IEEE P802.11
Wireless LANs

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| Proposed Liaison Statement to WFAin relation to coexistence issues |
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Abstract

This document contains a proposed LS to the WFA in relation to coexistence issues for discussion atteh March 2022 session of the IEEE 802.11 Coex SC

# Proposed text of Liaison Statement to WFA

To: <CEO of WFA>

CC: <Chair of Coex SC>

Dear Edgar

The IEEE 802.11 Coexistence Standing Committee (Coex SC) has been evaluating potential; coexistence issues between IEEE 802.11 (Wi-Fi) based systems and other technologies since about mid-2017. For some time before the establishment of the Coex SC, similar work was undertaken in the IEEE 802.19 Working Group and the IEEE 802.11 PD/ED *ad hoc*.

As part of its ongoing work, the Coex SC has being monitoring and reviewing activities in ETSI BRAN to specify the next version of EN 301 893 (5 GHz) and the first version of EN 303 687 (6 GHz). These Harmonised Standards will have a significant influence on future coexistence outcomes between Wi-Fi and other technologies in Europe, and in the many other countries that often follow European regulations.

EN 301 893, in its various versions and drafts, has enabled placement of IEEE 802.11a/n/ac/ax based products in the 5 GHz market in Europe, based on a set of requirements that enable reasonable coexistence outcomes in most use cases. Even better, most versions of EN 301 893 over the years have explicitly allowed the use of IEEE 802.11 compliant equipment, implicitly accepting that the access mechanisms and associated Preamble Detection and Energy Detection thresholds specified by IEEE 802.11 provide a good basis for reasonable coexistence between Wi-Fi equipment and with other technologies.

For various reasons, which are not described or discussed in this Liaison Statement, it appears that ETSI BRAN has decided the next version of EN 301 893 will:

* Allow IEEE 802.11a/n/ac/ax compliant equipment to continue to use traditional access mechanisms and thresholds
* Require all other technologies, including IEEE 802.11be and NR-U, to use a Wi-Fi-like access mechanism, based on EDCA:
	+ with listening based on Energy Detection only with a threshold of ‑72 dBm (scaled with transmit power)
	+ rather that the more traditional approach used by IEEE 802.11, with listening generally based on Energy Detection with a threshold of ‑62 dBm and Preamble Detection with threshold of ‑82 dBm

Preliminary studies discussed by the Coex SC (for example [11-21-0705-00](https://mentor.ieee.org/802.11/dcn/21/11-21-0705-00-coex-simulation-and-evaluation-of-the-impact-of-varying-ed-thresholds.pptx), [11-21-0851-00](https://mentor.ieee.org/802.11/dcn/21/11-21-0851-00-coex-5-ghz-ed-analysis.docx) and [11-21-1179-00](https://mentor.ieee.org/802.11/dcn/21/11-21-1179-00-coex-next-steps-in-the-evaluation-of-the-impact-of-varying-ed-thresholds.pptx)) have suggested that, under these new rules, IEEE 802.11be based equipment may have less access in the 5 GHz band in at least some use cases, and so less performance, than IEEE 802.11ax based equipment, and possibly other technologies too. It would be unfortunate if the next generation of Wi-Fi had less performance than previous generations, even in only some use cases!

The Coex SC, working with IEEE 802.11 TGbe, plan to continue evaluating coexistence outcomes under the new requirements imposed by the next version of ETSI BRAN’s EN 301 893. The Coex SC is also planning to continue discussing various possible refinements to IEEE 802.11be access mechanisms and associated thresholds in 5 GHz to mitigate any adverse impacts of the new requirements in EN 301 893.

In recent discussions related to coexistence in 5 GHz, some market orientated questions have arisen for which the IEEE 802.11 WG would appreciate the perspectives of the Wi-Fi Alliance and its members. Answers to these questions will assist the Coex SC prioritise its discussions on the question of coexistence of IEEE 802.11be based equipment in the 5 GHz band with equipment based on older Wi-Fi technologies and other non-Wi-Fi technologies:

* One option is to operate Wi-Fi equipment in an IEEE 802.11ax mode in 5 GHz, and an IEEE 802.11be mode in 2.4/6 GHz. This approach essentially avoids any issues caused by the new constraints on IEEE 802.11be based equipment in the next version of EN 301 892. Does the Wi-Fi believe this a viable option from a market perspective?
* Another option is to encourage ETSI BRAN to increase the Energy Detection threshold to ‑62 dBm with no Preamble Detection constraints, allowing Wi-Fi equipment to operate as in the past. However, this is only likely to be viable if LAA and NR‑U (or other similar technologies) do not use 5 GHz very much in practice because there is significant evidence from previous 3GPP studies that Wi-Fi equipment using an Energy Detection threshold at ‑62 dBm and a Preamble Detection threshold ‑82 dBm will be disadvantaged in many scenarios compared to other equipment using an Energy Detection threshold only above about ‑72 dBm. Does the Wi-Fi Alliance have a view of the likely penetration other technologies in 5 GHz in Europe and elsewhere over time, particularly NR‑U?

The IEEE 802.11 WG looks forward to a response from the Wi-Fi Alliance and commits to keeping the Wi-Fi Alliance up to date on coexistence related issues of mutual interest in the future.

Yours sincerely,

<Chair of IEEE 802.11>