IEEE P802.11  
Wireless LANs

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| 802.11bf  Teleconference Minutes December 2020 | | | | |
| Date: 2020-12-15 | | | | |
| Author(s): | | | | |
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Abstract

This document contains minutes from TG 802.11bf teleconference in December 2020.

Rev 0: Minutes for TG 802.11bf teleconference on 8th of December.

Rev 1: Minutes for TG 802.11bf teleconference on 15th of December added.

**Teleconference on Tuesday, December 8, 2020, 9:00am –11:00am (ET)**

**Proposed Agenda:**

* Call the meeting to order
* Patent policy and logistics
* TGbf Timeline
* Call for contribution
* Motion for IEEE 802.11bf Selection Procedure
* Motion for IEEE 802.11bf FRD
* Teleconference Times
* Presentation of submissions

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| --- | --- | --- | --- |
| **DCN** | **Author** | **Title** | **Time duration** |
| 20/1805 | Insun Jang (LG Electronics) | Discussion on WLAN Sensing Roles | 30min |
| 20/1741 | Pu (Perry) Wang (MERL) | Feasibility Study of Human Pose and Occupancy Classification using mmWave WiFi Beam Attributes --- Q&A | 10 mins |
| 20/1742 | Anthony Pesin (InterDigital) | A Study on the Impact of Radar Range Resolution in Different Use Cases --- Q&A | 10 mins |
| 20/1849 | Cheng Chen (Intel) | Wi-Fi Sensing Definitions | 20 mins |
| 20/1850 | Cheng Chen (Intel) | Overview of Wi-Fi Sensing Scenarios | 30 mins |
| 20/1851 | Cheng Chen (Intel) | Overview of Wi-Fi Sensing Protocol | 30 mins |
| 20/1893 | Meihong Zhang (Huawei) | Channel Modeling for WLAN Sensing Indoor Scenario | 30 mins |
| 20/1901 | Rui Du(Huawei) | Discussion on ambiguity function, range Doppler map and link level simulation | 30 mins |

* Any other business
* Adjourn

**Teleconferences are subject to applicable policies and procedures, see below.**  
•       IEEE Code of Ethics  
–       <https://www.ieee.org/about/corporate/governance/p7-8.html>    
•       IEEE Standards Association (IEEE-SA) Affiliation FAQ  
–       <https://standards.ieee.org/faqs/affiliation.html>  
•       Antitrust and Competition Policy  
–       <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/antitrust.pdf>  
•       IEEE-SA Patent Policy  
–       <http://standards.ieee.org/develop/policies/bylaws/sect6-7.html>    
–       <https://standards.ieee.org/about/sasb/patcom/>  
 •       IEEE 802 Working Group Policies &Procedures (29 Jul 2016)  
–       [http://www.ieee802.org/PNP/approved/IEEE\_802\_WG\_PandP\_v19.pdf](https://protect2.fireeye.com/v1/url?k=5e715d2a-02fb7fe5-5e711db1-0cc47ad93ea4-c0712d99b9889b4a&q=1&e=f61fa0ab-291b-4ac4-a25e-6335a767a660&u=http%3A%2F%2Fwww.ieee802.org%2FPNP%2Fapproved%2FIEEE_802_WG_PandP_v19.pdf)  
•       IEEE 802 LMSC Chair's Guidelines (Approved 13 Jul 2018)  
–       <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0120-27-0PNP-ieee-802-lmsc-chairs-guidelines.pdf>  
•       Participation in IEEE 802 Meetings  
–       <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>  
•       IEEE 802.11 WG OM: (Approved 10 Nov 2017)  
–       <https://mentor.ieee.org/802.11/dcn/14/11-14-0629-22-0000-802-11-operations-manual.docx>

**Chair Tony Xiao Han (Huawei) calls the meeting to order at 9:00 am (ET).**

The Chair goes through slide 4 in document 11-20/1832r0, covering “Meeting Protocol, Attendance, Voting & Document Status”.

The Chair goes through slides 6 and 7, covering “Participants have a duty to inform the IEEE” and “Ways to inform IEEE”, respectively.

The chair made a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked

The Chair goes through slides 8-13, covering “Other Guideline for IEEE WG meetings”, “Patent related information”, “Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct”, “Participants in the IEEE-SA “individual process” shall act independently of others, including employers”, “IEEE-SA standards activities shall allow the fair &  
equitable consideration of all viewpoints”, and “Required notices”.

The Chair goes through the proposed agenda, slide 14, and askes if there are any comments or questions. No response from the group.

The Chair asks if there is any objection to approve the agenda. No response from the group so the agenda is considered approved by unanimous consent.

The Chair discusses the timeline and call for contribution.

**Motions:**

**Motion 5:** Move to adopt 11-20/1812r0 as the selection procedure document for TGbf.

Move: Claudio Da Silva

Second: Assaf Kasher

Motion approved by unanimous consent

**Motion 6:** Move to adopt 11-20/1813r0 as the functional requirement document for TGbf.

Move: Claudio Da Silva

Second: Sang Kim

Question/Comment (Q): I believe the FRD is not complete. It does not cover the regulatory aspects. I therefore propose the following addition “2.7 Regulatory Compliance Provisions [TGbf R10] The amendment shall incorporate provisions for meeting regulatory requirements in the abovementioned frequency bands in major markets arising from the sensing functionality. [Ref-1 5.4]”

Answer (A): The FRD can be modified later if there is support for it, so you can see this as a baseline. I therefore propose to motion what we have at this point. Also, the FRD has been presented and discussed, and there has not been any discussion up until now.

Q: Is the intention to make 1813r0 the final FRD version (subject to change if needed)?

A: If there is a need it can be updated, but it is not intended as a draft.

Q: In the FRD, you are not listing non-HT, why?

A: Nobody saw a need for it.

Q: Maybe we can add “as the current FRD” to indicate that we are open for changes?

A: I believe we have a procedure. We want to adopt this document, and it clear from the procedure that it can be modified by a 75% approval rate.

After some discussion, the motion is friendly amended by adding “The Functional Requirement document may be modified at any time by a 75% approval vote.

Motion approved by unanimous consent

The Chair presents slide 19, showing the teleconference times.

**Presentations:**

**11-20/1805r1, “Discussion on WLAN Roles”, Insun Jang (LGE):**

Insun presents some thoughts on the different roles: Initiator, responder, transmitter, and receiver

Q: Is the Sens. Request sent at each TXOP?

A: Depends on the design.

Q: The roles are not clear on page 4

A: The responder is either transmitter or receiver

Q: Can the same STA be both transmitter and receiver?

A: I did not consider this.

Q: I believe we need to consider the case when the same device is both TX and RX, i.e., a radar like scenario.

**11-20/1742r0, “A Study on the Impact of Radar Range Resolution in Different Use Cases ”, Anthony Pesin (Interdigital):** This contribution was partly presented in the last session of the Plenary meeting, where there was no time for Q&A. Anthony quickly recapitulates the contribution and opens up for questions.

Q: What is the intention of the SP? As a capability or a performance parameter?

A: Perhaps add it to the excel sheet as a KPI?

Q: I believe it would be good to elaborate a bit on what “range resolution” means. Maybe provide a reference.

A: Range resolution is the ability of a radar system to distinguish between two or more targets on the same bearing but at different ranges.

The chair asks if there is any other business. No response from the group.

**The meeting is adjourned without objection at 11:04 am (ET).**

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 12/8 | Al Falujah, Iyad | ON Semiconductor |
| TGbf | 12/8 | Anwyl, Gary | MediaTek Inc. |
| TGbf | 12/8 | Au, Kwok Shum | Huawei Technologies Co., Ltd |
| TGbf | 12/8 | Au, Oscar | Origin Wireless |
| TGbf | 12/8 | Aygul, Mehmet | Istanbul Medipol University; Vestel |
| TGbf | 12/8 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 12/8 | Chayat, Naftali | Vayyar Imaging |
| TGbf | 12/8 | Chen, Cheng | Intel Corporation |
| TGbf | 12/8 | Cheng, Gang | Nokia |
| TGbf | 12/8 | Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 12/8 | Choi, Jinsoo | LG ELECTRONICS |
| TGbf | 12/8 | Costa, D.Nelson | Peraso Technologies Incorporated |
| TGbf | 12/8 | da Silva, Claudio | Intel Corporation |
| TGbf | 12/8 | DeLaOlivaDelgado, Antonio | InterDigital, Inc. |
| TGbf | 12/8 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 12/8 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 12/8 | Fridman, Roi | Vayyar Imaging Ltd |
| TGbf | 12/8 | Grigat, Michael | Deutsche Telekom AG |
| TGbf | 12/8 | Haskou, Abdullah | InterDigital, Inc. |
| TGbf | 12/8 | Jang, Insun | LG ELECTRONICS |
| TGbf | 12/8 | jiang, yiming | Nokia |
| TGbf | 12/8 | Kadampot, Ishaque Ashar | Qualcomm Incorporated |
| TGbf | 12/8 | Kasher, Assaf | Qualcomm Incorporated |
| TGbf | 12/8 | Kim, Jeongki | LG ELECTRONICS |
| TGbf | 12/8 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 12/8 | Kwon, Young Hoon | NXP Semiconductors |
| TGbf | 12/8 | Levitsky, Ilya | IITP RAS |
| TGbf | 12/8 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 12/8 | Ma, Li | MediaTek Inc. |
| TGbf | 12/8 | McCann, Stephen | Huawei Technologies Co., Ltd |
| TGbf | 12/8 | Morioka, Hitoshi | SRC Software |
| TGbf | 12/8 | Orlovsky, Michael | Vayyar Imaging LTD. |
| TGbf | 12/8 | Ozbakis, Basak | VESTEL Electronics Corp. |
| TGbf | 12/8 | OZDEN ZENGIN, OZLEM | VESTEL |
| TGbf | 12/8 | Pare, Thomas | MediaTek Inc. |
| TGbf | 12/8 | PESIN, ANTHONY | InterDigital, Inc. |
| TGbf | 12/8 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 12/8 | Rantala, Enrico-Henrik | Nokia |
| TGbf | 12/8 | RISON, Mark | Samsung Cambridge Solution Centre |
| TGbf | 12/8 | Rolfe, Benjamin | Blind Creek Associates |
| TGbf | 12/8 | Sahin, Onur | InterDigital, Inc. |
| TGbf | 12/8 | Solaija, Muhammad Sohaib | Istanbul Medipol University; Vestel |
| TGbf | 12/8 | Sosack, Robert | Molex Incorporated |
| TGbf | 12/8 | Sun, Yingxiang | Huawei Technologies Co. Ltd |
| TGbf | 12/8 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 12/8 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 12/8 | Turkmen, Halise | Vestel |
| TGbf | 12/8 | Wang, Chao Chun | MediaTek Inc |
| TGbf | 12/8 | Wilhelmsson, Leif | Ericsson AB. |
| TGbf | 12/8 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbf | 12/8 | Yee, James | MediaTek Inc. |
| TGbf | 12/8 | Zeng, Ruochen | NXP Semiconductors |
| TGbf | 12/8 | Zhang, Meihong | Huawei Technologies Co., Ltd |

**Teleconference on Tuesday, December 15, 2020, 9:00am –11:00am (ET)**

**Proposed Agenda:**

* Call the meeting to order
* Patent policy and logistics
* TGbf Timeline
* Call for contribution
* Teleconference Times
* Presentation of submissions

|  |  |  |  |
| --- | --- | --- | --- |
| **DCN** | **Author** | **Title** | **Time duration** |
| 20/1741 | Pu (Perry) Wang (MERL) | Feasibility Study of Human Pose and Occupancy Classification using mmWave WiFi Beam Attributes --- Q&A | 10 mins |
| 20/1849 | Cheng Chen (Intel) | Wi-Fi Sensing Definitions | 20 mins |
| 20/1850 | Cheng Chen (Intel) | Overview of Wi-Fi Sensing Scenarios | 30 mins |
| 20/1851 | Cheng Chen (Intel) | Overview of Wi-Fi Sensing Protocol | 30 mins |
| 20/1893 | Meihong Zhang (Huawei) | Channel Modeling for WLAN Sensing Indoor Scenario | 30 mins |
| 20/1901 | Rui Du(Huawei) | Discussion on ambiguity function, range Doppler map and link level simulation | 30 mins |
| 20/1712 | Assaf Kasher (Qualcomm) | Straw poll for use cases:  I agree to use 11-20-1712r1 as the basis to TGbf use cases document | 15 mins |

* Any other business
* Adjourn

**Teleconferences are subject to applicable policies and procedures, see below.**  
•       IEEE Code of Ethics  
–       <https://www.ieee.org/about/corporate/governance/p7-8.html>    
•       IEEE Standards Association (IEEE-SA) Affiliation FAQ  
–       <https://standards.ieee.org/faqs/affiliation.html>  
•       Antitrust and Competition Policy  
–       <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/antitrust.pdf>  
•       IEEE-SA Patent Policy  
–       <http://standards.ieee.org/develop/policies/bylaws/sect6-7.html>    
–       <https://standards.ieee.org/about/sasb/patcom/>  
 •       IEEE 802 Working Group Policies &Procedures (29 Jul 2016)  
–       [http://www.ieee802.org/PNP/approved/IEEE\_802\_WG\_PandP\_v19.pdf](https://protect2.fireeye.com/v1/url?k=5e715d2a-02fb7fe5-5e711db1-0cc47ad93ea4-c0712d99b9889b4a&q=1&e=f61fa0ab-291b-4ac4-a25e-6335a767a660&u=http%3A%2F%2Fwww.ieee802.org%2FPNP%2Fapproved%2FIEEE_802_WG_PandP_v19.pdf)  
•       IEEE 802 LMSC Chair's Guidelines (Approved 13 Jul 2018)  
–       <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0120-27-0PNP-ieee-802-lmsc-chairs-guidelines.pdf>  
•       Participation in IEEE 802 Meetings  
–       <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180-05-00EC-ieee-802-participation-slide.pptx>  
•       IEEE 802.11 WG OM: (Approved 10 Nov 2017)  
–       <https://mentor.ieee.org/802.11/dcn/14/11-14-0629-22-0000-802-11-operations-manual.docx>

**Chair Tony Xiao Han (Huawei) calls the meeting to order at 9:00 am (ET).**

The Chair goes through slide 4 in document 11-20/1832r0, covering “Meeting Protocol, Attendance, Voting & Document Status”.

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The chair made a Call for Potentially Essential Patents. No potentially essential patents reported, and no questions asked

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equitable consideration of all viewpoints”, and “Required notices”.

The Chair goes through the proposed agenda, slide 20, and asks if there are any comments or questions. No response from the group.

The Chair asks if there is any objection to approve the agenda. No response from the group so the agenda is considered approved by unanimous consent.

The Chair discusses the timeline and call for contribution.

Teleconference Times

The teleconference on 9th of February is moved to 2nd of February.

Question/Comment(Q): Proposal to wait till after Interim to decide on telco.

Answer(A): No problem to cancel, so I prefer to have allocated times.

The chair will send out an announcement for the agreed times.

Q: Do we have deadline for when a contribution needs to be uploaded? The reason why I am asking is that some of the contributions on the today’s agenda are not uploaded.

Q: There is only a rule if there are motions, but I think it would good to have it available 24 hours in advance. At least r0 should be on the server, but it is fine if the presentation is updated.

The chair will consider the input in this matte and discuss with the group.

**11-20/1741r1 “Feasibility Study of Human Pose and Occupancy Classification   
using mmWave WiFi Beam Attributes” Pu Wang (MERL):** Not presented.

**11-20/1849r1 “Wi-Fi Sensing Definition”, Cheng Chen (Intel):** Cheng goes through some definitions that he proposes to be adopted by 11bf.

First it is noted that one can divided sensing into two categories: Monostatic and Bistatic.

It is then proposed to define a *sensing initiator* as the one that initiates the sensing session, and another device that is involved in the sensing session as a *sensing responder*.

Furthermore, it is proposed to define a *sensing transmitter* and *sensing receiver* as a device that transmits and receives a sensing PPDU, respectively.

It is noted that there can only be one initiator in a sensing session, but multiple responders transmitters, and receivers.

Q: I believe the term responder is unclear as there is no response.

A: There is no response packet. A responder is a STA that respond to an initiator.

Q: Maybe someone else than the initiator wants the report? I think it can be requested by someone else than the initiator.

A: The fact that a STA initiates a sensing session is because it wants some measurement results.

Q: I don’t think you need such a strict restriction like the initiator must ask for the results at a specific time. It can ask as some time.

A: I will think about your comments.

Q: Initiator and responder are basically for the MAC layer, but not really needed on the PHY?  
A: I agree in principle.

Q: Maybe the sensing receivers have different bandwidths?

A: Yes, this is possible for instance using OFDMA. What is shown on page 11 may be either sharing in time or frequency.

**11-20/1850r0 “Overview of Wi-Fi Sensing Scenarios”, Cheng Chen (Intel):** Cheng goes through different scenarios for sensing, also exemplifying the different roles defined in the previous presentation (1849).

Q: In Scenario 6, how is a STA set-up to send a sensing packet to STA 2 and STA3?

A: I don’t show the negotiation phase before the actual sensing phase. There are alternatives for how this can happen.

Q: Do we think about single target or multiple targets?

A: There is not necessarily a well-defined target as in the case of gesture recognition.

The chair informs that a straw poll will be run to get the groups opinion about when a contribution should be uploaded to the server, in order to give people a chance to read it before the contribution is presented.

**The meeting is adjourned without objection at 11:03 am (ET).**

**List of Attendees:**

|  |  |  |  |
| --- | --- | --- | --- |
| Breakout | Timestamp | Name | Affiliation |
| TGbf | 12/15 | Au, Kwok Shum | Huawei Technologies Co., Ltd |
| TGbf | 12/15 | Aygul, Mehmet | Istanbul Medipol University; Vestel |
| TGbf | 12/15 | Beg, Chris | Cognitive Systems Corp. |
| TGbf | 12/15 | Bluschke, Andreas | Signify |
| TGbf | 12/15 | Bredewoud, Albert | Broadcom Corporation |
| TGbf | 12/15 | Chayat, Naftali | Vayyar Imaging |
| TGbf | 12/15 | Cheng, Gang | Nokia |
| TGbf | 12/15 | Chitrakar, Rojan | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 12/15 | Choi, Jinsoo | LG ELECTRONICS |
| TGbf | 12/15 | Costa, D.Nelson | Peraso Technologies Incorporated |
| TGbf | 12/15 | da Silva, Claudio | Intel Corporation |
| TGbf | 12/15 | DeLaOlivaDelgado, Antonio | InterDigital, Inc. |
| TGbf | 12/15 | Dong, Xiandong | Xiaomi Inc. |
| TGbf | 12/15 | Du, Rui | Huawei Technologies Co., Ltd |
| TGbf | 12/15 | Erell, Assaf | Vayyar Imaging Ltd. |
| TGbf | 12/15 | Grigat, Michael | Deutsche Telekom AG |
| TGbf | 12/15 | HAN, Xiao | Huawei Technologies Co., Ltd |
| TGbf | 12/15 | Haskou, Abdullah | InterDigital, Inc. |
| TGbf | 12/15 | jiang, yiming | Nokia |
| TGbf | 12/15 | Kadampot, Ishaque Ashar | Qualcomm Incorporated |
| TGbf | 12/15 | Kim, Sang Gook | LG ELECTRONICS |
| TGbf | 12/15 | Kwon, Young Hoon | NXP Semiconductors |
| TGbf | 12/15 | Lim, Dong Guk | LG ELECTRONICS |
| TGbf | 12/15 | Lindskog, Erik | SAMSUNG |
| TGbf | 12/15 | Ma, Li | MediaTek Inc. |
| TGbf | 12/15 | Merlin, Simone | Qualcomm Incorporated |
| TGbf | 12/15 | Ozbakis, Basak | VESTEL Electronics Corp. |
| TGbf | 12/15 | Pare, Thomas | MediaTek Inc. |
| TGbf | 12/15 | PESIN, ANTHONY | InterDigital, Inc. |
| TGbf | 12/15 | Popov, Mark | Vayyar |
| TGbf | 12/15 | Pushkarna, Rajat | Panasonic Asia Pacific Pte Ltd. |
| TGbf | 12/15 | Rafique, Saira | Istanbul Medipol University, Vestel |
| TGbf | 12/15 | Raissinia, Alireza | Qualcomm Incorporated |
| TGbf | 12/15 | Rantala, Enrico-Henrik | Nokia |
| TGbf | 12/15 | RISON, Mark | Samsung Cambridge Solution Centre |
| TGbf | 12/15 | Rolfe, Benjamin | Blind Creek Associates |
| TGbf | 12/15 | Sand, Stephan | German Aerospace Center (DLR) |
| TGbf | 12/15 | Solaija, Muhammad Sohaib | Istanbul Medipol University; Vestel |
| TGbf | 12/15 | Sosack, Robert | Molex Incorporated |
| TGbf | 12/15 | Sun, Bo | ZTE Corporation |
| TGbf | 12/15 | Sun, Yingxiang | Huawei Technologies Co. Ltd |
| TGbf | 12/15 | Trainin, Solomon | Qualcomm Incorporated |
| TGbf | 12/15 | Tsai, Tsung-Han | MediaTek Inc. |
| TGbf | 12/15 | Turkmen, Halise | Vestel |
| TGbf | 12/15 | Varshney, Prabodh | Nokia |
| TGbf | 12/15 | Wang, Chao Chun | MediaTek Inc. |
| TGbf | 12/15 | Wilhelmsson, Leif | Ericsson AB |
| TGbf | 12/15 | Wizenberg, Reut | Vayyar Imaging |
| TGbf | 12/15 | Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| TGbf | 12/15 | Zeng, Ruochen | NXP Semiconductors |
| TGbf | 12/15 | Zhang, Meihong | Huawei Technologies Co., Ltd |