IEEE P802.11
Wireless LANs

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| Comment resolution for OBSS\_PD spatial reuse Disallow  |
| Date: 2017-03-16 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following CIDs (1 CID):

6768.

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Revisions:

* Rev 0: Initial version of the document.
* Rev 1: (1) Changed Table 28-19 (Spatial Reuse subfield encoding) entry from 1 (where it would replace -80 dBm) to 14 (where it replaces -26 dBm); (2) modified description of addition to table in 6.5.4.2 (for clarity).

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.***

# OBSS\_PD Spatial Reuse Disallow

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| **6768** | **John Coffey** |  | **The adjustments in OBSS\_PD shown in this diagram represent a great increase in the level of interference that will be seen by the intended receiver of the frame that is currently under way. \*Every\* device that is permitted to transmit under current rules will still be allowed to transmit under the rule in the diagram. In addition, many more devices will be allowed to transmit. Even worse, \*every\* new device that is allowed to transmit will be allowed to do so at a transmit power level that results in the maximum level of interference that would apply under the existing rules: essentially the rule requires the new, interfering transmitter to reduce its transmit power, but only by just enough to get the interference down to that existing maximum. The justifications that have been given for this radical departure from prior practice seem extraordinarily weak, and essentially seem to boil down to (a) a misconception that the current rules constitute a safe harbor, at which the interference caused can be treated as if it didn't exist, and/or (b) the argument that other wireless standards, with entirely different deployment models and a vastly different installed base, do the same thing. This is a reckless attack on the fundamental integrity of 802.11 and on the indispensable attribute of backward compatibility. No evidence has been presented that even begins to justify the changes that are being proposed.** | **Remove the entire OBSS\_PD mode and all references to it and all modes that enable it in whole or in part from the draft.** | **Revised—****The changes added in document 11/17-0xxx add additional safeguards to those previously approved. The net effect of these changes has been to enable the victim transmitter, subject to permission from the victim AP, to disallow OBSS\_PD. The TG considers that the safeguards available, including the ones provided in the above referenced document and others (e.g., exclusion of TXOPs protected by CTS-to-self), provide fully adequate assurance of acceptable operation.** |

**Discussion:**

Document 17/458 describes the need and mechanism to disable OBSS\_PD based spatial reuse. This document covers the specification text change required to enable the OBSS\_PD spatial reuse feature.

**TGax Editor: *OBSS\_PD spatial reuse disable setting to disable OBSS\_PD spatial reuse on the transmitted packet, add to 28.16:***

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| B15-B18 | Spatial Reuse | 4 | Set to SRP Disallowed to disallow SRP-based spatial reuse (see 27.9 (Spatial reuse operation) and 27.11.6 (SPATIAL\_REUSE)).NOTE—This part needs further development.Set to SR\_Delay to delay the starting time of spatial reuse transmission (see 27.9.2.1 (General) and 27.11a (TXVECTOR parameters SPATIAL\_REUSE for an HE PPDU)).Set to SRP\_and\_NON SRG OBSS\_PD SR Disallowed to disallow both SRP-based spatial reuse and NON SRG OBSS\_PD based spatial reuse.  |

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| * Spatial Reuse subfield encoding
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|  **Value** | **Meaning** |
| 0 | SRP disallow |
| 14 | SRP\_ and\_NON SRG OBSS\_PD SR Disallowed |
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**TGax Editor: *OBSS\_PD spatial reuse disable setting to disable OBSS\_PD spatial reuse on the transmitted packet, add to 27.11.6:***

A STA may set the TXVECTOR parameter SPATIAL\_REUSE of an HE PPDU to SRP\_and\_NON SRG OBSS\_PD\_DISALLOW if the STA is an HE non-AP STA and the NON SRG OBSS\_PD SR Disallowed subfield of the SR Control field of the most recently received Spatial Reuse Parameter Set element from its associated AP is equal to 1.

An AP may set the following subfields of the Common Info field of a Trigger frame accordingly if an UL MU Response Scheduling A-Control subfield is carried in an MPDU within the same PPDU:

* MU-MIMO LTF Mode and STBC are set to 0
* Number of HE-LTF Symbols is set to 1

Spatial Reuse is set to SRP\_and\_NON SRG OBSS\_PD SR Disallowed A STA transmitting an HE trigger-based PPDU in response to soliciting MPDU(s), containing an UL MU Response Scheduling A-Control subfield, shall set the TXVECTOR parameters as follows:

* *NSYM* shall be set to the *FVAL* + 1, where *FVAL* is the value of the UL PPDU Length subfield of the UL MU Response Scheduling subfield
* UL\_TARGET\_RSSI, DL\_TX\_POWER, RU\_ALLOCATION, and MCS parameters shall be set to the values of UL Target RSSI, DL TX Power, RU Allocation, and UL MCS subfields of the UL MU Response Scheduling subfield, respectively.
* BW shall be equal to the bandwidth of the soliciting DL MU PPDU
* BSS\_COLOR, and DCM shall be set to the values of the RXVECTOR parameters BSS\_COLOR, and DCM of the soliciting DL MU PPDU, respectively

MU\_MIMO\_LTF\_MODE, LDPC\_EXTRA, NSTS, STBC, CODING TYPE, SS\_ALLOCATION shall all be set to 0

* SPATIAL\_REUSE may be set to the value indicating SRP\_ and\_NON SRG OBSS\_PD SR Disallowed

The parameter aOBSS\_PDDisallowedWindow shall have the value 128 for all HE STAs.

**TGax Editor: *OBSS\_PD spatial reuse disable based on received packet add to 27.9.2:***

If the PHY of a STA issues a PHY-CCA.indication with a value equal to BUSY followed by an RXSTART.indication due to a PPDU reception then the STA’s MAC sublayer may a) issue a PHY-CCARESET.request primitive and b) not update its NAV timers based on frames carried in the PPDU if all the following conditions are met:

* The STA has not set the TXVECTOR parameter SPATIAL\_REUSE to the value SRP\_and\_NON\_SRG\_OBSS\_PD SR Disallowed in any of the previous aOBSS\_PDDisallowWindow HE PPDUs it has transmitted
* The received PPDU is an Inter-BSS PPDU (see 27.2.1 (Intra-BSS and inter-BSS frame determination(#8111)))
* The RXVECTOR parameter RSSI\_LEGACY in the PHY-RXSTART.indication primitive, which defines the received power level measured from the legacy portion of the PPDU is below the OBSS\_PD level (defined in 27.9.2.2 (Adjustment of OBSS\_PD and transmit power))
* The PPDU is not one of the following:
* A non-HT PPDU that carries an individually addressed Public Action frame where the RA field is equal to the STA MAC address
* A non-HT PPDU that carries a group addressed Public Action frame
* A non-HT PPDU that carries an NDP Announcement frame(#8111)
* The SPATIAL\_REUSE subfield in the HE-SIG of the received PPDU is not set to SRP\_ and\_NON SRG OBSS\_PD SR Disallowed

A STA that takes actions (a) or (b) under the conditions of this paragraph is deemed to perform NON SRG OBSS\_PD-based spatial reuse (see 27.11.16).

**TGax Editor: *add new entry to table in Section 6.5.4.2 (Semantics of the service primitive)***

Name aOBSS\_PDDisallowWindow

Type integer

Description The time in ms required to elapse after the last transmission by an HE STA of an HE PPDU with SRP\_and\_NON SRG OBSS\_PD disallowed before the STA may perform OBSS\_PD-based spatial reuse. See 27.11.16.