FCC NPRM 60GHz Reply Comments Ad Hoc

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| FCC NPRM 60GHz Reply Comments Minutes | | | | |
| Date: 02-03nov21 | | | | |
| Name | | Affiliation | Address | Email |
|  | |  |  |  |
| Author | | | | |
| Jay Holcomb | | Itron | Liberty Lake, (Spokane) WA | jholcomb@ieee.org |

Abstract

Minutes of the Ad Hoc

These are the Minutes of the FCC NoI on IoT spectrum reply comments Ad Hoc, Tuesday, 02-03nov21

Lead calls the meeting to order at 14:35 ET.

1. Lead presents slides 2 – 6 of 802.18-21/0132r01, the call to order and administrative items
   1. Includes IEEE 802 meeting and participant’s guidelines and requirements.
2. Lead presents slides 7, the agenda:
   1. Call to Order
      1. Remember to mute when not speaking, thanks.
      2. Please request Q in chat window.
   2. Administrative items
      1. Someone to take some notes, \_jay\_
      2. Attendance & monitor chat window, \_Stuart K\_
   3. Approve agenda and last minutes
   4. Discussion items
      1. Work on FCC NoI on IoT spectrum, reply comments
      2. Next steps, moving forward, etc.
   5. Actions required.
      1. Reply Comments feedback
      2. Anything new today
   6. AOB and Adjourn
   7. Motion: Any objection to approving the agenda as presented?
      1. None heard.
      2. Results: Approved by unanimous consent
3. Lead presents slides 8 – 10, **FCC NOI on Spectrum Requirements for the Internet of Things**
   1. The Proceeding OET 21-353:
      1. <https://www.fcc.gov/ecfs/search/filings?proceedings_name=21-353&sort=date_disseminated,DESC>
      2. NoI in mentor: <https://mentor.ieee.org/802.18/dcn/21/18-21-0108-02-0000-fcc-noi-on-spectrum-for-the-internet-of-things.docx>
      3. **Reply Comment Date:** 
         1. **November 16, 2021, would have to start EC ballot 04Nov, this week.**
   2. **Some questions may be of interest to IEEE 802, e.g.**
      1. 1)  please refer to portions of paragraph 6 re IEEE: Standards groups such as 3GPP, IEEE, and others are also involved with IoT development. Are these standards providing sufficient guidance for IoT implementation in already existing spectrum bands?
         1. If the growing need for IoT connectivity is not being met with the current and planned licensed spectrum resources, what steps can the Commission take to address this important use in the future?
   3. **FCC NOI on Spectrum Requirements for the Internet of Things**
      1. **Some questions maybe of interest to IEEE 802, e.g.**
         1. please refer to paragraphs 10 and 11 asking the role of unlicensed spectrum and whether additional unlicensed spectrum should be considered. **From paragraph 10:**
   4. … … … Thus, the regulatory barriers to implement an unlicensed IoT system or connect IoT devices in the home or a business are lower provided the lack of interference protection does not pose an impediment. **For example, most in-home IoT devices such as thermostats, water or gas leak detectors, and smart home controllers connect to the Internet using unlicensed Wi-Fi connections.**
      1. IEEE 802 could make a supportive statement on the bold line above.
      2. The IoT term is so broad, so may need to clarify the different IoT devices/uses
         1. question: is there any indication in the NoI of what IoT focus is here?
   5. **Some of the questions from paragraph 11:** 
      1. What role have unlicensed devices played in the growth of IoT?
      2. What role is anticipated for unlicensed devices as IoT devices continue to proliferate for home and business applications?
      3. Does the lack of interference protection make unlicensed devices unsuitable for some IoT applications?
         1. IEEE 802 stds do well with sharing in general.
      4. **Is the amount of spectrum available for use by unlicensed devices adequate to meet the needs of the IoT?**
      5. Should additional spectrum be considered for unlicensed operations exclusively for IoT devices and applications?
      6. Are there unique properties of IoT devices that would be better served by targeted rule changes to the unlicensed spectrum access rules?
      7. If so, what changes would be necessary to ensure increased utility of unlicensed IoT devices.
   6. **Reviewed comments filed yesterday/today:**
      1. **Reviewed comments filed yesterday/today, just a few things brought up:**
         1. Opinion was made: Seems there is pressure to auction off more spectrum, and should we reply on importance of unlicensed? yes.
         2. Performance maybe a question of what is expected and may be different of licensed .vs. unlicensed bands, may need to keep that in mind.
         3. IEEE 802 has been good on different freq. ranges for different uses.
         4. Security, we do have it, following NIST, and others.
      2. **Discussed a couple of points IEEE 802 could reply to:**
         1. \*IEEE 802 does consider coexistence and sharing of spectrum, and it is important.
         2. Unlicensed spectrum based on IEEE 802 Stds is a critical part of much IoT communications.
         3. \*There is a place for both unlicensed and licensed.
         4. A system solution can use both unlicensed and licensed.
         5. Unlicensed is dominate in some use cases, see UWB and WFA.
         6. e.g. Smart City, utilities, home automation. see WFA.
         7. Ericsson seems to lean mobile for licensed and fixed for unlicensed.
         8. \*IEEE 802 is a leader in high thru put or long range, or etc. for the different frequency bands.
      3. **Outline on Draft reply comment boiler plate:** 
         1. We should thank in the conclusion the FCC for the allocation of unlicensed.
      4. **Plan is to review, WFA, UWB, Ericsson, Qualcomm and maybe Intel comments for cites to focus on, starting with the 3 highlighted points\* above.**
4. Lead presents slide 11, Actions required
   * **4+1(tbd) folks asked to review an assigned set of comments to find specific points to cite, starting with focus on the 3 points highlighted on the previous slide.**
   * **.18 VC will gather all the cites from first action above.**
   1. Any Other Business
      1. none heard.
5. Lead presents slide 12, Recess
   1. Next Ad Hoc – Wednesday 03nov21, 15:00 et
      1. Call-in in list server email
   2. **Overall IEEE 802 schedule:** [**http://ieee802.org/802tele\_calendar.html**](http://ieee802.org/802tele_calendar.html)
   3. Any objection to recess.
      1. None heard, we are recessed at 15:00et
   4. **Thank You**
6. Lead calls the meeting to order at 14:05et, 03Nov21.
7. Lead presents slides 2 – 6 of 802.18-21/0133r01, the call to order and administrative items
   1. Includes IEEE 802 meeting and participant’s guidelines and requirements.
8. Lead jumps to slide 13, the agenda:
   1. Call to Order
      1. Remember to mute when not speaking, thanks.
      2. Please request Q in chat window.
   2. Administrative items
      1. Someone to take some notes, \_jay\_
      2. Attendance & monitor chat window, \_Stuart K\_
   3. Approve agenda
   4. Discussion items
      1. Work on FCC NoI on IoT spectrum, reply comments
      2. Next steps, moving forward, etc.
   5. Actions required.
      1. Reply Comments and feedback
      2. Anything new today
   6. AOB and Adjourn
   7. Motion: Any objection to approving the agenda as presented?
      1. None heard.
      2. Results: Approved by unanimous consent
9. Lead presents slides 14, **FCC NOI on Spectrum Requirements for the Internet of Things**
   1. The Proceeding OET 21-353:
      1. <https://www.fcc.gov/ecfs/search/filings?proceedings_name=21-353&sort=date_disseminated,DESC>
      2. NoI in mentor: <https://mentor.ieee.org/802.18/dcn/21/18-21-0108-02-0000-fcc-noi-on-spectrum-for-the-internet-of-things.docx>
      3. **Reply Comment Date:** 
         1. **November 16, 2021, would have to start EC ballot 04Nov, this week.**
      4. **Seems we ran out of time for finalizing reply comments to this NoI, that is, to late to do a good job.**
      5. **One observation on these reply comments and looking at the comments from others some, we would not have anything new to add though could thank the FCC for this.**
      6. **So we need to watch diligently for first signs the NPRM maybe coming out, and we can use all that was put together this time as the base to build on.**
      7. **Process observation:** we can’t wait for Fed. Reg or equivalent in other countries. contributions and efforts need to start earlier **when we first ‘hear’ something.**
      8. **Need to capture everything possible in the minutes with what all we have gathered and learned to be ready to go with later.**
      9. **Another good comment to capture from Hughes to keep mind:** 
         1. [**https://ecfsapi.fcc.gov/file/11011601803789/EchoStar-Hughes%20IoT%20comments%20110121.pdf**](https://ecfsapi.fcc.gov/file/11011601803789/EchoStar-Hughes%20IoT%20comments%20110121.pdf)
         2. As described below, EchoStar/Hughes, a global provider of satellite services and IoT provider, believes that the proper approach to IoT services is to ensure that existing and future allocations for both licensed and unlicensed services accommodate IoT use cases, and that there is no reason to allocate specific spectrum for IoT.
      10. **Some basic points to capture for doing NPRM later:**
          1. Unlicensed and Wi-Fi good for IoT.
          2. Flexibility
          3. What is IoT? need to get it defined better.
10. Lead presents slide 25, Actions required
    * **.18 chair - be sure to capture as much as possible in the minutes from these ad hocs and this effort for base to sue if an NPRM comes out.**
    * **all to watch for first signs of the NPRM and start comments earlier**
    1. Any Other Business
       1. none heard.
11. Lead presents slide 16, Adjourn
    1. Next Ad Hoc – n/a
    2. **Any objection to Adjourn** 
       1. **None heard, we are adjourned at 15:31et**

1. Attendees Names and Affiliations

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| **Voting Attendees:** | |  |  | **2-Nov** | **3-Nov** |
| 1 | **Holcomb** | Jay | Itron Inc. | **x** | **x** |
| 2 | **Kerry** | Stuart | OK‐Brit, Self | **x** | **x** |
| 3 | **Petrick** | Al | Skyworks Solutions Inc. | **x** | **x** |
| 4 | **Rolfe** | Benjamin | Blind Creek Associates | **x** | **x** |
| 5 | **Stanley** | Dorothy | Hewlett Packard Enterprise | **x** | **x** |
| 6 | **Yaghoobi** | Hassan | Intel Corporation | **x** |  |
|  |  |  |  |  |  |
| **Non-Voting Attendees:** | | |  |  |  |
| 1 | **Halasz** | Dave | Morse Micro | **x** | **x** |

1. **Per actions required some other info gathered:**

Where this proceeding started, here is the link to the National Defence Authorization Act for Fiscal Year 2021 (pages 1410- 1414 in the PDF version, SEC. 9204. INTERNET OF THINGS) from which the NoI is spawned:

* + 1. <https://www.congress.gov/bill/116th-congress/house-bill/6395>

Background, IoT exploding,

[https://www.asme.org/topics-resources/content/10-best-iot-examples-in-2020](https://urldefense.com/v3/__https:/www.asme.org/topics-resources/content/10-best-iot-examples-in-2020__;!!F7jv3iA!ncRtpYoID1Cm0P8xIR7_Peg9OtZqWKlFapeRGqx8sOoGzJDNefS3GIMzj-OWuDFduQ$)

IoT using wireless,

[https://morningconsult.com/opinions/lets-start-the-decade-off-right-expanding-unlicensed-spectrum-use-and-unleashing-american-potential/](https://urldefense.com/v3/__https:/morningconsult.com/opinions/lets-start-the-decade-off-right-expanding-unlicensed-spectrum-use-and-unleashing-american-potential/__;!!F7jv3iA!ncRtpYoID1Cm0P8xIR7_Peg9OtZqWKlFapeRGqx8sOoGzJDNefS3GIMzj-Ou427ALA$)

IEEE 802 technologies are widely used,

[https://bridgera.com/wireless-technology-for-iot/](https://urldefense.com/v3/__https:/bridgera.com/wireless-technology-for-iot/__;!!F7jv3iA!ncRtpYoID1Cm0P8xIR7_Peg9OtZqWKlFapeRGqx8sOoGzJDNefS3GIMzj-PSToUHPA$)

IoT use in healthcare

[https://www.wipro.com/business-process/what-can-iot-do-for-healthcare-/](https://urldefense.com/v3/__https:/www.wipro.com/business-process/what-can-iot-do-for-healthcare-/__;!!F7jv3iA!ncRtpYoID1Cm0P8xIR7_Peg9OtZqWKlFapeRGqx8sOoGzJDNefS3GIMzj-MHULJstQ$)

IEEE 802.11 targeting IoT with 802.11ah and 802.11ax

[https://www.wi-fi.org/discover-wi-fi/wi-fi-certified-halow](https://urldefense.com/v3/__https:/www.wi-fi.org/discover-wi-fi/wi-fi-certified-halow__;!!F7jv3iA!ncRtpYoID1Cm0P8xIR7_Peg9OtZqWKlFapeRGqx8sOoGzJDNefS3GIMzj-MTSsnXcw$)

We should also include some references for 802.15, etc

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from some of the comments, WFA, Intel and UWBA. :

<https://ecfsapi.fcc.gov/file/110183176536/Wi-Fi%20Alliance%20-%20IoT%20NOI%20Comments.pdf>

*Enabling of wide range of IoT use-cases and applications are only achievable through enabling of various unlicensed mode of operation including Very Low Power and Mobile*

[https://ecfsapi.fcc.gov/file/110124312286/Intel%2021-353%20IOT%20NOI%20COMMENT%2011-1-21%2Cvf0.pdf](https://urldefense.com/v3/__https:/ecfsapi.fcc.gov/file/110124312286/Intel*2021-353*20IOT*20NOI*20COMMENT*2011-1-21*2Cvf0.pdf__;JSUlJSUl!!F7jv3iA!ncxL-Hn68kYgeybjPfEEMabvzTAf6Qw4fS7qBwvhg55fGr7fSojbc-z94d3yq7sCSg$)

*IoT covers a wide range of use cases, performance requirements and geographic coverage needs. Different spectrum ranges (low, mid, and high bands) may be suitable for different types of IoT applications. Recommends considering allocation of future unlicensed spectrum in different frequency ranges with special consideration of performance requirements (spectrum requirements) as a main challenge to adoptions of some IoT applications in unlicensed bands.*

[https://ecfsapi.fcc.gov/file/1028395728232/UWBA%20FCC%20IoT%20AMENDED%20Comments%20Oct%2028%202021%20FINAL.pdf](https://urldefense.com/v3/__https:/ecfsapi.fcc.gov/file/1028395728232/UWBA*20FCC*20IoT*20AMENDED*20Comments*20Oct*2028*202021*20FINAL.pdf__;JSUlJSUlJSU!!F7jv3iA!ncxL-Hn68kYgeybjPfEEMabvzTAf6Qw4fS7qBwvhg55fGr7fSojbc-z94d2or3CAYw$)

* Use of unlicensed spectrum for IoT is huge and growing rapidly
  + IoT should not require exclusive use of any part of the band. Shared usage is an essential capability for IoT to be able reach its maximum potential. The currently expanding plethora of consumer and commercial products do not even begin to encompass the full scope of the capabilities that IoT will unleash.
* The combination of longer-range devices and smaller low power, unlicensed UWB devices will continue to evolve as an essential component of IoT.
* The smart phone / personal device is IoT now
  + It has Wi-Fi, UWB and other unlicensed radios
  + Such devices depend on both licensed and unlicensed spectrum
* Exclusive allocation of spectrum is not efficient wrt diversity of use overall value
* Sharing is important to the future.
  + Many ways to share can work
* Properly designed and operated systems already coexist with licensed protected services

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* What is a thing? There are lots of things
  + Many different needs best served by many different technologies
  + 802 Wireless standards are the dominant technologies in many kinds of IoT
    - 802.15.4 SUN (aka 15.4g) for SG/SC, metro area monitoring, etc
    - 802.15.4 UWB (all sorts of things where knowing where they are, if they are moving, or if they are there it is important)
    - 802.15.4 LECIM for things far apart that shouldn't move like critical infrastructure and wide area sensor networks
    - 802.11 in things that need lots of bits per second and/or to working with other consumer devices
  + Need to consider efficient use of the spectrum, using a lot of BW to move a few bits. Other groups will jump on this as an example of how unlicensed system designers waste spectrum. Can we point it out as it's mentioned in the NOI the FCC knows all about Wi-Fi. So do we do much more than agree with them?
  + Need to point out many things comprise IoT look at the number of 802.15 and 802.11 based devices.
  + Do we raise awareness of other than 802.11devices there are other unlicensed IoT things including for home and consumer. That is send the message 802 is about developing the right tools for many jobs and thus using the spectrum smartly and efficiently
    - 802.11ah is starting to get a little bit of use in some IoT - but enough to be worth mentioning?  Probably yes. Might benefit from more sub-1GHz spectrum
* A great many things in IoT are connected using unlicensed wireless technologies
  + Smart Grid: Meters and all that
  + Smart Cities
  + Consumer "things" in the home
    - it isn't all Wi-Fi - narrow band sub-1GHz is everywhere
    - 2.4 GHz based on 802.15.4 DSSS is in even more devices (game controllers, remotes, all sorts of things you don't think of as being connected)
    - UWB is used throughout the world in consumer devices, industrial, transportation to keep track of things which is IoT
    - UWB is increasingly used for sensing and related IoT applications (presence detection for example)
  + The phone is a thing that is increasingly part of IoT and will use both licensed and unlicensed technologies working together (Mobile, BT+UWB, UWB, Wi-Fi)
* Do we need more unlicensed spectrum? Yes and no
  + Matching the right technology to the needs of a particular IoT application is key to efficient use of available spectrum
    - No single technology is efficient
    - Example: using mm Wave for presence detection requires a lot more bandwidth and power than doing it with UWB (UWB based systems are working now).
  + More unlicensed spectrum could be used in some IoT applications
    - Unlicensed generally returns more diverse uses per MHz than licensed (but not always?)
    - Extending UWB to 12 GHz is a good idea
    - Finding other areas to effectively share is good
* Targeted rule changes for unlicensed IoT?
  + A few modest rule changes could allow more flexible use of the spectrum so we can use it more wisely.
  + Do we need more unlicensed spectrum dedicated to IoT? Yes and No
    - In general no.  Many or most IoT apps don't need dedicated spectrum to work
    - Sharing is far more efficient (more value)
    - There may be some bands where purpose-specific is a benefit particularly sub-1GHz narrow band (e.g. 15.4g)
  + Acknowledge that there are **some** IoT things where dedicated (licensed) spectrum may be advantageous (or maybe not), however later is flexibility need to be considered here?
* Points related to but not specifically addressing the questions we could/should include
  + Positive coexistence is critical to efficient and effective IoT
  + Efficiency and value metrics need to include diversity of use