifications for the entire simulation scenarios.
			4. Q: Clarifications asked about the approach and steps for calibration.
2. Recess at 18:01 until Tuesday AM2 (10:30 AM).

**Tuesday, March 18th 2014, AM2 Session (10:30-12:30)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chair of HEW SG, @10:30
	1. Agenda 11-14/0219r1 is on the server. Rev 2 is working document.
	2. There were 200 people in the room at the beginning of the session. More people came in later.
	3. Chair reminded that this meeting is operated under the IEEE 802 and IEEE 802.11 P&P.
	4. Chair asked to limit presentation time
2. Agenda for this session
	1. Tuesday AM2
		1. Call Meeting to order
		2. IEEE 802 and 802.11 IPR Policy and procedure.
		3. Presentations
		4. Recess
	2. Chair asked if there are any objections to proceed with this agenda – no objections.
		1. The agenda approved.
3. Update of comment collection process on PAR and CSD by the chairperson.
	1. Bob Grow, the chair of 802.3, mentioned that 802.3WG have no comments on HEW PAR and CSD, but Bob has some comments. Basically those comments are editorial comments.
	2. Chair of 802.21 mentioned that he has not received any comments until now, but he still accepts comments.
	3. Waiting for comments from 802.1, 802.15 and 802.22.
4. Presentations
	1. Yakun Sun (Marvell) presented “Calibration of Long-Term SINR for System Simulator” based on 14/0336r0.
		1. Summary
			1. Joint contribution with Huawei, LG, Samsung, Intel and ZTE to provide TBD items related to long term SINR.
			2. Calibration of long term SINR based on some simulation scenarios presented.
		2. Discussions
			* 1. Q: The abstraction method asked.
				2. C: Equation for calculation of DL SINR is confusing. Would like to know who is transmitting. Do not like to see too many STA are transmitting.
				3. C: Supportive comment for this approach..
	2. Jarkko Kneckt (Nokia) presented “Calibration of System Level Simulators” based on 14/0356r0.
		1. Summary
			1. Simulations conducted based on the residential (apartment) scenario.
			2. SINR, Throughput and Number of concurrent transmissions are discussed.
		2. Discussions
			1. C: Do not understand the reason why fading on is always better than the fading off.
			2. C: Would like to understand why OLLA should be considered for calibration purpose. 🡪 A: It is not necessary as far as fixed rate is assumed, but may be necessary if MCS selection is considered.
			3. C: Throughput performance with RTS/CTS is sometimes better than without RTS/CTS. Would like to understand the reason for this.
			4. C: This will be a one set of conditions for calibration purpose.
			5. C: The impact of interference seems to be small. Any explanation for that? 🡪 Need to discuss offline.
	3. Le Liu (Huawei) presented “Considerations on evaluation methodology for candidate HEW PHY&MAC techniques” based on 14/0383r0.
		1. Summary
			1. Compared with standalone SLS, integrated SLS is more comprehensive and provides stronger insights to investigate and evaluate candidate PHY&MAC techniques for HEW.
			2. Some analysis presented.
		2. Discussions
			1. C: Agree with what was presented. Intermediate result is also important for the calibration purposes.
			2. C: PHY system level simulation is also effective to evaluate some aspects of the technologies.
			3. C: One of the important points of the integrated system simulation to evaluate effect of control signals and others.
	4. Eisuke Sasaki (Sony) presented “Multicast Considerations for HEW” based on 14/0301r0.
		1. Summary
			1. Video distribution using multicast mechanism is the primary interest of this presentation.
			2. Propose simulation scenarios to cover the multicast communication usage model that is critical to realizing the specific use cases
			3. Potential multicast enhancements in HEW should be explored.
		2. Discussions
			1. C: 802.11aa considers medium number of STAs.
			2. Q: Any straw polls to incorporate the contents into the simulation scenario? 🡪 Chair answered we do not have official document nor procedure.
			3. Had a supportive comment.
	5. Sameer Vermani (Qualcomm) presented “PHY Abstraction” based on 14/0330r3.
		1. Summary
			1. Effective SINR calculation for PHY abstraction can be done in various ways as long as a matching reference curve is used.
			2. Approaches proposed so far have the following complexities – (i) SINR is MCS dependent, (ii) Multiple MCS dependent parameters and (iii) A complex effective SINR mapping function.
			3. Suggested an easy alternative to overcome the issues with the proposed approaches
		2. Discussions
			1. C: Accuracy of mapping function to AWGN discussed.
			2. Q: Asked about the intention of proposing another PHY abstraction method.
			3. Q: Asked for any simulation results for the structure of verifying abstraction method.
			4. Q: Asked if any specific equalizer should be assumed. 🡪 MMSE will be good.
			5. C: Potential issue to evaluate OFDMA.
			6. C: Relation with the channel model discussed.
5. Recessed at 12:31 until PM2 (16:00) today.

**Tuesday, March 18th, 2014, PM2 Session (16:00-18:00)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chair of HEW SG, @16:01
	1. About 190 people are in the room at the beginning of the session.
	2. Chair reminded IEEE 802 and 802.11 IPR P&P.
	3. Agenda Doc.11-14/0219r1 is on the server. Rev 2 is the working document
2. Agenda for this session
	1. Proposed agenda for Tuesday, March 18th, 2014, PM2 session
		1. Call the meeting to order
		2. Reminder:
			1. IEEE 802 and 802.11 IPR Policy & Procedure.
			2. Attendance
		3. Presentations
		4. Discussions: EC Comments on PAR and CSD.
		5. Recess
	2. Chair asked if there are any objections to proceed with this agenda – no objections.
	3. Agenda approved.
3. Presentations
	1. Dongguk Lim (LG Electronics) presented “Suggestion on PHY Abstraction for Evaluation Methodology”, based on 14/0353r0
		1. Summary
			1. MMIB method for 256QAM modulation
			2. SINR per tone calculation considering channel estimation error introduced.
		2. Discussions
			1. C: It is good to have proposals. Would like to start discussion on this point.
		3. **Straw Poll: “Do you support to include SINR calculation method considering channel estimation error in slide 15 as a part of PHY abstraction method in evaluation methodology document [1]?”**
			1. Discussion
				1. Proposed to remove last words “in evaluation … document [1]”
				2. **Modified straw poll text: “Do you support to include SINR calculation method considering channel estimation error in slide 15 as a part of PHY abstraction method?”**
			2. Result
				1. In Favor: 17
				2. Opposed: 0
				3. Abstain: many
			3. The result suggests we need more discussions.
	2. Kaushik Josiam (Samsung) presented “Channel Models for different links in Simulations”, based on 14/0329r0.
		1. Summary
			1. While channel model for AP↔STA link are agreed, we do not have models specified for STA↔STA and AP↔AP links.
			2. Path loss and shadowing models for outdoor STA↔STA links proposed.
			3. Need models for AP-AP link in both indoor and outdoor environments or a common set of assumptions must be agreed.
		2. Discussions
			1. C: Changes in the antenna parameters suggested to be consistent with the discussion in Geneva.
			2. C: Need to look at the device to device communication channel for STA-STA channel.
	3. Jim Lansford (CSR) presented “A Simplified Simultaneous Transmit and Receive Mechanism”, based on 14/0339r0
		1. Summary
			1. A simplified STR mechanism proposed which only requires STR capability at the AP and can be supported by traditional STAs.
			2.
		2. Discussions
			1. Q: 40 dB isolation – how can be achieve it? 🡪 Need to investigate.
	4. Jinyoung Chun (LG Electronics) presented “Suggestion on evaluation methodology”, based on 14/0350r0
		1. Summary
			1. In evaluation, we see that some users can’t support even MCS0.
			2. Since those users may not be able to be associated in real world, they have to be well handled in evaluation such that they do not cause impractical results.
			3. Some suggestions in slide 7 (e.g. to exclude unassociated users in evaluation)
		2. Discussions
			1. C: Scenario defined every STA to have some level of SINR.
			2. C: This is not system simulation issue, but HEW design problem.
			3. Q: How to obtain SINR for outdoor large BSS.
			4. C: Asked about the reason of not using 2 stream transmission in slide 6.
			5. Q: Interference – MAC is not considered.
			6. Q: MCS selection method? – Based on estimated SINR.
			7. Q: Effect of outdoor environment such as large delay spread – need offline discussion.
	5. Zhanji Wu (BUPT) presented “Joint Coding and Modulation Diversity with RBD pre-coding MU-MIMO”, based on 14/0345r1
		1. Summary
			1. An improved MIMO-OFDM scheme based on Joint Coding and Modulation Diversity (JCMD) together with Regularized Block Diagonalization (RBD) precoding multiuser (MU) MIMO proposed.
			2. For target FER=0.01, JCMD with RBD obtains 3dB gain than BICM with RBD, and JCMD with RBD obtains 1.8dB gain than JCMD with BD.
		2. Discussions
			1. No discussion.
4. EC Comments on PAR and CSD documents
	1. Comments from Mark Hamilton (1/2).
		1. MAC: Should not be band-specific.
			1. There are examples of PHY specific MAC features such as MU-MIMO related to 802.11ac PHY.
		2. PHY: concerned potential impact on 802.11af PHY which copied 802.11ac PHY:
			1. A new PHY wouldn’t be reflected in 802.11af.
	2. Comments from Mark Hamilton (2/2)
		1. Mobility:
			1. The PAR does not address mobility (BSS transition, vehicular speed).
	3. Comments from 802.22.
		1. From 1 to 6 GHz is quiet broad:
			1. Preferred to keep current text as it is.
			2. Need to check if there are similar comments from other group.
	4. Received comments and responses contained in a document.
5. Recess @ 17:58 until PM3 (19:30) this evening.

**Tuesday, March 17th, 2014, PM3 Session (19:30-21:30)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chair of HEW SG, @19:35
	1. About 180 people are in the room.
	2. Chair reminded IEEE 802 and 802.11 IPR P&P.
	3. Agenda Doc.11-14/1506r2 is on the server. Rev 3 is the working document
	4. Chair asked to limit the time for each presentation to 20 minutes.
2. Agenda for this session
	1. Tuesday PM3
		1. Meeting call to order
		2. IPR Policy reminder
		3. EC comments on PAR and CSD.
		4. Presentations
		5. Recess
	2. Agenda approved without objections.
3. EC comments on PAR and CSD
	1. Review the progress of comment resolutions.
	2. Edit: response document, PAR and CSD.
	3. Chair to upload the response and revised PAR and CSD documents.
	4. We will have motions to approve the response and revised documents during AM1 session on Wednesday.
4. Presentations
	1. Ron Porat (Broadcom) presented “Evaluation Methodology” based on 13/1359r1
		1. Summary
			1. Ron went through the revised Evaluation Methodology document highlighting the changes.
		2. Discussions
			1. Q: How to proceed with this document? 🡪 Ron prefers offline works.
	2. Jarkko Kneckt (Nokia) presented “Utilizing Unused Resources by Allowing Simultaneous Transmissions” based on 14/0357r0.
		1. Summary
			1. HEW should specify means for simultaneous transmissions scheme shall be compatible with physical and virtual carrier sensing
			2. To maximize the network performance the interference level shall be optimized for data receiver and transmitter
			3. Simultaneous transmissions improve WLAN system performance.
		2. Discussions
			1. C: Point is how we make it actually happen. Would like to know if the presenter has any ideas. 🡪 No specific proposal.
			2. C: This is the way forward. Would like to ask the effect of RTS/CTS exchange. Good to optimize the performance.
			3. C: In real world there will be many legacy STAs which will be a victims of the new technology.
			4. C: we will have a way to make this such as specified by 11ah that resolves OBSS issue by signaling
	3. Pinging Xu (Southeast University) presented “Energy Efficiency in HEW”, based on 14/0373r0.
		1. Summary
		2. Discussions
			1. No discussions
5. Chair asked if there are other submissions ready to present. 🡪 No response.
6. Recess @ 21:04 until AM1 (8:00) tomorrow morning.

**Wednesday, March 19th, 2014, AM1 Session (8:00-10:00)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chairperson of the HEW SG, @8:08 AM
	1. About 170 people are in the room.
	2. Chair reminded IEEE 802 and 802.11 IPR P&P.
	3. Agenda Doc.11-14/0219r2 is on the server. Rev 3 is the working document
2. Agenda for this session
	1. Tentative Agenda
		1. Call Meeting to order
		2. Reminder
			1. IEEE 802 and 802.11 IPR Policy and procedure.
			2. Attendance
		3. SG Motion(s)
			1. Motion to approve resolutions of comments related to PAR and CSD
			2. PAR reaffirmation motion
			3. CSD reaffirmation motion
			4. SG Extension Motion
		4. Presentations
		5. Recess
	2. Chair asked if there are any modifications to the agenda.
	3. Agenda approved without objections.
3. SG Motions
	1. **Comment Resolution Motion.**
		1. **Move to accept resolutions to comments related to HEW SG draft PAR and CSD in doc. 11-14/0424r0.**
		2. **Moved by Brian Hart (Cisco), Seconded by Lei Wang (Marvell).**
		3. **Discussions on the motion**
			1. **No discussion.**
		4. **Result**
			1. **Motion passed by 85/0/1.**
	2. **PAR Motion**
		1. **Believing that the PAR contained in the document referenced below meets IEEE-SA guidelines,**

**Request that the PAR contained in 11-14/0165r1 be posted to the IEEE 802 Executive Committee (EC) agenda for WG 802 preview and EC approval to submit to NesCom.**

* + 1. **Moved by Rakesh Taori (Samsung), Seconded by Allan Jones (Activision).**
		2. **Discussion on the motion**
			1. **No discussion.**
		3. **Result**
			1. **Motion passed by 94/0/1.**
	1. **CSD Motion**
		1. **Believing that the criteria for standard development CSD contained in the document referenced below meets IEEE 802 guidelines,**

**Request that the CSD contained in 11-14/0169r1 be posted to the IEEE 802 Executive Committee (EC) agenda for WG 802 preview and EC approval to submit to NesCom.**

* + 1. **Moved by Lei Wang (Marvell), Seconded by Brian Hart (Cisco).**
		2. **Discussion on the motion**
			1. **No discussion.**
		3. **Result**
			1. **Motion passed by 97/0/1.**
	1. **Motion for SG Extension**
		1. **Request the IEEE 802 LMSC to extend 802.11 HEW Study Group.**
			1. **Moved by Allan Jones (Activision), Seconded by Lei Wang (Marvell).**
		2. **Discussion on the motion**
			1. **No discussion.**
		3. **Result**
			1. **Motion passed by 105/0/0.**
1. Presentations
	1. Minho Cheong (NEWRACOM) presented “Modeling of additional channel loss in dense WLAN environments”, based on 14/0113r1
		1. Summary
			1. Discussed considerations on how to model additional channel loss due to human-body blockage we could experience especially in super-dense Wi-Fi environments.
			2. Logarithmic-linearly proposal to the population density with a threshold.
			3. More measurement campaigns by other companies expected.
		2. Discussions
			1. Q: Asked if the mobility of the STA is considered. 🡪 A: Stationary condition.
			2. Q: 2.4GHz? 🡪 A: Yes.
			3. C: 5GHz band may have a different result.
	2. Giwon Park (LG Electronics) presented, “Discussion on power save mode for real time traffic”, based on 14/0352r0.
		1. Summary
			1. Discussed many types of real time traffic and appropriate 802.11 Power Save modes for High Efficiency WLAN.
			2. Concluded that real time traffic such as live video streaming and VoIP with silence suppression may not be efficiently supported by the current 802.11 power save mode.
		2. Discussions
			1. C: VoIP trigger mode U-APSD can be used.
			2. C: MAC may not aware the requirements of application – practical issue that should be considered 🡪 Intension of this presentation is to introduce problems that current video services have.
			3. C: 11ah may solve some of the problems. Would like to know why not use the PSMP for VoIP.
			4. C: U-APSD uplink transmission is not coordinated.
			5. C: Seems to be suggesting new power save mode for HEW such as VoIP support over U-APSD. 🡪 Need further study.
	3. Naveen Kakani (CSR) presented, “Short Packet Optimizations”, based on 14/0342r1.
		1. Summary
			1. Summary of Packet Length statistics
			2. Discussed optimizations already available in 802.11 and new optimizations that can be considered.
			3. The next step will be to evaluate proposed mechanisms and come back with preliminary performance numbers.
		2. Discussions
			1. C (slide 8): Do not understand benefit of using EIFS + Contention Period.
			2. C (slide 7): AP side only?
			3. C: Possible optimization will be aggregating multi-user short packets
			4. Q (slide 5): Assume VDI scenario primary application?
	4. Naveen Kakani (CSR) presented, “A Simplified Simultaneous Transmit and Receive MAC”, based on 14/0340r0.
		1. Summary
			1. In band STR (Full Duplex) transmission allows 100% increase in Network throughput.
			2. A simplified MAC mechanism which supports In Band STR proposed.
		2. Discussions
			1. Q: Preamble for uplink seems to be different from the downlink frame. 🡪 A: Not proposing any changes at this point.
			2. Q: Any simulation result showing the improvements? 🡪 No result. This is proposal of high level concept.
			3. C (slide 9): Signaling of STR seems to be suggesting changes to the VHT SIG field. 🡪 A: Not suggesting anything.
			4. C: Assuming that there are lots of short packets, would like to make sure STR is effective.
			5. C: Seems that both AP and STA need to support this capability.
2. Recess until AM1 (8:00 AM) tomorrow morning.

**Thrsday, March 20th, 2014, AM1 Session (8:00-10:00)**

1. The meeting called to order by Osama Aboul-Magd (Huawei), the chairperson of HEW SG, @ 8:00.
	1. About 160 people are in the room at the beginning of the session.
	2. Agenda Doc.11-14/0219r3 is on the server. Rev 4 is the working document
	3. Chair reminded IEEE 802 and 802.11 IPR P&P.
	4. Attendance reminder.
2. Administrative Items
	1. Announcement
		1. We still have 11 presentations.
		2. Chair asked to limit time for each presentation to 20 minutes.
	2. Agenda for this session
		1. Tentative Agenda for this session
			1. Call Meeting to order
			2. IEEE 802 and 802.11 IPR Policy and procedure.
			3. Presentations
			4. Recess
		2. Chair asked if there are any comments or objections – no objections. The agenda approved.
3. Presentations
	1. Takayuki Nishio (Kyoto University) presented “Traffic Separation Scheme for Optimizing WLANs using PHY and MAC options”, based on 14/0392r0.
		1. Summary
			1. A traffic separation scheme which enables WLANs to coordinate traffic so that WLAN options increase the system throughput efficiently.
				1. The benefits of the proposed scheme include easy implementation, minimizing the latency and prioritization of real time traffic.
		2. Discussions
			1. No question.
	2. Leif Wilhelmsson (Ericsson) presented “Possible Indoor Channel Models for HEW System Simulations”, based on 14/0393r0.
		1. Summary – Feasibility of UL multi-user transmissions discussed.
			1. The 802.11n channel model (in particular D) appears to give too low attenuation. Not suitable for PL estimation.
			2. For single floor – the linear attenuation model seems suitable, e.g. 3GPP HeNB
			3. For Multi-floor penetration, n>1, COST 231 seems to give too high attenuation. Other simple alternatives exist
			4. Overall WINNER II seems as the best model for NLOS.
		2. Discussions
			1. C: Topology of our indoor simulation scenario is identical to the 3GPP TR 36.814. There have been some minor updates. Would like to understand the intention of proposing slightly different model.
			2. Q (slide 11): Difference between the two graphs. A: The left side graph is based on the measurements and right one is based on simulations.
	3. Nihar Jindal (Broadcom) presented “PHY Calibration Results”, based on 14/0307r0.
		1. Summary
			1. SINR calibration results for scenario 1 based on an operationally meaningful SINR definition included effective SINR results with multipath and 2x2 MIMO presented.
			2. It was shown that PHY system simulation results for scenario 1 allows for calibration of per-STA throughput.
		2. Discussions
			1. Q (slide 7): CCA level changed? – No.
			2. Q: Which on the SNR and SINR is represented? – Both.
			3. C (slide 15): Have a concern in the simulation scenario.
	4. Filip Mestanov (Ericsson) presented “Stadium Scenario for HEW”, based on 14/0r.
		1. Summary
			1. An initial proposal for modeling of a stadium scenario with dense BSS deployments and high user density.
			2. Simulation scenario and parameters for stadium models presented.
		2. Discussions
			1. C: Many devices using 2.4 GHz still exist. Not good to push them to the 5GHz.
			2. Q: What will be the next step? – A: Stadium scenario is somewhat covered in the existing simulation scenario. Additional scenario might be proposed depending on the result of discussions.
			3. Q: Traffic distribution – where it comes from? From actual measurements.
			4. Q: Channel model.
	5. Yakun Sun (Marvell) presented “Instantaneous SINR Calibration for System Simulation”, based on 14/0335r0.
		1. Summary
			1. Two options of instantaneous SINRs calibration are proposed:
				1. Suggestion #1:

Use Option 1 (SINR per tone) given its convenience and readiness.

Option 2/2a can be revisited in the latter steps of calibrations.

* + - * 1. Suggestion #2:

Use Option 1 (SINR per tone) given its convenience and readiness.

Option 2/2a can be revisited in the latter steps of calibrations.

* + 1. Discussions
			1. C (slide 17): MCS7 is assumed which seems to be too high. MCS does not matter since we focus only on the SINR.
			2. C (sllide 5): Option 2 seems to be more appropriate.
			3. C (slide 18): Not sure how to calculate the interference on each tone. 🡪 This is only for the calibration purpose.
	1. Tianyu Wu (MediaTek) presented “Discussions on MCS selection for SLS calibration”, based on 14/0386r0.
		1. Summary
			1. System Level Simulator (SLS) is an essential tool in HEW.
			2. Further discussions on SLS alignment discussed – MCS selection.
		2. Discussions
			1. C: If the packet error was caused by collision, MCS should not be affected.
			2. C: Identified some problem in dynamic adaptation of MCS.
			3. C: Not sure whether MCS adaptation is really required in the SLS.
			4. C (slide 5): 10% PER MCS is not practical since we cannot know PER is 10%. Reasonable suggestion is use the MCS that maximize the throughput.
			5. C: MCS selection needs to converge within a reasonable time.
			6. C: Need to understand interference situation to think about MCS adaptation.
1. Recess @10:01 AM until PM1 (13:30) today.

**Thursday, March 20th, 2014, PM1 Session (13:30-15:30)**

1. The meeting called to order by Osama Aboul-Magd (Huawei Technologies), the chair of HEW SG, @ 13:30.
	1. About 170 people are in the room at the beginning of the session.
	2. Chair reminded IEEE 802 and 802.11 IPR P&P.
	3. Chair reminded attendance.
	4. Agenda Doc.11-14/0219r3 is on the server. Rev 4 is the working document
2. Agenda for this session
	1. Tentative Agenda for this session
		1. Call Meeting to order
		2. IEEE 802 and 802.11 IPR Policy and procedure.
		3. Presentations
			1. 14/0425, “A New Metric for Evaluating the Throughput Performance of HEW” - 10 minutes
			2. 14/0443, “What is P2P traffic in HEW Simulation Scenarios?”, Jarkko Kneckt (Nokia) - 10 minutes
			3. 14/0111, “Which will be the first between 11ac optionals and new features?”, Minho Cheong (NEWRACOM) – 20 minutes
			4. 14/0112, “Wi-Fi interference measurements in Korea - part II”, Minho Cheong (NEWRACOM) – 20 minutes
			5. 14/0372, “System level simulations on increased spatial reuse”, Liwen Chu (Marvell) – 20 minutes
			6. 14/0419, “802.11ax Spec Development Process Proposal”, Rolf de Vegt (Qualcomm) – 20 minutes
		4. Goals for May 2014
		5. Teleconference Schedule
		6. AOB
		7. Adjourn
	2. Chair asked if there are any objections to proceed with this agenda – no objections. The agenda was approved.
3. Presentations
	1. Yunzou Li (Tsinghua University) presented “A New Metric for Evaluating the Throughput of HEW”, based 14/0425r3.
		1. Summary
			1. Current inefficiency of WLAN comes from insufficient knowledge of STAs (topology) and applications.
			2. Evaluate the throughput of HEW under some important prior knowledge of STAs.
		2. Discussions
			1. No discussion
	2. Jarkko Kneckt (Nokia) presented “What Is P2P Traffic in HEW Simulation Scenario” based on 14/443r0.
		1. Summary
			1. 11-13-1001r8 HEW SG Simulation Scenarios document includes P2P traffic in every simulation scenario while P2P Traffic is not defined in 802.11.
			2. This submission clarifies P2P Traffic and proposes additions to 13-1001 HEW SG Simulation Scenarios document.
		2. Discussions
			1. No question.
	3. Minho Cheong (NEWRACOM) presented “Wi-Fi interference measurements in Korea (Part II)” based on 14/112r1.
		1. Summary
			1. Follow up presentation given in May 2013 providing additional results.
			2. Measurements and analysis are done on dense Wi-Fi environments according to different level of population density. As population density goes high, performance of Wi-Fi goes extremely degraded.
			3. Solutions to dense Wi-Fi environments are strongly required so that we could also manage to use Wi-Fi in the future (explosion of number of Wi-Fi devices).
		2. Discussions
			1. No questions nor comments
	4. Minho Cheong (NEWRACOM) presented “Which will be the first between 11ac optionals and new features?” based on 14/0111r0. 🡪 Deferred
		1. Summary
		2. Discussions
	5. Hongyuang Zhang (Marvell) presented “System level simulations on increased spatial reuse” based on 14/0372r2.
		1. Summary
			1. APs may select higher CCA levels for AP’s/STA’s carrier sensing in the BSS in several HEW contributions.
			2. Increasing CCA level with BSS Color can improve spatial reuse in HEW BSS and boost the throughput in residential use case.
			3. Fairness mechanism is required for coexistence among STAs with different CCA levels.
		2. Discussions
			1. Q: Asked about synchronization between the packets. 🡪 A: All packets are assumed to be synchronized in current analysis.
			2. Q: BSS color – what needs to be considered? – A: CCA, interference, etc.
			3. Q (slide ?): Performance comparison - Why HEW has better throughput? - A: Due to BSS color.
			4. Q (slide 7): Any results for total throughput? – Not for this time.
			5. Q: Any reason to choose -62dBm for the CCA threshold? – No. Just pick a value.
	6. Simone Merlin (Qualcomm) presented updates on “Simulation Scenario Document” based on 13/1001r8.
		1. Revision 7 is on the server.
		2. No contribution received before this session and got some during the session.
			1. Contribution from Wookbong (LG), Reza (Cisco), Yakun (Marvell), Eisuke (Sony), Jarkko (Nokia) and Klaus (Nokia).
			2. Had good discussions on path loss and penetration loss during this week. This topic requires some more discussions.
		3. Discussions
			1. Seems to assume different calibration parameter depending on the scenario. 🡪 Yes.
			2. Asked about the status of the channel model document. 🡪 Chair mentioned it will be discussed in the task group.
			3. Asked if we should have scenario for multiple operators and multiple entities. 🡪 We can discuss about it if we got a proposal.
			4. TBDs in the document – It is because we have received no proposal.
		4. Simone will post the clear version of the document. Comments and feedback welcomed.
	7. Rolf de Vegt (Qualcomm) presented “802.11ax Spec Development Process Proposal” based on 14/0419r.
		1. Summary
			1. Once task group .11ax has been formed, the group will have to develop and agree on a selection procedure.
			2. Fairness mechanism is required for coexistence among STAs with different CCA levels.
			3. Next step
				1. Once the taskgroup has been established, the group will need to develop and adopt a selection procedure
				2. Proposal here is to include an SFD step in the selection procedure for TG ax
		2. Discussions
			1. No discussions
4. Goals for May 2014 session
	1. SG or TG election
	2. Continue the work on simulation scenarios, evaluation methodologies, channel models, and function requirements.
5. Teleconference Planning
	1. Chair asked if we need teleconferences between now and May meeting.
		1. Jarkko suggested at least one conference call.
		2. Chair suggested April 17, 10:00-12:00 ET.
	2. Discussion
		1. What will be discussion topics for the conference call? 🡪 Jarkko suggested simulation scenario, but we can cancel if do not have any discussion items.
6. AOB
	1. No other businesses.
7. HEW SG adjourned@15:01.