IEEE 802.11 Coexistence SC

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| Proposed LS to 3GPP RAN1 related to restricting *short LBT* | | |
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Abstract

*This document contains a draft liaison to 3GPP RAN1 (cc’ed to ETSI BRAN) related to proposals for restricting the use of short LBT.*

## Proposed LS to 3GPP RAN1

TO:

* Wanshi Chen, 3GPP TSG RAN WG1 Chair, wanshic@qti.qualcomm.com

CC:

* Susanna Kooistra, 3GPP Liaison Coordinator, susanna.kooistra@3gpp.org
* Edgard Vangeel, ETSI BRAN Chair, evangeel@cisco.com
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* Andrew Myles, Chair, IEEE 802.11 Coexistence Standing Committee, amyles@cisco.com

SUBJECT: **Use of short LBT[[1]](#footnote-1)**

DATE: 20 September 2019

Dear Wanshi,

In January 2019, the IEEE 802.11 WG sent 3GPP RAN1 a Liaison Statement requesting *3GPP RAN1 consider supporting the proposed restrictions on no/short LBT in ETSI BRAN.* The IEEE 802.11 WG Liaison Statement was sent to assist in 3GPP RAN1’s consideration of a Liaison Statement on the same topic from ETSI BRAN in December 2018.

3GPP RAN1 has not replied to the Liaison statement from IEEE 802.11 WG. However, we understand that 3GPP RAN1 responded to ETSI BRAN’s Liaison Statement in February 2019, notifying ETSI BRAN that within 3GPP RAN1:

*There is no consensus on the proposal to:*

*(1) ban the use of no LBT transmissions and*

*(2) to restrict the use of short LBT transmissions so that it can only be used 1% of time rather than 5% as currently defined in the clause on Short Control Signalling Transmissions.*

*There is also no consensus on limiting NR-U DRS transmissions to a 1% limit.*

*Furthermore, reducing 5% transmission limit to 1% transmission limit would not be consistent with the behaviour of a device implementing LTE-LAA and is not preferred*

IEEE 802.11 WG would like to inform 3GPP RAN1 that there were interesting and important discussions related to the use of *no/short LBT* at the *Coexistence Workshop* held in Vienna, Austria in July 2019. Indeed, the post-workshop *Issues Survey* indicated those people who responded to the survey considered this topic as the third most important coexistence issue.

There were three presentations at the *Coexistence Workshop* related to the *no/short LBT* topic:

* [*3-12*](https://mentor.ieee.org/802.11/dcn/19/11-19-1112)*: The use of no LBT for DRS is not justified by history* (Cisco)
  + Explained how the historical basis of the *no LBT* rule in EN 301 893 justifies its removal or at least further restriction.
* [*3-13*](http://grouper.ieee.org/groups/802/11/Workshops/2019-July-Coex/LBT%20for%20short%20control%20messages%20v4.pptx)*: LBT for Short Control Messages* (Huawei)
  + Asserted the use of *short LBT* for DRS has no significant impact on coexistence between Wi-Fi & LAA/NR-U
  + Explained that simulation shows restricting the use of *short LBT* for DRS by NR-U has relatively small impact on the DRS transmission rate.
* [*3-14*](http://grouper.ieee.org/groups/802/11/Workshops/2019-July-Coex/3-14-coex-workshop-presentation-short-LBT-Broadcom.pptx)*: On standalone transmissions with short fixed LBT* (Broadcom)
  + Explained that simulation shows the use of *short LBT* for DRS for NR-U significantly degrades the performance of Wi-Fi using normal LBT access.

A panel discussion was held after the three presentations. There seemed to be consensus during the panel discussion that the use of *no LBT* for *Short Control Signalling* (as defined in EN 301 893) is not required for protocols specified by either the IEEE 802.11 WG or by 3GPP RAN1, and that the use of *no LBT* is generally inappropriate.

The panel discussion highlighted both agreement and disagreement on questions related to whether the use of *short LBT* should be further restricted:

* There was agreement that restricting the use of *short LBT* by NR-U would not have any significant adverse effect on NR-U performance
* There was disagreement on whether restricting the use of *short LBT* by NR-U would have any significant adverse effect on Wi-Fi performance.

However, the panel discussion also highlighted an innovative way around any disagreement. Firstly, it was observed that the agreement above suggests either maintaining the *status quo* or further restricting the use of *short LBT* by NR-U should both be acceptable options for NR-U stakeholders, because neither option harms NR-U. It was then observed that at least the second of these two options should be acceptable to all stakeholders, regardless of whether they believe the use of short LBT adversely affects Wi-Fi, or not. The “win-win” result derived from these observations is that restricting the use of *short LBT* by NR-U does not harm NR-U and may have a benefit for Wi-Fi.

The IEEE 802.11 WG therefore requests that 3GPP RAN1 embrace this mutually acceptable outcome by explicitly further restricting the use of *short LBT* by NR-U in the NR-U specification, and by supporting the proposed restrictions oin ETSI BRAN on the use of *no/short LBT* in EN 301 893. It is suggested that the implementation details of any restrictions on *no/short* LBT in EN 301 893 be left to the experts in ETSI BRAN.

The IEEE 802.11 WG recognises that a restriction on the use of *short LBT* will be problematic for LAA equipment that has already been designed or deployed. On this basis, the IEEE 802.11 WG supports proposals for ETSI BRAN to consider appropriate mechanisms to grandfather LAA equipment using the current less restrictive *no/short LBT* rules.

We look forward to your response to this Liaison Statement as part of an invigorated collaboration on coexistence issues between IEEE 802.11 WG and 3GPP RAN1 derived from the success of the *Coexistence Workshop*.

Regards,

/s/

Dorothy Stanley ([dstanley@ieee.org](mailto:dstanley@ieee.org)) Chair of IEEE 802.11 WG

1. This document represents the views of the IEEE 802.11 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802. [↑](#footnote-ref-1)