

Liaison statement from IEEE 802.11 Working Group to ETSI BRAN

TO: Edgard Vangeel, ETSI BRAN Chair, evangeel@cisco.com

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SUBJECT: Adaptivity and the revision of EN 301 893

DATE: 15 May 2018

Dear Edgard,

This document is an approved Liaison Statement from the IEEE 802.11 Working Group (WG) to ETSI BRAN. The positions contained within this Liaison Statement are those of the IEEE 802.11 WG and do not necessarily reflect positions of the IEEE, the IEEE Standards Association, IEEE 802 or any other IEEE organisational unit.

The IEEE 802.11 WG has been made aware of recent discussions in BRAN#97 related to adaptivity, particularly the “four alternatives”. The four alternatives document the spectrum of possible directions for refinements to the adaptivity clause in the next revision of EN 301 893. The four alternatives have been reviewed in detail in the IEEE 802.11 Coexistence Standing Committee.

The four alternatives are characterised by the IEEE 802.11 WG as follows:

- **Alt 1:** status quo in EN 301 893, with two mutually exclusive options:
 - ED at -72 dBm for any equipment with any non-802.11a/n/ac modes
 - ED at -62 dBm (implicitly with PD of -82 dBm) for any equipment with 802.11a/n/ac conformant modes only
 - Note: a device can only ever use one of the two options.
- **Alt 2:** extension of status quo to include 802.11ax, with two mutually exclusive options:
 - ED at -72 dBm for any equipment with any non-802.11a/n/ac/ax modes
 - ED at -62 dBm (implicitly with a PD of -82 dBm) for any equipment with 802.11a/n/ac/ax modes only
 - Note: a device can only ever use one of the two options
 - Note: it was proposed that Alt 2 be justified as representing the “market reality” that 802.11ax will use the traditional dual thresholds. It was also only proposed on the understanding that further scientific evaluations of coexistence will be undertaken to better inform future revisions of EN 301 893.

- **Alt 3:** the proposal previously supported by IEEE 802.11 WG in BRAN(18)097012
 - ED at -72 dBm for any equipment
 - ED at -62 dBm (implicitly with PD of -82 dBm) for any equipment conformant with 802.11 clause 17.3
 - Note: any device can use either of the two options at any time during its operation, but may switch between the two options at most once every minute.

- **Alt 4:** unique preambles
 - ED at -72 dBm for any equipment
 - ED at -62 dBm for any equipment that respects the preamble of other equipment using the same preamble at -82 dBm.

The IEEE 802.11 WG does not support Alt 1, which represents the status quo in EN 301 893, and does not allow IEEE 802.11ax to use the traditional and well proven dual threshold mechanism used by IEEE 802.11a in the 5GHz band since 1999 and subsequently by IEEE 802.11n/ac.

The IEEE 802.11 WG also does not support Alt 4, because it effectively allows LTE based equipment to ignore IEEE 802.11a/n/ac/ax equipment up to ED of -62dBm, which 3GPP RAN1 simulations¹ show does not promote fair coexistence between IEEE 802.11 and LAA systems.

It is the view of the IEEE 802.11 WG that both Alt 2 & Alt 3 have merit because they both allow IEEE 802.11ax to use the traditional dual threshold mechanism.

Alt 2 is attractive because it recognizes the “market reality” that IEEE 802.11ax will specify the use of dual thresholds and documents a commitment by all stakeholders to undertake and act upon proper scientific investigation of coexistence in future revisions of EN 301 893.

However, Alt 2 has a practical difficulty in that we believe the revised EN 301 803 can’t use the same method as the current version to reference IEEE 802.11ax. The problem is that IEEE 802.11ax will most likely not be ratified before the end of 2019 and so probably cannot be referenced by an ETSI standard in the meantime. Alt 2 is also problematic in that it does not have the flexibility to allow IEEE 802.11 equipment to choose to use the single threshold mechanism in those situations where it might make sense. Similarly, it does not allow non-IEEE 802.11 equipment to use the dual threshold mechanism in situations it might make sense.

¹ 3GPP TR 36.889

In conclusion, the 802.11 WG recommends that ETSI BRAN consider adopting Alt 3, which resolves these practical difficulties, but with the addition of the motivation and understanding from Alt 2, namely that:

- Alt 3 is justified as representing the “market reality” that IEEE 802.11ax is being specified to use dual thresholds
- Alt 3 is adopted on the understanding that further scientific evaluations of coexistence will be undertaken to better inform future revisions of EN 301 893.

We look forward to hearing the result of your deliberations on this matter.

Sincerely,

Dorothy Stanley
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