IEEE P802.11  
Wireless LANs

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| TGaz Meeting Minutes  May 7th-11th, 2018  Warsaw, Poland | | | | |
| Date: 2018-05-08 | | | | |
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Abstract

Minutes for the TGaz meeting beginning on May 7th, 2018.

**IEEE 802.11 Task Group AZ**

**May 7th – 11th, 2018**

1. **TGaz – May 08th, 2018 – Tue AM2**
   1. Called to order by TGaz chair, Jonathan Segev (Intel Corporation) at **1030 Hrs. CEDT**, Vice Chair Carlos Aldana (Intel Corporation), Roy Want (Google) Secretary (Ganesh Venkatesan (Intel) acting Secretary).
   2. Agenda Doc. **IEEE 802.11-18/0596r3 (in progress)**
   3. Review Patent Policy and logistics
      1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics – no clarifications requested.
      2. Chair called for any potentially essential patent -- no response from the audience.
      3. Chair reviewed IEEE 802 WG participation as individual professional – no clarification requested.
      4. Chair reminded all to record their attendance
      5. Recorded Participation requirement
         1. Headcount: ~14 present (at 1041 Hrs CEDT)
   4. Review Agenda
      1. Called for any additional submissions for the week.
      2. Reviewed and agreed the agenda with 5 session slots.
      3. Chair called for any additional feedback and changes to agenda.
      4. **Motion: We approve the agenda for document 11-18/0596r3**
         1. **Approved** by unanimous consent
   5. Approve previous meeting minutes (posted to Mentor on Mar 13th, 2018, r1 was posted on Mar 27th, 2018)
      1. Reviewed March 2018 meeting minutes by Roy Want (Google) **11-18/0571r1**
         1. **Motion: Move to approve document 11-18-0571r1 as TG meeting minutes for the March 2018 meeting**
         2. Moved: Assaf Kasher, Seconded: Qinghua Li.
         3. Discussion of the motion: none
         4. **Results (Y/N/A):** 11/0/1; **motion passes**
      2. There was no material for teleconferences, and as a result, the two previous events were cancelled Mar – May, 2018
   6. Pre-association Security Negotiation **11-18-350r4** (Nehru Bhandaru – Broadcom)
      1. Title: **Pre-association Security Negotiation**
      2. Updated with comments received since the last presentation.
      3. Comments received and related discussions are part of this submission
      4. Editor instructions in the submission “Allow” are non-standard. The author and the TGaz editor will work to cope with this non-standard instruction.
      5. **Motion:   
         Move to adopt 11-18-350r4 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text.**
      6. Moved: Nehru Bhandaru, Seconded Erik Lindskog
      7. **Results (Y/N/A)**: 11/0/1; **motion passes**
   7. **802.11az HEz Secure Measurement Protocol** (Yongho Seok 11-18/0727r0)
      1. Title: **802.11az HEz Secure Measurement Protocol Amendment Text**
      2. Addresses SFD requirements 17, 18 and 19
      3. Text in green highlight indicates additional requirements that came up while generating amendment text from SFD.
      4. Figure 11-yy ‘Measurement is invalid’ needs rewording. To be considered during comment collection.
      5. **Motion  
         Move to adopt document 11-18-727r0 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text**
      6. Moved: Yongho Seok, Seconded: Chitto Ghosh
      7. **Results (Y/N/A)**: 9/0/2; **motion passes**
   8. Yongho Seok (Mediatek) presented document **11-18/0729r0 – 802.11az Range Measurement protocol update**
      1. Title: **802.11az Range Measurement Protocol update**
      2. Addresses SFD requirements 3.2.2 and 3.2.3
      3. Replace NGP Announcement with NDP Announcement and qualify it as ‘a ranging NDP Announcement’
      4. C. Figures 11-xx and 11-yy should label FTM as Initial FTM.
      5. **Motion   
         Move to adopt document 11-18-729r1 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text.**
      6. Moved: Yongho Seok, Seconded: Qinghua Li
      7. **Results (Y/N/A)**: 9/0/2; **motion passes**
   9. 60 GHz Direction Measurement Draft Text Assaf Kasher (Qualcomm) document **11-18/812r0**
      1. Title: **60 GHz Direction Measurement Draft Text**
      2. Summary: Amendment text corresponding to direction measurement over a 60 GHz link.
      3. C: Direction measurement is specific to DMGz/EDMGz only
      4. Will continue this submission in the next slot.
   10. Attendance reminder
   11. Recess at 1230 Hrs. CEDT.
2. **TGaz – 08th May, 2018 – Tue PM2**
   1. Called to order by TGaz chair, Jonathan Segev (Intel Corporation) at **1600 Hrs CEDT**; Vice Chair, Carlos Aldana (Intel Corporation); Roy Want (Google) Secretary (Ganesh Venkatesan (Intel) acting Secretary).
   2. Agenda Doc. **Now working with revision 11-18/0596r4 (in progress)**
   3. Review Patent Policy and logistics
      1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics – no clarifications requested.
      2. Chair called for any potentially essential patent -- no response from the audience.
      3. Chair reviewed IEEE 802 WG participation as individual professional – no clarification requested.
      4. Chair reminded all to record their attendance
      5. Recorded Participation requirement
         1. Headcount: ~29 present (at 1700 Hrs CEDT)
   4. Reviewed submission order and updated agenda
      1. Updated agenda presentation order and feedback requested: none received
      2. Agenda agreed.
   5. TG Leadership election
      1. TG Chair re-affirmation by WG
      2. TG Vice Chair – Carlos Aldana (Intel Corporation) has stepped down. As previously announced a call for nominations shall be made prior to the July meeting; and election conducted at the July meeting
      3. TG Secretary – Roy Want (Google). No other nominations.
      4. **Motion:**

**We affirm Roy Want (Google) for the TGaz Secretary position**

* + 1. Moved: Allan Zhu; Seconded: Erik Lindskog
    2. **Results: (Y/N/A)** 11/0/0 **Motion Passes**
  1. Project Milestones (Jonathan Segev (Intel)) **11-18/596r4**
     1. D1.0 and D2.0 milestones are critical to meet in order to maintain the planned timeline (both for infrastructure use cases and P2P Use Cases)
     2. D1.0 needs to be of good quality in order
        1. To pass WG Letter Ballot and have external organizations (e.g. WFA) plan for corresponding certification
        2. To minimize the number of comments which could slow down executing to follow-on milestones (recirculation ballots, etc)
     3. Document 11/875r4 is the 802.11 Editor’s Guide – the chair recommends that TG members review the Editor’s Guide and use the guidelines in the development of amendment text to ensure that D1.0 is of good quality
     4. **Proposed Plan:**
        1. Review/verify draft meets the 802.11 style guide (missing parts, naming conventions, normative and descriptive sections).
        2. Perform internal comment collection coming out of July 2018 meeting.
        3. Perform internal comment resolution during the Sep. and possibly Nov. meeting (reject any remaining comments).
        4. Go to Initial WG ballot coming out of Nov. 2018.
        5. Consequence is SFD freeze going out of the July meeting.
     5. **Motion:  
        We commit to the process depicted in Slide #40 of submission 11-18/0596r04**
     6. **Discussion:**
     7. C: What does commit mean?
     8. R: The chair will guide the TG to execute the planned process
     9. Moved: Assaf Kasher; Seconded: Chitto Ghosh
     10. **Results (Y/N/A):** 15/0/0 **Motion Passes.**
  2. Continue from AM2 -- 60 GHz Direction Measurement Draft Text Assaf Kasher (Qualcomm) document **11-18/812r0**
     1. Title: **60 GHz Direction Measurement Draft Text**
     2. Green colored text in the submission is new relative to the presentation of this topic in the March 2018 meeting.
     3. Need to add 2 as a new value for the Trigger field of the FTM Request frame in the submission
     4. **Motion:**

**Move to adopt document 11-18-812r1 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text**

* + 1. Moved: Eitan Alecsander; Seconded: Yongho Seok
    2. **Discussion:**
    3. None
    4. **Results (Y/N/A):** 11/0/0 **Motion Passes.**
  1. Ranging NDP Transmission; Yongho Seok (MediaTek) document **11-18/0728r1**
     1. Title: **Ranging NDP Transmission**
     2. Summary: NDP frames are exchanged in order to obtain a range estimate**.** This submission provides details of the NDP frame. A subsequent submission will provide additional details.
     3. Discussion: None.
     4. **Motion:**
     5. **Move to adopt document 11-18-728r1 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text**
     6. Moved: Yongho Seok; Seconded: Qinghua Li
     7. Discussion: None
     8. **Results (Y/N/A)**: 12/0/0; **Motion Passes**
  2. PHY spec text for under 7 GHz Qinghua Li (Intel Corporation) document **11-18/0925r0**
     1. Title: **PHY Spec Text for under 7 GHz**
     2. Summary: This submission proposes amendment text relevant to the format of NDP frames that are exchanged in trigger-based HEz ranging and VHTz ranging.
     3. **Motion**
     4. **Move to adopt document 11-18-925r1 to the 802.11az draft and instruct the technical editor to incorporate it in the 802.11az draft amendment text.**
     5. Moved: Qinghua Li, Seconded: Yongho Seok
     6. Discussion. None
     7. **Results (Y/N/A)**: 11/0/0; **motion passes**
  3. HEz Ranging Sequence for Passive Location Support -- Eric Lindskog (Qualcomm) document **11-18/0928r0**
     1. Title: **HEz Ranging Sequence for Passive Location Support**
     2. Summary: proposes an adaptation of the HEz Ranging sequence for Passive Location support.
     3. **Straw poll:   
        We support using ‘HEz uplink Sounding for Passive Location’ Trigger Frame SubType, as depicted in slide #3 of the submission 11-18-928r0, for UL sounding trigger frame in the HEz ranging sequence for passive location support**
     4. **Results (Y/N/A)**: 11/0/1
     5. **Motion:   
        Move to adopt the following SFD text to the SFD document and instruct the SFD Editor to incorporate it under section 5 Scalability aspects of positioning and grant editorial license to the editor**

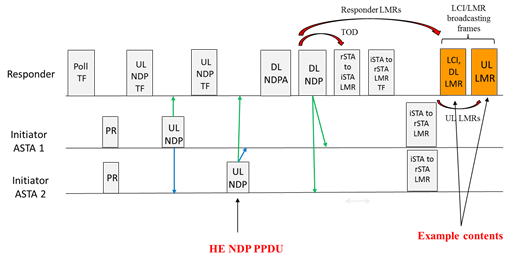
**“The sub-type for the UL sounding TF in the Passive HEz sequence shall be ‘HEz uplink Sounding for Passive Location’ Trigger Frame SubType, as depicted in slide #3 of the submission 11-18-928r0”**

* + 1. Moved: Erik Lindskog; Seconded: Assaf Kasher
    2. Discussion: none
    3. **Results (Y/N/A)**: 10/0/1; **Motion Passes**
    4. Continue discussion of this submission at next time slot
  1. Reminder to do attendance.
  2. Recess at 1759 Hrs. CEDT till WED PM1.

1. **TGaz – 09th May, 2018 – Wed PM1**
   1. Called to order by TGaz chair, Jonathan Segev (Intel Corporation) at **1330 Hrs. CEDT**
   2. Vice Chair, Carlos Aldana (Intel Corporation); Roy Want (Google) Secretary (Ganesh Venkatesan (Intel Corporation) acting Secretary).
   3. Agenda Doc. **Now working with revision 11-18/0276r5 (in progress)**
   4. Review Patent Policy and logistics
      1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics – no clarifications requested.
      2. Chair called for any potentially essential patent -- no response from the audience.
      3. Chair reviewed IEEE 802 WG participation as individual professional – no clarification requested.
      4. Chair reminded all to record their attendance
      5. Recorded Participation requirement
         1. Headcount: ~14 present (at 1335 Hrs. CEDT)
   5. Reviewed submission order and updated agenda
      1. Updated agenda presentation order agreed.
   6. Continue discussion of “HEz Ranging Sequence for Passive Location Support -- Eric Lindskog (Qualcomm) document **11-18/0928r0”**
      1. Complete pending Straw polls and motions
      2. **Straw poll:   
         We support having the UL NDP in HEz ranging for support of passive location to be of type HE NDP PPDU**
      3. **Results (Y/N/A)**: 8/0/3.
      4. **Motion:  
         Move to adopt the following requirement for Passive Location operation And instruct the SFD editor to incorporate it in theSFD under section-5 (Scalability aspects of the positioning protocol) and grant editorial license to the editor.**

**The UL NDP in HEz ranging for support of passive location to be of type HE NDP PPDU**

* + 1. Moved: Erik Lindskog, Seconded: Yongho Seok
    2. Discussion: None
    3. **Results (Y/N/A)**: 8/0/1, **motion passes**
    4. **Straw poll  
       We agree that for Passive Location to have two broadcast frames for broadcasting of information such as LCI, MAC address tables and measurement results of the current round (N) or the last round (N-1):  
       • The first frame to contain information known early by the Responder, e.g. LCI info, MAC address tables and DL measurement results.  
       • The second frame to contain information available late in the opportunity, e.g. the UL measurement results   
       Results (Y/N/A):** 9/0/2
    5. **Motion:**
    6. **Move to adopt the following requirements for Passive Location operation, instruct the SFD editor to incorporate it in the SFD under section 5 (Scalability aspects of the positioning protocol) and grant editorial license to the editor:  
       “The Passive Location HEz sequence shall have two broadcast frames as depicted in the figure below for broadcasting of information such as LCI, MAC address tables and measurement results of the current round (N) or the last round (N-1):  
       • The first frame to contain information known early by the Responder, e.g. LCI info, MAC address tables and DL measurement results.  
       • The second frame to contain information available late in the opportunity, e.g. the UL measurement results”**



* + 1. Discussion: None
    2. Moved: Ganesh Venkatesan Second: Assaf Kasher
    3. **Results: (Y/N/A):** 7/0/1 Motion passes
  1. **Availability Window Advertisement (Ganesh Venkatesan (intel) on behalf of Dibakar Das (Intel) document 18-855r1)**
     1. Title: **Availability Window Advertisement**
     2. Summary: proposes a mechanism to advertise HEz Ranging Schedules and negotiate Availability Window(s) for HEz Ranging exchange(s)
        1. Discussed about the three possible methods of signaling the availability windows
        2. Reviewed the pros and cons of each of these proposed methods
     3. Discussion
     4. C: Schematic in Slide 3 does not show UL and DL LMRs;
     5. R. The LMRs are lumped under LMR block
     6. **Straw poll  
        Do you support the following behavior:  
        An RSTA advertises Availability Window information/schedule in advertisement Management frames.  
        The advertisement includes an indication of whether the RSTA can accept proposals for an Availability Window schedule from the ISTA that is different from the advertised ones.  
        Results (Y/N/A):** 7/0/2
     7. **Motion:  
        Move to adopt the following requirements for HEz Measurement exchanges, instruct the SFD editor to incorporate it in the SFD under section 3.2  (Protocol Description) and grant editorial license to the editor:  
        “An RSTA shall advertise Availability Window schedule in advertisement Management frames. The advertisement includes an indication of whether the RSTA can accept proposals for an Availability Window schedule from the ISTA that is different from the advertised ones.”**
     8. Discussion: None
     9. Moved: Ganesh Venkatesan, Seconded: Assaf Kasher
     10. **Results (Y/N/A):** 8/0/1, **Motion passes**
     11. **Straw poll**

**Do you support the following behavior:  
“In the IFTMR:  
The ISTA shall request an RSTA for an availability window schedule by specifying a subset of preferred Availability windows from the RSTA’s advertised Availability windows set.  
An ISTA may also indicate ‘Any Window Assignment Is Acceptable’.”  
Results (Y/N/A):** 8/0/2

* + 1. **Motion:**

**Move to adopt the following requirements for HEz Measurement exchange, instruct the SFD editor to incorporate it in the SFD under section 3.2.1 (Protocol Negotiation) and grant editorial license to the editor:  
“In the IFTMR:  
The ISTA shall request an RSTA for an availability window schedule by specifying a subset of preferred Availability windows from the RSTA’s advertised Availability windows set.  
An ISTA may also indicate ‘Any Window Assignment Is Acceptable’.”**Discussion: None.  
Moved: Ganesh Venkatesan, Second: Chitto Ghosh  
**Results (Y/N/A):** 8 / 0 / 0; Motion passes

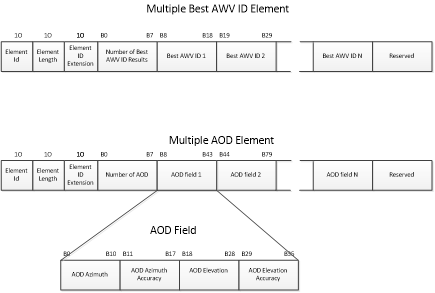
* 1. BSS Color in NDP Ranging by Yongho Seok (presenting for Liwen Chu): Submission **11-18-893**
     1. Submission 11-18-893 (Yongho Seok presenting for Liwen Chu)
     2. **Straw poll  
        Do you support that in HEz ranging associated and/or unassociated STAs should only use BSS Color announced by AP for HEz transmissions and receptions?  
        Results (Y/N/A):** 7/0/3
     3. **Motion  
        Move to adopt the following requirements for HEz Measurement exchange, instruct the SFD editor to incorporate it in the SFD under section 3.2.3 (HEz Measurement Exchange) and grant editorial license to the editor:**  
          
        **“Associated and unassociated STAs shall only use BSS Color announced by AP for HEz measurement exchange.”**
     4. Discussion: None.
     5. Moved: Yongho Seok, Second: Qinghua Li
     6. **Results (Y/N/A):** 6/0/3; Motion passes.
  2. Reminder to do attendance
  3. Recess at 1524 Hrs. CEDT

1. **TGaz – 10th May, 2018 – Thu AM2**
   1. Called to order by TGaz chair, Jonathan Segev (Intel Corporation) at **1030 Hrs. CEDT**
   2. Vice Chair, Carlos Aldana (Intel Corporation); Roy Want (Google) Secretary (Ganesh Venkatesan (Intel Corporation) acting Secretary).
   3. Agenda Doc. **Now working on revision 11-18/0596r7 (in progress)**
   4. Review Patent Policy and logistics
      1. Chair reviewed the IEEE-SA Patency Policy, additional guidelines about IEEE-SA meeting and logistics – no clarifications requested.
      2. Chair called for any potentially essential patent – no response from the audience.
      3. Chair reviewed IEEE 802 WG participation as individual professional – no clarification requested.
      4. Chair reminded all to record their attendance
      5. Recorded Participation requirement
         1. Headcount: ~10 present (counted at 1035 Hrs. CEDT)
   5. Reviewed submission order and updated agenda
      1. Added Group Management items to the agenda
      2. Updated agenda presentation order and feedback requested: none received
      3. Agenda agreed.
      4. Assaf Kasher (Qualcomm) volunteered to act as the Task Group Secretary for the PM2 session.
   6. Negotiation for HEz ranging for passive location support by Erik Lindskog (Qualcomm) presented document **11-18/0882r3**
      1. Title: **Negotiation for HEz ranging for passive location support**
      2. Summary: describes a set of parameters to be included in the capability advertisement and during .11az negotiation to negotiate Passive Ranging.
      3. Discussion: None
      4. **Straw poll  
         We support the following:**

**Add a bit to HEz ranging negotiation parameters in the in IFTM/IFTMR, to indicate request/grant to participate in an HEz ranging opportunity for passive location support:  
The bit shall be present in the request from an ASTA, taking on the role of ISTA, as well as in the RSTA response.   
A request for HEz Ranging for passive location support can be made by the ASTA/ISTA if the RSTA has indicated capability of supporting HEz Ranging for passive Location.   
The capability shall be indicated in the Extended Capabilities element of the RSTA.   
Discussion:** None  
**Results (Y/N/A):** 8/0/2

* + 1. **Motion:**  
       **Move to adopt the following requirements for Passive Location operation, instruct the SFD editor to incorporate it in the SFD under Section 5 (Scalability Aspects of Positioning Protocol) and empower the editor to perform editorial changes:   
       Add a bit to HEz ranging negotiation parameters in the IFTM and IFTMR, to indicate request/grant to participate in an HEz ranging opportunity for passive location:  
       The bit shall be present in the request from an ASTA, taking on the role of ISTA, as well as in the RSTA response.   
       A request for HEz Ranging session for passive location can be made by the ASTA or ISTA if the RSTA has indicated capability of supporting HEz Ranging for passive Location.   
       The capability shall be indicated in the Extended Capabilities element of the RSTA.**
    2. Discussion: None
    3. Moved: Ganesh Venkatesan, Second: Assaf Kasher
    4. **Results (Y/N/A):** 10/0/0; **Motion Passes**
  1. 60GHz AoD Messaging by Assaf Kasher (Qualcommm) document **11-18/0552r1**
     1. Title: **60GHz AoD Messaging**
     2. Summary: Protocol and message exchanges needed to enable use of AoD needed to enable use of Angle of Departure (AOD) in 60GHz Direction measurement protocol.
     3. **Straw poll:**

**Do you agree to add the following to the SFD:  
“In the DMGz/EDMGz direction measurement protocol,  to enable Initiator to Responder AOD measurement feedback, a Best AWV ID field (11bit) will be added to the Direction Measurement result element, as depicted in slide 5 of submission 11-18-552r1. The Best AWV ID will be sent in the first FTM frame sent from the responder to the initiator after the transmission of the AOD TRN field”**  
**Results (Y/N/A):** 9/0/1

* + 1. **Motion:**  
       **Move to adopt the following requirements for 60Ghz AoD messaging, instruct the SFD editor to incorporate it in the SFD under Section 4.2 (Directional Measurement) and empower the editor to perform editorial changes:   
       “In the DMGz/EDMGz direction measurement protocol,  to enable Initiator to Responder AOD measurement feedback, a Best AWV ID field (11bit) shall be added to the Direction Measurement result element, as depicted in slide 5 of submission 11-18-552r1. The Best AWV ID shall be included in the first FTM frame within a burst from the responder to the initiator after the transmission of the AOD TRN field”**
    2. Moved: Assaf Kasher; Seconded: Erik Lindskog
    3. Discussion: none
    4. **Results (Y/N/A):** 8/0/0; **Motion Passes**
    5. **Straw poll**  
       **Do you agree to add the following text to the SFD:  
       “In the DMGz/EDMGz direction measurement protocol,  to enable Responder to Initiator AOD feedback, Two new elements will be defined as in slide 6 of submission 11-18-552r1.  The exchange of these elements, as part of FTM frames shall occur after the end of the FTM burst. The multiple Best AWV ID element shall be sent by the initiator to the responder.  The responder shall then send (allowing time for performing the calculation) the multiple AOD feedback element to the initiator.”**
    6. Results (Y/N/A): 9/0/0
    7. **Motion**:   
       **Move to adopt the following requirements for 60Ghz AoD messaging, instruct the SFD editor to incorporate it in the SFD under Section 4.2 (Directional Measurement) and empower the editor to perform editorial changes:   
       “In the DMGz/EDMGz direction measurement protocol,  to enable a Responder to Initiator AOD feedback, Two new elements will be defined as depicted below.  The exchange of these elements, as part of FTM frames shall occur after the end of the FTM burst.   
       The multiple Best AWV ID element shall be sent by the initiator to the responder.  The responder shall then send the multiple AOD feedback element to the initiator.”**
    8. Moved: Assaf Kasher, Second: Alecsander Eitan
    9. **Results (Y/N/A):** 6/0/0; **Motion passes**
  1. HEz RTT Location Using Anchor Stations and Client Cooperation Eric Lindskog (Qualcomm) document **11-18/0927r2**
     1. Title: **HEz RTT Location Using Anchor Stations and Client Cooperation**
     2. Summary: Introduces the concept of cross RTT measurement to facilitate Passive Ranging/Location. UL NDP exchanges between an {A|I}STA are processed by other {I|A} STA’s within range
     3. Discussion of proposal
     4. C. Do the Anchor STAs know their locations in Slide #5;
     5. R. The Anchor STAs know their location; But one could enable co-operative strategy between the Anchor STAs when they are determining their location.
     6. C: How would the Anchor STAs (or ISTAs) listen if they are transmitting UL NDPs.
     7. R: Only ISTAs/ASTAs not participating in the current HEz exchange can take part in the co-operative strategy (leverages the exchange sequences of the Passive Ranging).
  2. Clock Attack Threat Model for .11az Minguang Xu (Apple) document **11-18/0939r0**
     1. Title: **Clock Attack Threat Model for .11az**
     2. **Summary:** describes a new attack threat resulting from clock drifts in the estimation of t1 and t4.
     3. C: the threat is hard to achieve without expensive analog implementation(s)
     4. R: Yes. However with some Rx and Tx beam forming techniques and co-located distinct Rx and Tx hardware, the attack could be launched
     5. C: What is the impact of launching such an attack
     6. R: RTT estimate would be incorrect resulting in erroneous estimation of position
     7. C: WiFi ranging signal is wideband.  It may not be easy to mix/up convert a wideband signal, so the required hardware capability might be high to perform such an attack.
     8. R: Future analysis should consider this
     9. C: PPM assumptions 50 and 200 are they realistic (802.11 has 20ppm for 2.4 and 25 for 5GHz)
     10. R: +/- 25 ppm is the 50 ppm assumed here.
     11. R: most receivers drop the packet if they detect a 200ppm clock drift
     12. R: author’s recommendation is to drop the frame if clock drift is detected
     13. **C:** a major change in the freq. offset in the received frame relative to the most recently received frame from the RSTA should be consider a reason for suspicion and the received frame dropped as a result.
     14. **R:** Yes, that would be another good way to mitigate the attack
  3. Review Timeline (Slide #84 of the Agenda Slides)
     1. July 2018: Internal comment collection on D0.3 and SFD freeze
     2. Nov 2018: WG LB on Draft 1.0
     3. May 2019 WG LB on D2.0
     4. **Motion:**
     5. **We commit to the timelines depicted by slide #80 of 11-18-596-07.**
     6. Moved: Assaf Kasher; Second: Ganesh Venkatesan
     7. **Results (Y/N/A):** 7/0/0; **Motion passes**.
  4. Extended meeting time by 5 minutes without any objection
  5. Discussed July meeting goals
     1. **Motion:**
     2. **We commit for the July meeting goals depicted in slide 89 as the TG Plan Of Record.**
     3. Moved: Assaf Kasher; Seconded: Qinhua Li
     4. **Results (Y/N/A):** 7/0/0; Motion passes.
  6. Approved a teleconference 1Hr at 1100 Hrs. EDT on June 13th, 2018
  7. Reminder to do attendance
  8. TGaz adjourned for week at 1235 HRs. CEDT

1. **TGaz – 10th May, 2018 – Thu PM2 – TGaz did not meet**

**References:**

1. <https://mentor.ieee.org/802.11/dcn/18/11-18-0596-08-00az-tgaz-may-meeting-agenda.pptx>
2. <https://mentor.ieee.org/802.11/dcn/18/11-18-0571-01-00az-meeting-minutes-march-2018-session.docx>
3. <https://mentor.ieee.org/802.11/dcn/18/11-18-0350-04-00az-pre-association-security-negotiation-for-11az.docx>
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