**Before the  
Federal Communications Commission**

**Washington, D.C. 20554**

In the Matter of )

)

Petition for Waiver to Allow Deployment of ) GN Docket 18-357

Intelligent Transportation System Cellular )

Vehicle to Everything (C-V2X) Technology )

**COMMENTS OF IEEE 802**

Paul Nikolich

IEEE 802 LAN/MAN Standards Committee Chairman

em: IEEE802radioreg@ieee.org

[Month, Day, Year filed]

1. Introduction

IEEE 802 is pleased to provide comments in the above-captioned proceeding.

IEEE 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 component of the IEEE Standards Association, one 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 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.[[1]](#footnote-1)

1. Inconsistency of 5GAA waiver request and U-NII-4 sharing proposals under evaluation today by the FCC and USDOT

The U-NII-4 proceeding has been active since 2013[[2]](#footnote-2), and through that proceeding two sharing proposals were brought forward for comment and at this point testing is actively ongoing with the FCC and USDOT. Both sharing proposals depend explicitly on U-NII-4 devices detecting the presence of IEEE 802.11p (DSRC) activity in the band, per FCC rules[[3]](#footnote-3) from 2003 that an ITS device follows the DSRC protocol. As the U-NII-4 proceeding has progressed it is working toward formzlizing these two sharing proposals, with a multi-phase test plan, phase 1 of the testing that has just been completed and results are availble[[4]](#footnote-4), with phase 2 being planned.

If non-DSRC ITS protocols are allowed to use the 5.9 GHz band, they will not be detected by U-NII-4 devices as proposed under the two sharing approaches. Detection of non-DSRC devices would be at best more complex and how effective is unknown. Then, by allowing this waiver for a non-DSRC ITS protocol, it would open the door and set a precedence that would allow other non-DSRC protocols over time and it is not known how approved and installed U-NII-4 devices could detect them or how long it would take to develop robust detection schemes among these different protocols.

[ add something on issues with detect and vacate sharing proposal? ]

Regarding the Re-channelization sharing proposal, the 5GAA proposal has incompatible views about the use of the 5895-5925 MHz portion of the band (and possibly also the 5850-5925 MHz band). Rather than the 7 - 10 MHz channels, the DSRC community would use the upper 3 for critical/safety needs, the lower 40 MHz would be less critical needs. The waiver request would cover 2 of the 3 proposed most critical/safety defined channels. There fore the plan and with current rules, vehicle safety would be compromised.

* Along with this is a further waiver/rule request was mentioned to go up and ask for more spectrum above.

**just for reference for now:**

|  |  |  |  |
| --- | --- | --- | --- |
| 170 | 5850-5855 | 5 | reserve |
| 172 | 5855-5865 | 10 |  |
| 174 | 5865-5875 | 10 |  |
| 175 | 5865-5885 | 20/10 |  |
| 176 | 5875-5885 | 10 |  |
| 178 | 5885-5895 | 10 | control |
| 180 | **5895-5905** | 10 |  |
| 181 | **5895-5915** | 20/10 |  |
| 182 | **5905-5915** | 10 |  |
| 184 | **5915-5925** | 10 |  |

1. The evolution path from IEEE 802.11p to 3GPP LTE V2X with evolution path from IEEE 80211p to IEEE 802.11bd (Next Generation V2X)

IEEE 802.11 NGV represents a seamless evolution path for IEEE 802.11p DSRC. By contrast, 3GPP LTE V2X (Release 14 and 15) and New Radio (NR) V2X protocols under development in Release 16 can only offer a more disruptive evolution from DSRC.

IEEE 802 recently approved the project scope for a new Next Generation V2X (NGV) amendment, to be called IEEE 802.11bd. That project scope includes the following requirement:

This amendment shall provide interoperability, coexistence, backward compatibility, and fairness with deployed OCB (Outside the Context of a BSS) devices.

= Need to let the FCC know/remind them what is coming for standards, and what 5GAA is saying about the future is not all true; P802.11bd is coming.

NGV devices must be capable of:

* Interoperating with IEEE 802.11p devices, i.e. capable of decoding IEEE 802.11p packets and capable of at least one transmission mode that can be decoded by IEEE 802.11p devices
* Sharing the channel with IEEE 802.11p devices on an efficient and fair basis (this implies that NGV packets will utilize the same packet preamble as DSRC packets, following the normal 802.11 evolution strategy)

These pillars of interoperability and fair & effective same-channel coexistence are expected to be the basis for a seamless evolution path from IEEE 802.11p (DSRC) to IEEE 802.11bd (NGV). No splitting of the spectrum is needed to simultaneously accommodate DSRC and NGV.

By contrast, the waiver seeks to introduce ITS protocols into the 5.9 GHz band that are incompatible with DSRC. These new protocols, LTE V2X in this waiver request, and likely NR V2X in a future rulemaking request, are not designed to co-exist in the same channel with DSRC or with each other. An LTE V2X receiver cannot decode an 802.11p packet, nor can an 802.11p device decode an LTE V2X packet. Furthermore, they cannot reliably detect and defer to each other’s transmissions. So, there is no expectation of interoperability or fair channel sharing between DSRC and these non-DSRC protocols. To the extent that the waiver request is motivated by providing an evolution path from DSRC to protocols with more advanced MAC/PHY features, we observe that the NGV development presents a better alternative that does not require splitting the spectrum (and thus utilizes the spectrum more efficiently and with less cost and complexity).

1. Is this a waiver or more a rule change request?

With the waiver request asking to have DSRC devices vacate the upper 20 MHz, seems this is more than a waiver, more a request for a rule change, considering the current FCC rules, since 2003, state ITS devices are to follow the DSRC protocol as referred earlier in these comments.

As stated on 24 October 2018, the National Highway Traffic Safety Administration statement on safety value on 5.9 GHz spectrum[[5]](#footnote-5), there are more than 70 deployments using all seven DSRC channels in thousands of vehicles on the road today, and many using channel 184, e.g. in California, designated for public safety applications involving safety of life and property[[6]](#footnote-6). To vacate these users now seems would be a vehicle safety concern. Even channel 182 which the waiver is asking is being used, e.g. in New York and Florida, and would affect those users if having to change their operations to vacate channel 182 for this waiver.

There is also the US DoT Connected Vehicle Pilot Deployment Program that is in process in Wyoming, New York and Florida[[7]](#footnote-7). \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It is not clear in 5GAA’s waiver request why an experimental license request could not be used, as opposed to asking users following the FCC rules to vacate 20 MHz of the band. Since what they are proposing looks to be further experimentation, an experimental licence could be a possibility. At the same time why do they want to use the top 20 MHz where there are identified channels for public safety that are being used, as opposed to experiment on other channels that are for less critical applications.

1. Conclusion

Considering the points mentioned above, we therefore ask the Commission to request 5GAA to re-evalute their waiver request considering these points and the Commission not act until such adjustments to the waiver request is done and then re- published and opened for further comments by interested parties such as IEEE 802.

Regards,

By: \_\_\_\_

Paul Nikolich

IEEE 802 LAN/MAN Standards Committee Chairman

em: IEEE802radioreg@ieee.org

1. 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 or the IEEE Standards Association. [↑](#footnote-ref-1)
2. The “Unlicensed National Information Infrastructure (U-NII) Devices in The 5 GHz Band” Proceeding, ET Docket No. 13-49, <https://www.fcc.gov/ecfs/search/filings?proceedings_name=13-49&sort=date_disseminated,DESC> [↑](#footnote-ref-2)
3. See FCC Part 90 , Subpart M and Part 95, Subpart L [↑](#footnote-ref-3)
4. Results can be found at: <https://www.fcc.gov/document/fcc-requests-comment-59-ghz-phase-i-testing-data/attachment-a> [↑](#footnote-ref-4)
5. U.S. Department of Transportation’s National Highway Traffic Safety Administration issues statement on safety value of 5.9 GHz spectrum, <https://www.nhtsa.gov/press-releases/us-department-transportations-national-highway-traffic-safety-administration-issues> [↑](#footnote-ref-5)
6. FCC Part 90.377 [↑](#footnote-ref-6)
7. US DoT Connected Vehicle Pilot Deployment Program <https://www.its.dot.gov/pilots/> [↑](#footnote-ref-7)