IEEE P802.11
Wireless LANs

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| LB266 CR for CIDs in EHT Spatial reuse operation |
| Date: 2022-10-04 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Zinan Lin | InterDigital |  |  | Zinan.lin@interdigital.com |
| Hanqing Lou |  |  |  |
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Abstract

##### This submission present proposed resolutions for the following 7 CIDs: 11674, 11675, 12010,12066, 12067, 12363, 14010

##### The proposed changes are based on 802.11be/D2.2.

##### Revision history:

##### r0 – initial version

r1 – Add SP for CID 11675

## CID 11674

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 11674 | Zinan Lin | 35.11.3.1 | 515.05 | The measurement of RPL should be performed on the 20 MHz subchannel in which the preambles of PSRT and PSRR PPDU are both present | Modify the sentence "It shall be measured in at least one 20 MHz channel in which the preamble of PSRR PPDU is present." to "It shall be measured in at least one 20 MHz channel in which the preambles of PSRT PPDU and PSRR PPDU are both present." | **Revised**It is indicated on P3939L18 of 802.11REVme\_D2.0 that “RPL\_PSRR,20MHz is the normalized received signal power in units of dBm/20 MHz, measured at theantenna connector in at least one 20 MHz subchannel. The measured 20 MHz subchannel(s)shall be the subchannel(s) in which the preamble of both the PSRR PPDU and the PSRT PPDUare present. The measurement method is implementation dependent.” Therefore, to be consistent with the description on 802.11REVme\_D2.0, it will be updated as “RPL\_PSRR,20MHz is the normalized received signal power in units of dBm/20 MHz, measured at theantenna connector in at least one 20 MHz subchannel. The measured 20 MHz subchannel(s)shall be the subchannel(s) in which the preamble of both the PSRR PPDU and the PSRT PPDUare present. The measurement method is implementation dependent.” TGbe editor: please incorporate changes shown in 11-22/1794r1 under the tag 11674 |

**Discussion**

It is shown on P3939L15 of 802.11REVme D2.0 that

*TxPowerPSRT* is the intended transmit power over the entire bandwidth of the PSRT PPDU in dBm

*NPSRT,nonpunc* is the number of nonpunctured 20 MHz subchannels of the PSRT PPDU

*RPLPSRR,20MHz* is the normalized received signal power in units of dBm/20 MHz, measured at the antenna connector in at least one 20 MHz subchannel. The measured 20 MHz subchannel(s) shall be the subchannel(s) in which the preamble of both the PSRR PPDU and the PSRT PPDU are present. The measurement method is implementation dependent.

*PSRmin* is equal to the PSR value if there exists one PSR value within the bandwidth of the PSRT

PPDU or the smallest of the PSR values if there exist multiple PSR values within the bandwidth

of the PSRT PPDU. Each PSR value is specified per 20 MHz. They are obtained from the Meaning column of Table 27-23 (Spatial Reuse field encoding for an HE TB PPDU(11ax)) based on at least one of the following:

i) The value of the UL Spatial Reuse subfield in the Common Info field of the Trigger frame

of the PSRR PPDU.

ii) The value of the RXVECTOR parameter Spatial Reuse of the HE TB PPDU that follows

the PSRR PPDU.

Therefore, to be consistent with the description shown in 802.11 REVme D2.0, the definitions of RPL\_PSRR,20MHz and PSR\_min need to be updated.

**End of discussion**

## CIDs 11675, 12010, 14010

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 11675 | Zinan Lin | 35.11.3.1 | 515.13 | How does the OBSS STA determines if an HE TB PPDU follows the PSRR PPDU or an EHT TB PPDU follows the PSRR PPDU? | It should add the contents to illustrate what information should follow if different types of TB PPDU is requested by the trigger frame | **Revised:** agree in principle with the commentThe OBSS STA needs to use the Common Info field of the Trigger frame to determine if the Special User Info field exists or not as indicated Table 9-45a (Valid combinations of B54 and B55 in the Common Info field, B39 in the User Info field, and solicited TB PPDU format) . In addition, the OBSS STA may not be able to hear the HE TB PPDU or EHT TB PPDU. Therefore, the current texts related to the PSR value determination, a) and b), need to be modified.TGbe editor: please incorporate changes shown in 11-22/1794r1 under the tag 11675 |
| 12010 | Eunsung Park | 35.11.3 | 515.16 | Change "b) Special User Info field of ~" to "b) The value of the EHT Spatial Reuse n subfield, 1<=n<=2, in the Special User Info field of ~". | As in comment. | **Accepted** |
| 14010 | Geonjung Ko | 35.11.3.1 | 515.16 | Need to specify which value of the Special User Info field is used. | As in comment | **Revised**It is similar comment to CID 12010TGbe editor: please incorporate changes shown in 11-22/1794r1 under 12010 |

**Discussion of CID 11675**

The OBSS STA needs to use the Common Info field of the Trigger frame to determine if the Special User Info field exists or not as indicated Table 9-45c (Valid combinations of B54 and B55 in the Common Info field, B39 in the User Info field, and solicited TB PPDU format) in 802.11be D2.2. Therefore, B55 of the Common Info field of the Trigger frame is the criteria to determine if the Special User Info field is present or not. In addition, the OBSS STA may not be able to hear the HE TB PPDU or EHT TB PPDU. Therefore, the current texts related to the PSR value determination, a) and b), need to be modified to be consistent with Table 9-45c.



There are two options to modify the texts (P554L52 802.11be D2.2) as the resolution of CID 11675.

Option 1:

The PSR value is based on at least one of the following:

1. The value of the UL Spatial Reuse subfields in the Common Info field of the Trigger frame of the PSRR PPDU if (#11675) B55 in the Common Info field of the Trigger frame is equal to 1, or
2. (#12010, 14010) The value of the EHT Spatial Reuse n subfield, 1<=n<=2, in the Special User Info field of the Trigger frame of the PSRR PPDU if (#11675)B55 in the Common Info field of the Trigger frame is equal to 0, or
3. The value of the RXVECTOR parameter Spatial Reuse of the TB PPDU that follows the PSRR PPDU.

Option 2:

The PSR value is based on at least one of the following:

1. The value of the UL Spatial Reuse subfields in the Common Info field of the Trigger frame of the PSRR PPDU if (#11675) the Special User Info field is not present in the Trigger frame, or
2. (#12010, 14010) The value of the EHT Spatial Reuse n subfield, 1<=n<=2, in the Special User Info field of the Trigger frame of the PSRR PPDU if (#11675) the Special User Info field is present in the Trigger frame, or
3. The value of the RXVECTOR parameter Spatial Reuse of the TB PPDU that follows the PSRR PPDU.

SP: Which option do you prefer as the resolution of CID 11675

1. Option 1
2. Option 2
3. Abs

Option 1: 10; Option 2: 20; Abs: 60

Therefore Option 2 is adopted.

**End of discussion**

## CID 12066, 12363, 12067

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 12066 | Leonardo Lanante | 35.11.3.1 | 514.53 | Wrong article "indentifies an PSR" | Change 'an' to 'a' | **Accepted** |
| 12067 | Leonardo Lanante | 35.11.3.1 | 514 | When a STA doesn't hear the PSRR PPDU but has heard the corresponding TB PPDU, the STA should still be able to perform EHT PSR-based SR. However, conditions 1 and 2 doesn't seem to allow it. The STA can use a previous RPL value that it received from the AP whose TB PPDU is being addressed to. | Modify condition 1 such that it allows an EHT STA to use PSR based SR when it received a TB PPDU that allows PSR based SR and it has a previous RPL value for the AP whose TB PPDU was addressed to. | **Rejected**1. Condition 1 only requires to decode the PSRR PPDU to identify the PSRR PPDU as an Inter-BSS PPDU, which was already in 802.11ax (REVme D2.0 Subclause 26.10.3.2)2. The situation mentioned in this CID may be already existing in 802.11ax. Suggest bringing this comment to REVme |
| 12363 | Massinissa Lalam | 35.11 | 513.58 | Spatial reuse hasn't really take off in 11ax (no market adoption, regulation which may not allow it ...). I see no clear benefit to keep maintaining it in 11be. Removing subclause 35.11 (and associated ones) should be considered at this stage. | As in comment | **Rejected**The commenter fails to identify the technical issues. It fails to identify the specific changes that would satisfy the comments.  |

***TGbe editor: please make the following change in subclause 35.10.3 in 802.11be/D2.2***

**35.10.3 EHT PSR-based spatial reuse operation**

**35.10.3.1 EHT PSR-based spatial reuse initiation**

An EHT STA identifies (#12066) a PSR opportunity if the following two conditions are met:

1) The EHT STA receives a PHY-RXSTART.indication corresponding to the reception of a PSRR PPDU that is identified as an inter-BSS PPDU (see 26.2.2 (Intra-BSS and inter-BSS PPDU classification)).

2) An PSRT PPDU is queued for transmission and the intended transmit power of the PSRT PPDU in dBm shall meet the following condition in Equation (35-5):

$TxPower\_{PSRT,total}-10 ×log\_{10}N\_{PSRT,,nonpunc}\leq PSR\_{min}-RPL\_{PSRR,20MHz}$ (35-5)

where

$N\_{PSRT,nonpunc} $is the number of nonpunctured 20 MHz subchannels of the PSRT PPDU

$RPL\_{PSRR,20MHz}$is (#11674) the normalized received signal power in units of dBm/20 MHz, measured at the antenna connector in at least one 20 MHz subchannel. The measured 20 MHz subchannel(s) shall be the subchannel(s) in which the preamble of both the PSRR PPDU and the PSRT PPDU are present. The measurement method is implementation specific.

$PSR\_{min} $is equal to PSR value if there exists one PSR value within the bandwidth of PSRT PPDU or equal to the (#11674) smallest of multiple PSR values if there exist multiple PSR values within the bandwidth of PSRT PPDU. Each PSR is specified per 20 MHz. The PSR value is based on at least one of the following:

1. The value of the UL Spatial Reuse subfields in the Common Info field of the Trigger frame of the PSRR PPDU if (#11675) the Special User Info field is not present in the Trigger frame, or
2. (#12010, 14010) The value of the EHT Spatial Reuse n subfield, 1<=n<=2, in the Special User Info field of the Trigger frame of the PSRR PPDU if (#11675) the Special User Info field is present in the Trigger frame, or
3. The value of the RXVECTOR parameter Spatial Reuse of the TB PPDU that follows the PSRR PPDU.