IEEE P802.11
Wireless LANs

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| 802.11 AMP TIG Session minutes for January 2023 IEEE Interim |
| Date: 2023-1-16 |
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Abstract

This document includes minutes of AMP TIG Sessions of January 2023 IEEE 802 Interim mixed-mode meeting.

Version Tracking:

R0: Creating the minutes, January 16th.

R1: Updating for the second sessions, January 20th.

# Monday 16 January 2023 @ 7:30-9:30 pm ET

## Opening (IEEE 802.11-22/2137r1)

* 1. Call to order 7:30 pm ET.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy and meeting rules (slides 2-8).
	4. No response to the call for patents.
	5. Chair introduced IEEE-SA COPYRIGHT POLICY (slides 9-10)
	6. Chair reviewed other Guidelines, Guideline for Straw Polls, Suggested Best Practices in Mix-mode and Registration for January mixed-mode Interim Meeting (slides 11-15).
	7. Chair reviewed current AMP TIG Session Plan, AMP Documents Update, AMP Teleconference Progress, AMP session Agenda, and future Teleconference Plan (slides 16-23).
	8. Jon Rosdahl is local coordinator, Zhisong Zuo is executive secretary.
	9. Chair call for approval of the agenda of the AMP session.

## Agenda (IEEE 802.11-22/2137r1)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/22/11-22-2137-01-0amp-amp-tig-meeting-agenda-for-jan-interim-2023.pptx. (slide 19)
		+ Call meeting to order and remind the group to record attendance on imat.ieee.org
		+ IEEE-SA IPR policies and meeting rules
		+ Approval of agenda
		+ AMP TIG Dec 2022 TC summary
		+ Contribution discussion list updates

11-22/2207, FCC Part 15 and Channel Widths, Dave Halasz (Morse Micro)

11-22/0089, Frequency regulation chapter for AMP TIG Report, Joerg Robert (TU Ilmenau / Fraunhofer IIS)

11-23/0064, Discussion on S1G regulation requirements, Weijie Xu (OPPO)

11-23/0072, Proposed revision on draft technical report for AMP, Amichai Sanderovich (Wiliot Ltd)

11-23/0056, 802.11 compatible backscatter prototype, Vytas Kezys (Haila)

* + - Any other business?
		- Recess
	1. No objection, Agenda approved.

## Contribution discussion

* 1. Presentation of IEEE 802.11-22/2207, FCC Part 15 and Channel Widths, by Dave Halasz (Morse Micro):

Q(uestion): I’m assuming you talking about narrow band is due to energizer, to follow FCC regulation.

A(nswer): We would like to consider that restriction for all reader’s signal.

Q(uestion): If we can just transmit wider bandwidth than 500kHz to follow the FCC regulation for transmit in 902 – 928 MHz, then it is still work for AMP devices.

A(nswer): That can be allowed. But this is only for US, not sure for other regions.

Q(uestion): Still, that FCC regulation should apply to communication. Does it also apply to energizer?

A(nswer): We assume it is also for energizer. Since it transmits signal.

* 1. Presentation of IEEE 802.11-23/0089 Frequency Regulation Chapter for AMP TIG Report, by Joerg Robert (TU Ilmenau / Fraunhofer IIS)

Q(uestion): 29.14 dBm is close to 30 dBm and can work for AMP devices. The devices can adapt base on the regulations of different regions.

A(nswer): The paper is to show some insides of the EU frequency regulation and implication to the AMP technologies. And we desire same set of standard over different regions.

Q(uestion): For 29 dBm case, the energizer can be easily adapted. And this is not very sensitive to the bandwidths. Also, for the 35 dBm case, what it the angular requirement of the directive antenna. We this the directive should also work for AMP devices.

A(nswer): We shown that as 90 degree in the paper. The original ETSI regulation are very specific and that should be followed.

Q(uestion): Focus on the fact of the Regulation on the frequency for Europe. Those can actually be considered in the technical discussion. It seems those are feasible, including the directive antenna.

A(nswer): Yes, this is just giving some factual details of the Regulation.

* 1. Presentation of IEEE 802.11-23/0064 Discussion on S1G regulation requirements, by Weijie (OPPO)

Q(uestion): Should we consider different standard for different region?

A(nswer): The adaptation would be simpler due to the simple OOK wave form. So, the differences would be small.

Q(uestion): In Europe, the regulation is quite different. We also expect that will bring much different in standard.

A(nswer): We can discuss that in the study. But we do not expect too much different.

* 1. Presentation of IEEE 802.11-23/0112 Ambient IOT Device Demo, by Amichai Sanderovich (Wiliot Ltd), (newly create to demo for use cases paper in section 3.5)

Q(uestion): The distance for receiving the signal from the devices?

A(nswer): Similar as the Energizing Module to devices, around 10 meter.

Q(uestion): How you do the transmission of devices? What is the protocol it is using for device transmit to iPhone？

A(nswer): The device is actively transmitting. Blue tooth.

Q(uestion): Transmission power of device?

A(nswer): Did not check.

Q(uestion): How long to charge before activating the devices?

A(nswer): Short like 2 seconds, and also depend on distance.

Q(uestion): Is there battery inside?

A(nswer): No, the energy is from harvested power.

* 1. Presentation of IEEE 802.11-23/0062 Proposed revision on Draft Technical Report for AMP, by Amichai Sanderovich (Wiliot Ltd)

Comment: Very good use case for storing food, which related to everyone.

* 1. Presentation of IEEE 802.11-23/0056, 802.11 compatible backscatter prototype, by Vytas Kezys (HaiLa)

Q(uestion): What is the UL link signal?

A(nswer): The UL signal is 802.11 compatible.

Q(uestion): What is the signal modulation scheme.

A(nswer): It use DSSS.

Q(uestion): What about the power consumption of the device when you doing backscattering?

A(nswer): No exact number of power, but it would be in similar level of other backscattering.

Q(uestion): What about the date rate?

A(nswer): DL 1 Mbps, DSSS signal

Q(uestion): For the DSSS signal, do you do the synchronization in the device?

A(nswer): Yes.

Q(uestion): How to extend the coverage.

A(nswer): Works on infrastructure and device have to be done to meet the use case coverages.

## Closing

* 1. The chair announced the session recessed at 9:30 pm ET.
	2. Next session will be on January 19th

# Thursday 19 January 2023 @ 10:30-12:30 am ET

## Opening (IEEE 802.11-22/2137r2)

* 1. Call to order 10:30 pm ET.
	2. Chair instructed members to record attendance in IMAT.
	3. Chair introduced the patent policy and meeting rules (slides 2-8).
	4. No response to the call for patents.
	5. Chair introduced IEEE-SA COPYRIGHT POLICY (slides 9-10)
	6. Chair reviewed other Guidelines, Guideline for Straw Polls, Suggested Best Practices in Mix-mode and Registration for January mixed-mode Interim Meeting (slides 11-15).
	7. Chair reviewed current AMP TIG Plan, AMP Documents Update, AMP Teleconference Progress, AMP session Agenda, and future Teleconference Plan (slides 16-23).
	8. Jon Rosdahl is local coordinator, Zhisong Zuo is executive secretary.
	9. Chair call for approval of the agenda of the AMP session.

## Agenda (IEEE 802.11-22/2137r2)

* 1. Chair presented the agenda: https://mentor.ieee.org/802.11/dcn/22/11-22-2137-02-0amp-amp-tig-meeting-agenda-for-jan-interim-2023.pptx. (slide 22)
		+ Call meeting to order and remind the group to record attendance on imat.ieee.org
		+ IEEE-SA IPR policies and meeting rules
		+ Approval of agenda
		+ Contribution discussion

11-23/0106, Some Thoughts on Backscatter Modulation, Joerg Robert (TU Ilmenau / Fraunhofer IIS)

11-23/0057, Coverage with realistic propagation for AMP IoT, Vytas Kezys (Haila)

11-22/1960, Summary and recommendation for AMP IoT, Yina Qi(OPPO)

11-23/0063, Proposal for consensus straw poll, Weijie Xu (OPPO)

* + - Teleconference plan
		- Any other business?
		- Adjourn
	1. Agenda was approved without objection.

## Contribution discussion

* 1. Presentation of IEEE 802.11-23/0106, Some Thoughts on Backscatter Modulation, by Joerg Robert (TU Ilmenau / Fraunhofer IIS)

Q(uestion): For RFID, it already adopted back scattering. The issue of harmonic can be addressed.

A(nswer): RFID solve it with some specific design. It has narrow bands and avoid overlapping with harmonic interference. In the TIG study, we also need to have our solution.

Q(uestion): How much is the power loss. In backscattering, how about power loss from incoming signal and backscattered signal

A(nswer): Those are theoretical analysis. It could be 2dB. Further comment: In practice, it is around 5 dB loss.

Further Answer: It is depending on solutions. For example, polarization loss could be one of factor. The loss can be 12. But it can be low as 1dB with some measures done in hardware.

Q(uestion): How you consider other factors like antenna matching for the backscattering loss

A(nswer): This is more theoretical illustration. More engineering factors can be considered.

Q(uestion): Do you have study on the regulatory requirement for the harmonic issues.

A(nswer): In our earlier presentation there are references, requirements are per band.

* 1. Presentation of IEEE 802.11-23/0057, Coverage with realistic propagation for AMP IoT, by Vytas Kezys (Haila)

Q(uestion): Is that Raytracing not real measurement? The joint transmission is done for optimal case like good synchronization.

A(nswer): That tool be commonly used to evaluate the coverage. This is not the real measurement. The joint transmission may need some synchronized transmissions from different TXs.

Q(uestion): In the evaluation, the DL receiving sensitivity -35dBm is for decoding signal or harvesting power?

A(nswer): It is for decoding. In the slide 13 we include both decoding and harvesting(-22dBm) into consideration.

Q(uestion): The evaluation assuming TX power under US regulation. The regulation in Europe is much stringent. In some case, only directive antenna can transmit higher power.

A(nswer): It can use directional beam to meet the regulation.

Q(uestion): When you synchronize TXs tightly, the target Tag may be benefit by JT. Then, how to consider the interference to others, with multiple joint transmissions.

A(nswer): It can be solved by carful coordination.

Q(uestion): It sounds the transmissions of DL can be focus on specific areas.

A(nswer): Certain amount power be concentrated in on direction. But you should move the beam around. This can cover the whole area with duty cycle in few seconds.

Q(uestion): How the TXs’ Locations are determined.

A(nswer): This is modeling my house, the TXs are in places same as my APs. It is Random.

Q(uestion): How the coherent gain can be achieved.

A(nswer): It can be done by slightly shifting of the different JT signals.

* 1. Presentation of IEEE 802.11-22/1960r2, Summary and recommendation for AMP IoT, by Yina Qi (OPPO)

Q(uestion): We should show strong link be AMP and 802.11 family. We can work on this.

A(nswer): We think the study has done the work. Some existing 802.11 technology can be the based and this is feasible.

C(omment): We agree strong link should be shown for AMP and 802.11 family. The paper should show that more clearly.

C(omment): The focus can be given more clearly. Few sentences can be given to show what we will do for the next.

A(nswer): We agree with the comments, the next paper may give the list.

* 1. Presentation of IEEE 802.11-23/0063, Proposal for consensus straw poll, by Weijie Xu (OPPO)

Q(uestion): For the bullet “How the AMP device does energy harvesting is not in the scope”, we think harvesting should be studied in AMP since it is one of basis of AMP.

A(nswer): We here just emphasize the harvesting of AMP power is not in the scope. But we can assume the level of power is low due to AMP power source.

C(omment): We do not agree to standardize this before we have concluded the need to realize this technology into 802.11.

A(nswer): We can further discuss and justify it that is satisfied.

## Future teleconference plan

* 1. Chair propose one more teleconference next month. 2 time slots suggested by chair.

Feb 7th, 2023, 9:00am ~ 11:00am, ET

Feb 28th, 2023, 9:00am ~ 11:00am, ET

No objection, schedule approved.

## Closing

* 1. Chair adjourned the session at 12:30pm ET.