**Before the
Federal Communications Commission**

**Washington, D.C. 20554**

In the Matter of )

 )

Petition for Rulemaking: Amendment of ) CG RM-11844

Rules Governing Ultra-Wideband Devices )

and Systems )

**Ex Parte OF IEEE 802**

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[Month, Day, Year filed]

1. Introduction

IEEE 802 LAN/MAN Standards Committee (LMSC) is pleased to provide a reply to comments on the above-captioned petition for a comprehensive review of Part 15, Subpart F, regulations governing Ultra-Wideband (UWB) devices and systems. In our filing on 8/23/2019[[1]](#footnote-1) we endorsed the petition. We remain in favor of this petition and offer responses to the concerns raised by opponents to the petition.

IEEE 802 LMSC is a leading consensus-based industry standards body, producing standards for wireless networking devices, including wireless local area networks (“WLANs”), wireless specialty networks (“WSNs”), wireless metropolitan area networks (“Wireless MANs”), and wireless regional area networks (“WRANs”). We appreciate the opportunity to provide these comments to the Commission.

IEEE 802 is a committee of the IEEE Standards Association and Technical Activities, two of the Major Organizational Units of the Institute of Electrical and Electronics Engineers (IEEE). IEEE has about 420,000 members in about 190 countries and supports the needs and interests of engineers and scientists broadly. In submitting this document, IEEE 802 acknowledges and respects that other components of IEEE Organizational Units may have perspectives that differ from, or compete with, those of IEEE 802. Therefore, this submission should not be construed as representing the views of IEEE as a whole.[[2]](#footnote-2)

The IEEE 802.15 Working Group (WG) is now specifying the next generation of precision ranging capable UWB PHY enhancements. The participation in the development of enhanced ranging includes major consumer electronics and mobile handset makers, with mass market application targets based on UWB capability in mobile devices, vehicles, buildings and other structures.

1. Majority of comments support the petition

In reviewing the comments filed we note that the all of the filed commenters except for one (1) support the petition. In reviewing both positive and negative comments, IEEE 802 continues to supports initiating the rule making process to review and revise Subpart F of Part 15 of the commission’s rules.

We note that a number of commenters, including Vortezon[[3]](#footnote-3), Alteros[[4]](#footnote-4), Michael McLaughlin (Decawave)[[5]](#footnote-5), and the UWB[[6]](#footnote-6) Alliance suggest review of the in-band power limits to allow increased in-band power for some applications. IEEE 802 agrees that modest increases are justified by the experience in the record, while advising caution. IEEE 802 recommends that any change preserves the current out of band limits and the current maximum limits specified for the the 1164 MHz through 1610 MHz bands used by critical services such as GPS.

Nearly all commenters support the review of restrictions on outdoor infrastructure. IEEE 802 agrees, noting that outdoor use authorized under Subpart C §15.250 and multiple approved waivers has demonstrated no harmful interference as noted by several commenters.

Robert Bosch LLC added clarification that the intent of the waiver request is to maintain carefully designed protections of critical services, and not make radical changes but rather align the regulations with current practice of the commission. Bosch also notes that proposed review could enable more flexible use of the rules which is another useful tool in addressing greater value from the spectrum. Bosch also notes some aspects of the current rules favor specific technologies and as an unintended consequence may encourage practices that are wasteful of spectrum resources, instead of the intended effect of motivating efficient use of spectrum. Specifically allowing frequency sweeping or hopping in calculating the occupied bandwidth will remove the incentive for artificially sloppy bandwidth expansion and treat technologies using non-pulsed signals more equitably with systems based on pulsed signals. IEEE 802 agrees favors revisions that make the rules more technology neutral, which promotes greater opportunity for innovation.

Another repeated comment is revision of the the provision in §15.519(a)(1) which requires an ‘acknowledgement’ signal. Vayyer[[7]](#footnote-7) and Michael McLaughlin (Decawave)[[8]](#footnote-8) explain that there are alternative ways to ensure a device transmits only when necessary and does so minimizing potential interference. IEEE 802 agrees with the need to revise this rule so as to state a technical requirement rather than a specific technical technique. IEEE 802 wireless standards include alternative techniques such as CSMA that achieve the goal and believes the consensus standards process is the better way to achieve technical solutions than the regulatory process.

Novelda[[9]](#footnote-9) comments in their support for the petition that globally harmonized measurement techniques and requirements promotes innovation worldwide by lowering the cost to test and certify devices, enabling products to be growth to many more consumers. Novelda also notes the waiver process has effectively proven the alternate testing methods codified in international standards to be effective. IEEE 802, as an international standards development organization, general agrees that harmonization via international standards has great value.

1. Protection of GPS is a high priority

Comments from the GPS Innovation Alliance (GPSIA) oppose the petition. The concerns raised are that proposed changes to Subpart F would increase potential for interference in the GPS bands. IEEE 802 is committed to promoting positive coexistence and is not endorsing any changes that would negatively impact GPS or other critical services. We note that the petition does not seek to change the current limits in the GPS bands, nor alter the UWB band allocation in any way that would allow an increase the potential energy radiated into the GPS bands. IEEE 802 would not support any such changes. IEEE 802 wireless standards are used in nearly every consumer device that also includes a GPS receiver today, and our members have a keen interest in assuring positive coexistence with GPS.

The GPSIA comments suggest the petition as proposing “sweeping changes” and “radical revision” that will “unwind carefully developed protections for high priority spectrum uses.” We disagree with this characterization. IEEE 802 endorses, and believes that the intention of the petition, is to make reasonable, incremental changes that will promote innovation and provide greater value to be gained from the spectrum without increasing the potential for harmful interference to critical services. We further note that the rule making process provides the opportunity and means for addressing technical concerns, and ensure the needs of the GPS industry and users are protected. We believe working with the stakeholders in the rule making process is the correct way to achieve the most value from the spectrum.

Specifically the petition proposes no changes to the UWB band definitions, the peak power, Equivalent Isotropic Radiated Power (EIRP) or Power Spectral Density (PSD) allowed in the GPS bands (1164-1610 MHz). The commission established the band plan and power limits to, among other things, protect GPS. It has been working and all available information suggests it will continue to do so. We further note that the specified level, -85.3 dBm/MHz, is far lower than what is allowed to be emitted into the GPS band by unintentional radiators and devices operating under Subparts C and E of Part 15 of the commission’s rules: observing that modern consumer devices which contain a GPS receiver also contain high speed digital circuitry as well as multiple radios authorized under Subparts C and E strongly confirms that operation under the levels defined in those Subparts does not interfere with the GPS receiver operation.

 The GPSIA seems concerned that the proposed changes may lead to deployment of more UWB devices. We believe this is true and a positive thing. We believe modest changes to Subpart F will promote innovation and provide options for addressing new applications.

 IEEE 802 believes that all stakeholders should consider the concerns raised by GPSIA in the rulemaking process. We believe these concerns can be readily addressed in the process without increasing risk of interference to GPS nor stifling innovation in development of licensed exempt technologies. We remind GPSIA that this is the start of a well-defined, proven process that provides many opportunities for all stakeholders’ concerns to be identified and addressed. We encourage the commission to initiate the rulemaking process and encourage GPSIA to work with other stakeholders to achieve the greatest mutual benefit.

1. Recommendations

We continue to support initiating a rule making process. The rule making process provides the opportunity to identify and address concerns of all stakeholders.

We continue to recommend reasonable revisions that retain the carefully developed protections for high priority spectrum uses.

We believe the recommendations previously submitted do not change the protections for high priority spectrum users. In particular we recommend retaining the current stringent requirements in the bands used by GPS (1164-1610 MHz).

1. Conclusion

Following review and consideration of the negative comments received by the commission as described above, we continue to respectfully request the Commission to begin rulemaking to revise and update the rules governing UWB operation.

Regards,

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1. https://ecfsapi.fcc.gov/file/10823280773273/18-19-0106-06-0000-uwb-petition-reply%20to%20prm-802.pdf [↑](#footnote-ref-1)
2. This document solely represents the views of the IEEE 802 LAN/MAN Standards Committee and does not necessarily represent a position of either the IEEE, the IEEE Standards Association or IEEE Technical Activities. [↑](#footnote-ref-2)
3. <https://ecfsapi.fcc.gov/file/1081934492860/Vortezon%20%20UWB%20Comments.pdf> [↑](#footnote-ref-3)
4. <https://ecfsapi.fcc.gov/file/10819040765552/Bosch%20Petition%20Comments%20final.PDF> [↑](#footnote-ref-4)
5. <https://ecfsapi.fcc.gov/file/108161423407346/FCC%20-%20RM11844%20-%20Decawave.docx> [↑](#footnote-ref-5)
6. https://ecfsapi.fcc.gov/file/1081670360966/UWBAlliance\_Supports\_Bosch\_Petition\_RM-11844\_08152019%20.pdf [↑](#footnote-ref-6)
7. <https://ecfsapi.fcc.gov/file/1081950166208/Vayyar_Coments_FCC_CG_RM-11844.pdf> [↑](#footnote-ref-7)
8. <https://ecfsapi.fcc.gov/file/108161423407346/FCC%20-%20RM11844%20-%20Decawave.docx> [↑](#footnote-ref-8)
9. <https://ecfsapi.fcc.gov/file/10818044114813/FCC%20-%20RM%2011844%20-%20Novelda.docx> [↑](#footnote-ref-9)