IEEE P802.11
Wireless LANs

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| Comment Resolutions for Clause 9.3.2.7 |
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Abstract

This submission proposes comment resolutions for subclauses 9.3.2.7:

5159, 5212, 5213, 5214, 5215, and 5380.

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 TGah Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGah Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGah Editor: Editing instructions preceded by “TGah Editor” are instructions to the TGah editor to modify existing material in the TGah draft. As a result of adopting the changes, the TGah editor will execute the instructions rather than copy them to the TGah Draft.***

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| **CID** | **Clause Num** | **P** | **L** | **Comment** | **Propose Change** | **Resolution** |
| 5159 | 9.3.2.7 | 240 | 6 | The statement "An S1G STA that receives an NDP CTS frame should disregard the value of the Duration field of the NDP CTS frame if any of the following conditions are satisfied:" is incorrect. The Duration field value should not be disregarded. | In the case of CTS used in sector training, i.e., AP sends our consecutive training NDP CTSs with Address Indication bit set to 1 and the RA/Partial BSSID field set to the PARTIAL\_BSSID of the AP, the duration field should be toward the end of sector training. | ReviseDiscussion: In sector training procedure, different NDP frames use different sectors. If OBSS STAs/APs discard the Duration field, OBSS’s transmission may collide with the following NDP training frames.TGah editor: TGah editor to make changes shown in 11-15/0100r1 under the headings that includes CID 5159 |
| 5212 | 9.3.2.7 | 239 | 28 | Good to know 1MHz duplicate PPDU is not used for dynamic bandwidth negotiation. It is not clear whether static duplicate RTS/CTS can be used and if it is allowed, what is the rules. | Make it clear. | RejectDiscussion: 1MHz Duplicate RTS frames cannot have the Dynamic BW indication field set to 1. So this addition is totally redundant. See 9.3.2.6: “An S1G STA using dynamic bandwidth operation (see 9.3.2.7 (CTS and DMG CTS procedure)) that transmits an RTS carried in a greater than(#5287) 2 MHz PPDU with TXVECTOR parameter FORMAT set to S1G\_DUP\_2M shall set the Dynamic Indication field in the Frame Control field of the RTS frame to 1. Otherwise, the S1G STA shall set the Dynamic Indication field in the Frame Control field of the RTS carried in any other PPDU to 0 to indicate that it shall not use dynamic bandwidth operation (see 9.3.2.7 (CTS and DMG CTS procedure)). |
| 5213 | 9.3.2.7 | 239 | 44 | Paragraphs of static/dynamic operation contradict with paragraph in L44 | Remove the contradiction. | ReviseDiscussion: a S1G STA/AP may respond NDP CTS or normal CTS per L44. However static/dynamic part only allows NDP CTS responding. TGah editor: TGah editor to make changes shown in 11-15/0100r1 under the headings that includes CID 5213 |
| 5214 | 9.3.2.7 | 239 | 55 | Text P239L55 to P240L15 is not needed since SO operation and sector training has their own special NAV setting rules. | Remove the text from P239L55 to P240L15. | Revise.Discussion: text in P239L55 to P240L4 is not need since it asks for a STA sets NAV per the Duration field in the received frame. If we list the cases which do not need to set NAV per the Duration field in the received frame, all the other cases follow NAV setting rules.TGah editor: TGah editor to make changes shown in 11-15/0100r1 under the headings that includes CID 5214 |
| 5215 | 9.3.2.7 | 240 | 17 | Partial BSSID check is not required since if an AP receives a NDP CTS frame with Address Indicator field equal to 1, the NDP CTS frame must from another AP. | Remove the paragraph. | ReviseDiscussion: an NDP CTS frame with 1 in Address Indicator can only be transmitted by an AP. If an AP receives an an NDP CTS frame with 1 in Address Indicator, the NDP CTS must be from other AP. TGah editor: TGah editor to make changes shown in 11-15/0100r1 under the headings that includes CID 5215 |
| 5380 | 9.3.2.7 | 238 | 62 | When determining whether the channel is idle, the TA field of the RTS frame is compared to the saved TXOP holder address. However, if TXOP is initiated by a PV1 frame or an NDP frame (e.g., NDP CTS as CTS-to-self (see P245L58)), no TXOP holder MAC address is saved. It is necessary to prohibit transmitting an RTS frame during the TXOP that is initiated by a PV1 frame or an NDP frame. | Insert a following text at the end of 9.3.2.6 (VHT and S1G RTS procedure):---An S1G STA that initiates a TXOP by transmitting a PV1 frame or an NDP CMAC frame shall not send an RTS frame for the duration of the TXOP. | ReviseDiscussion: A PV1 frame includes MAC address in TA field when the PV1 frame is transmitted by an AP. However a PV1 frame doesn’t include MAC address in TA field when the PV1 frame is transmitted by a STA. A NDP frame doesn’t include transmitter’s MAC address. It makes sense to disallow RTS in a TXOP when a TXOP is initiated by PV1 frame and NDP frame. TGah editor: TGah editor to make changes shown in 11-15/0100r1 under the headings that includes CID 5380 |

9.3.2.6 VHT and S1G RTS procedure

***Tgah editor: Insert the following paragraphs at the end of subclause 9.3.2.6 as follows (5380):***

An S1G STA that transmits an RTS frame to another STA shall set the TXVECTOR parameter RESPONSE\_INDICATION to NDP\_RESPONSE unless the Link Adaptation per Normal Control Response Capable field of the S1G Capabilities element received from that STA contained a value of 1 in which case the S1G STA may set the RESPONSE\_INDICATION to NORMAL\_RESPONSE as described in 9.31.3 (Link adaptation using the VHT variant HT Control field).

An S1G STA that initiates a TXOP with a PV1 frame or an NDP CMAC frame shall not send an RTS frame to an S1G STA for the duration of the TXOP.

9.3.2.7 CTS and DMG CTS procedure

***TGah editor: Modify the following paragraphs after the 3rd paragraph of subclause 9.3.2.7 as follows(5213):***

An S1G STA that is addressed by an RTS frame that has the Dynamic Indication field in the Frame Control field equal to 0 (Static) behaves as follows:

—If the NAV indicates idle and the CCA has been idle for all secondary channels within the channel width indicated in the Bandwidth Indication field of the Frame Control field of the RTS frame for a PIFS period prior to the start of the RTS frame, then the STA shall respond with an (NDP) CTS frame after a SIFS. The STA shall set the TXVECTOR parameter CH\_BANDWIDTH to a value that is equivalent to the value of the Bandwidth Indication field of the Frame Control field in the received RTS frame. The (NDP\_2M) CTS frame shall have the Bandwidth Indication field set to the value of the Bandwidth Indication field of the received RTS frame.

—Otherwise the STA shall not respond with an (NDP) CTS frame.

An S1G STA that is addressed by an RTS carried in a 2 MHz duplicated frame that has the Dynamic Indication field in the Frame Control field equal to 1 (Dynamic) behaves as follows:

—If the NAV indicates idle, then the STA shall respond with an (NDP\_2M) CTS frame after a SIFS. The (NDP) CTS frame's TXVECTOR parameter CH\_BANDWIDTH may be set to any channel width for which the CCA on all secondary channels has been idle for a PIFS prior to the start of the RTS frame and that is equal to or less than the channel width indicated in the Bandwidth Indication field of the Frame Control field of the RTS frame. The (NDP\_2M) CTS frame shall have the Bandwidth Indication field set to a value that is equivalent to the value of the TXVECTOR parameter's CH\_BANDWIDTH.

—Otherwise the STA shall not respond with NDP CTS frame.

NOTE—NDP\_1M CTS frame is not used for dynamic bandwidth indication.

***Tgah editor: Modify the following paragraphs at the end of subclause 9.3.2.7 as follows (5159, 5214, 5215):***

An S1G STA shall transmit NDP CTS frames instead of CTS frames with the following exception: transmission of an CTS frame is required if link adaptation procedure is negotiated as described in 9.31 (Link adaptation). A non-S1G STA shall not transmit NDP CTS frames.

The RA/Partial BSSID field of the NDP CTS shall be generated as described in 8.9.1.1 (NDP CTS). The Duration field in the NDP CTS frame shall be set to the same value as the Duration field from the received RTS frame, adjusted by subtraction of aSIFSTime and the NDPTxTime required to transmit the NDP CTS frame, where NDPTxTime is calculated according to 9.3.2.4a.1 (RID update).

An S1G STA that receives an NDP CTS frame should disregard the value of the Duration field of the NDP CTS frame if any of the following conditions are satisfied:

—The value of the Address Indicator field is equal to 1, and the value of the Early Sector Indicator field is equal to 0, and the value of the RA/PBSSID field is equal to the PBSSID of the AP with which the non-AP STA is associated to.

—The value of the Address Indicator field is equal to 0, and the value of the RA/PBSSID indicates that the STA is the intended receiver of this frame, and the frame is received during the intervals of time negotiated with the UL-Sync capable AP (see 9.46.1 (Sync frame transmission procedure for uplink traffic)).

9.42g.4 TXOP-based sectorization operation

***Tgah editor: change the last paragraph in subclause 9.42g.4 as follows (5159):***

To facilitate the detection of the spatially orthogonal conditions by OBSS non-AP STAs or OBSS APs, the NDP CTS may be transmitted preceding the SO frame exchange. If the Early Sector Indicator in the NDP CTS frame is equal to 1, it indicates that the NDP CTS frame is followed by the sectorized beam frame exchange. Setting the early sector indicator to 1 and Address Indicator to 0 also indicates to the OBSS STAs that it might cancel its NAV and its RID setting if the spatially orthogonal conditions are subsequently met. If the ongoing frame exchange transmission preceding the NDP CTS is between a pair of STAs within its BSS, the STA does not reset its NAV and its RID even though the spatially orthogonal conditions are met. The RXVECTOR parameter COLOR is utilized to detect the SO condition by classifying the received PPDU between a same BSS transmission and an OBSS transmission. Hence, if the Early Sector Indicator is equal to 0, OBSS STA need not check for spatially orthogonal conditions. Figure 9-100 (CTS-to-self preceding SO frame exchange sequence) illustrates the frame exchange preceded by CTS-to-self using NDP CTS.

9.3.2.4 Setting and resetting the NAV

***TGah Editor: Change the paragraph below (including the first bullet) as follows (5159, 5214, 5215):***

In addition to the NAV update rules described in this subclause, an S1G STA shall also update its NAV to a new NAV value if it is greater than the current NAV value, with the information received in the Duration field of frames of type: NDP CTS, NDP Ack, NDP\_2M PS-Poll-Ack, and S1G Beacon, except when the received frame is an:

—NDP CTS that is either addressed to the S1G STA as a response to an RTS frame, or that is an NDP CTS frame whose value of the Duration field can be disregarded as defined in 9.3.2.7 (CTS and DMG CTS procedure.

9.3.2.15 Response Indication procedure

*TGah Editor: Insert the following bullet in the second column of P247L27 of TGah3.1****(5159, 5214, 5215)****:*

* CTS frame, as described in 9.3.2.7 (CTS and DMG CTS procedure)