IEEE P802.11
Wireless LANs

|  |
| --- |
| Proposed Draft Text for D0.1: Threshold-based Sensing Procedure |
| Date: 2022-02-13 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Mengshi Hu | Huawei |  |  | humengshi@huawei.com |
| Rui Du |  |  |  |
| Naren Narengerile |  |  |  |
| Yan Xin |  |  |  |
| Ali Raissinia | Qualcomm |  |  |  |
| Rui Yang | InterDigital |  |  |  |
| Rajat Pushkarna | Panasonic |  |  |  |
| Dongguk Lim | LG Electronics |  |  |  |
| Lei Huang | OPPO |  |  |  |
| Oscar | Origin Wireless |  |  |  |

Abstract

This submission provides the proposed draft text on **threshold-based sensing procedure** for 802.11bf D0.1.

The following Motions are reflected in this PDT:

[Motion 18] (Motion passed, See 11-20/1874r40)

**Move to add the following to 11bf SFD:**

The 11bf amendment defines an optional threshold-based measurement and reporting procedure in which

* The difference between the current measured CSI and the previous measured CSI is quantified. The difference is referred to as CSI variation.
* A threshold value to be used by the sensing receiver in the threshold-based procedure is defined.
* By comparing the CSI variation with the threshold, the sensing receiver can send a feedback resulting from the large CSI variation to the sensing transmitter.
* Whether the threshold is predefined, or defined by the sensing receiver, transmitter, initiator or responder is TBD.
* The threshold-based procedure is not always required (Procedure A in 21/0351r5 is not always required).

[Motion 33] (Motion passed, See 11-20/1874r40)

**Move to add the following to 11bf SFD:**

In the threshold-based measurement instance, the threshold for each responder to be compared with the CSI variation value is determined by the initiator.

**Version history:**

Rev 0: Initial PDT

Rev 1: Editorial changes

Rev 2: Editorial changes

**NOTE:**

1. The words highlighted in blue are added to make the threshold-based sensing procedure reasonable and understandable.
2. The words without an additional color reflect the above two motions (Motion 18 and Motion 33).
3. The words highlighted in yellow indicate TBD.

**The PDT is shown as follows:**

xx.xx.xx Threshold-based sensing procedure

The threshold-based sensing includes a selection procedure before the measurement report procedure in the reporting phase of a measurement instance. In the selection procedure, the sensing receivers being triggered in the measurement report procedure are selected according to the CSI variation values of the sensing receivers and the threshold values set for them. The threshold-based reporting is optional, and is applicable to a TB sensing measurement instance where the sensing initiator can be a sensing transmitter (Whether the threshold-based sensing is applicable to other cases is TBD). An example of the threshold-based sensing procedure is shown in Figure xx1.



**Figure xx1. Threshold-based sensing procedure in a sensing measurement instance (example)**

The CSI variation indicates the quantified difference between the current measured CSI and the previous measured CSI at a sensing receiver. The details of how to calculate and quantify the CSI variation at the sensing receivers are TBD.

The threshold for each responder to be compared with the CSI variation value is determined by the sensing initiator, and is transmitted to each sensing receiver through a TBD frame. Different sensing receivers may have different threshold values set by the sensing initiator.

When negotiated, the AP initiator shall transmit a Sensing Trigger frame A to the non-AP STA responder that supports the threshold-based reporting to obtain the CSI variation feedback value. The non-AP STA that supports the threshold-based reporting shall transmit a Frame B containing the CSI variation feedback value in the assigned RU.

The AP initiator that receives the CSI variation feedback value greater than or equal to the threshold from the non-AP STA should transmit a Sensing Trigger Frame C SIFS after the reception of the Frame B sent by the non-AP STA to the same non-AP STA. The AP initiator that receives the CSI variation feedback value less than the threshold from the non-AP STA shall not send a Sensing Trigger Frame C to the same non-AP STA. The non-AP STA that provided the CSI variation feedback value greater than or equal to the threshold shall transmit the Sensing Measurement Report frame to the AP initiator in the assigned RU when triggered by a Sensing Trigger Frame C sent by the AP initiator.

NOTE: The names of Sensing Trigger frame A, Frame B and Sensing Trigger frame C are TBD.