IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Proposed resolution for CID 24001 | | | | | | Date: 2020-07-16 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Andrew Myles | Cisco |  |  | amyles@cisco.com | |

Abstract

This submission proposes resolutions for comments related to TGax D6.0 with the CID 24001

Revisions:

Rev 0: Initial version of the document.

**Interpretation of a Motion to Adopt**

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

Discussion

There has been much discussion for at least the last six years in various forums about “best” listening mechanisms to enable good coexistence within and between technologies. Options discussed have covered the full range of possibilities, including *PD/ED* at -82/-62 dBm or -82/-72 dBm, *ED-only* at -77 dBm, -72 dBm or -62 dBm, or various combinations.

It has proven difficult to definitively determine the “best” listening mechanism to enable good coexistence in all circumstances:

* There is significant evidence that *PD/ED* at -82/-62 dBm provides the best, balanced coexistence solution in many scenarios. This is not surprising given the success of the *PD/ED* mechanism as the basis of 802.11sytems sharing for more than 20 years. Unfortunately, the *PD/ED* mechanism is likely to be limited to 802.11 systems in the near future because 3GPP decided not to adopt *PD/ED* for LAA or NR-U.
* There is also good evidence that reasonable coexistence is possible between systems using *PD/ED* at -82/-62 dBm, such as 802.11 systems, and other systems using *ED-only* at -72 dBm, such as LAA and NR-U systems. That said, the evidence also suggests that the coexistence is generally not as good as if all systems used the *PD/ED* mechanism.
* The various discussions about the “best” coexistence solution have also highlighted that the answer often depends on the details of the scenario. For example, the 802.11 WG has recognised that *PD/ED* at -82/-62 dBm is not always optimum by its specification of a spatial reuse mechanism that effectively raises the *PD* threshold in certain cases. It is also likely that the coexistence balance between *PD/ED* and *ED-only* systems will depend on the prevalence of the use of OFDMA.

A very recent development is that ETSI BRAN has reported (see 11-20-1034-00) that it has been decided that EN 303 687 will only enable the use of *ED-only* at -72 dBm for 6 GHz operation in Europe. Unlike EN 301 893, EN 303 687 will not allow the use of *PD/ED* at -82/-62 dBm. This will effectively restrict 802.11 operation to *PD/ED* at -82/-72 dBm, when combining the specification in the 802.11ax draft and the requirements in the EN 303 687 draft.

This restriction will probably still result in reasonable coexistence between 802.11 systems. However, it may provide an advantage to LAA/NR-U systems using *ED-only* at -72 dBm, compared to 802.11 systems using *PD/ED* at -82/-72 dBm. In this context, changing the 802.11ax draft to allow the use of *ED-only* at -72 dBm could be considered in the future for scenarios (including 6 GHz operation in Europe) where other systems are likely to be using this listening mechanism. Of couse, no promise can be made at this time about future changes to the standard.

In the meantime, the comment and proposed resolution can be rejected because it contains insufficient detail to allow the *ED* threshold for 802.11ax operation in the 6 GHz band be changed from -62 dBm to -72 dBm (or for the PD threshold to be changed from -82 dBm to -72 dBm).

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| **CID** | **Section** | **Pg / Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 24525 |  |  | A number of companies (led by Ericsson) are aggressively advocating in ETSI BRAN and 3GPP RAN1 that 802.11ax should use an ED threshold of -72 dBm when operating in the 6 GHz band. They are basing their campaign on simulations that purport to show both 802.11ax and NR-U are better off when using a maximum ED threshold of -72 dBm (NR-U already uses this threshold, whereas 802.11 uses an ED threshold of -62 dBm in combination with a PD threshold of -82 dBm). Interestingly, other simuations show that NR-U would be better off using 802.11's PD/ED mechanism. Some IEEE 802.11 WG individual members have advocated in the Coex SC for a similar change.  The proposed change is significant because it changes a basic parameter of 802.11 operation after 20+ years of successful operation. However, the proposal does deserve proper consideration. The Coex SC has discussed this proposal at length without consensus, but does not have the authority to agree such a significant change to 802.11ax anyway. It needs to be agreed in TGax." | For the purposes of starting discussion on this issue, I would like to propose that the ED threshold for 802.11ax operation in the 6 GHz band be changed from -62 dBm to -72 dBm (note the specification of -72 dBm applies only when the maximum transmit power is >= 23 dBm. A more complete specification of the proposed threshold is in EN 301 893 v2.1.1 clause 4.2.7.3.2.5, option 2). I will leave it to the experts in TGax to determine where this change should occur in the 802.11ax draft.  Personally, I am against this change (there are some good technical reasons to reject the proposal, which I am happy to provide to TGax). The benefit of TGax rejecting (or accepting) the proposed change is that it will give the IEEE 802.11 Coex SC direction on possible LSs on this topic to ETSI BRAN and 3GPP RAN1." | Rejected  The proposed resolution contains insufficient detail to allow the ED threshold for 802.11ax operation in the 6 GHz band be changed from -62 dBm to -72 dBm (or for the PD threshold to be changed from -82 dBm to -72 dBm). |