IEEE P802.11
Wireless LANs

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| Resolutions to S1G PHY |
| Date: 2019-03-10 |
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Abstract

This submission shows

* Resolution for comments received from TGm comment collection (11Revmd D2.0)
* The proposed changes are based on 11Revmd D2.1.
* The submission provides resolutions to 7 CIDs:
2627, 2313, 2312, 2311, 2261, 2270 and 2323

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: update to CID 2323
* Rev 2: update to CID 2312, CID 2313, CID 2270 and CID 2323
* Rev 3: update to fix editorials
* Rev 4: update remaining CIDs - 2313, 2312, 2270
	+ Resolution to CIDs 2627, 2323, 2261 and 2311 (Comment Group PHY Motion B) accepted on March
* Rev 5: update to CIDs 2312 and 2313
* Rev 6&7: update to CIDs 2312 and 2313

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2627 | 3294.48 | "Set to S1G\_SHORT\_PREAMBLE defined in 23.3.8.2.1 " -- S1G\_SHORT\_PREAMBLE is not defined there, it's an enum value. And anyway it should not be specified to be set here, rather it should be set in the PHY spec (see 18/0710) | Delete the referenced row. At 3293.40 change "The PREAMBLE\_TYPE =S1G\_SHORT\_PREAMBLE. " to "The S1G\_SHORT preamble (see 23.3.8.2.1) is used." | Revised.These changes make the change on page 3293, and other related changes, but do not delete the referenced rowTGm Editor: make changes according to this document 11-19-0261-03-00m Resolutions to S1G PHY |

***Discussion***

At 3332.32, given three preamble formats defined with S1G\_1M preamble, S1G\_SHORT preamble, and S1G\_LONG preamble, those terms are used to implement the resolution as below.



***To TGm Editor:*** ***P3295L24*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

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| * TXVECTOR and RXVECTOR parameters (11ah)
 |
| Parameter | Condition | Value | **TXVECTOR** | **RXVECTOR** |
|  |  |  |  |  |
| PREAMBLE\_TYPE | FORMAT is S1G and (CH\_BANDWIDTH is CBW2 or CBW4 or CBW8 or CBW16) | Determine the type of preamble of the S1G PPDU.Enumerated type:S1G\_SHORT\_PREAMBLE indicates the short preamble defined in 23.3.8.2.1 (S1G\_SHORT preamble).S1G\_LONG\_PREAMBLE indicates the long preamble defined in 23.3.8.2.2 (S1G\_LONG preamble). | Y | Y |
| FORMAT is S1G\_DUP\_2M | Set to S1G\_SHORT\_PREAMBLE ~~defined in 23.3.8.2.1 (S1G\_SHORT preamble).~~ (#2627) | Y | Y |
| Otherwise | Not present  | N | N |

***------------- End Text Changes -----------------------***

***To TGm Editor:*** ***P3294L28*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

The PPDU bandwidth is determined by the CH\_BANDWIDTH parameter, and the preamble type (i.e., ~~S1G\_1M\_PREAMBLE, S1G\_SHORT\_PREAMBLE, S1G\_LONG\_PREAMBLE~~ S1G\_1M preamble, S1G\_SHORT preamble, and S1G\_LONG preamble) is determined by the PREAMBLE\_TYPE parameter.

* The 1 MHz format PPDU (S1G\_1M) is used for non-duplicate S1G transmissions at 1 MHz bandwidth (i.e., CH\_BANDWIDTH = CBW1), and for S1G\_DUP\_1M transmissions of any bandwidth (i.e., CH\_BANDWIDTH = CBW1, CBW2, CBW4, CBW8, or CBW16). ~~The PREAMBLE\_TYPE = S1G\_1M\_PREAMBLE.~~ The S1G\_1M preamble (see 23.3.8.3) is used. Support for the S1G\_1M is mandatory.
* The greater than or equal to 2 MHz short format (S1G\_SHORT) is used for non-duplicate S1G transmissions and for S1G\_DUP\_2M transmissions, at bandwidths of 2 MHz and higher (i.e., CH\_BANDWIDTH = CBW2, CBW4, CBW8, or CBW16). ~~The PREAMBLE\_TYPE = S1G\_SHORT\_PREAMBLE.~~ The S1G\_SHORT preamble (see 23.3.8.2.1) is used. This PPDU format is similar to the HT-greenfield format in Clause 19 (High-throughput (HT) PHY specification), which does not contain a legacy portion in the preamble. Support for S1G\_SHORT is mandatory.
* The greater than or equal to 2 MHz long format (S1G\_LONG) is used for non-duplicate S1G transmissions at bandwidths of 2 MHz and higher (i.e., CH\_BANDWIDTH = CBW2, CBW4, CBW8, or CBW16). The S1G\_LONG format is not used for S1G\_DUP\_2M transmissions. ~~The PREAMBLE\_TYPE = S1G\_LONG\_PREAMBLE.~~ The S1G\_LONG preamble (see 23.3.8.2.2) is used. This PPDU format is similar to the HT-mixed format in Clause 19 (High-throughput (HT) PHY specification). Support for S1G\_LONG is optional if a STA supports only 1 MHz and 2 MHz PPDUs, and is mandatory if a STA supports wider than 2 MHz PPDUs. All S1G STAs shall support detecting and decoding up to the SIG-A field of S1G\_LONG PPDUs.

***------------- End Text Changes -----------------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2313 | 3337.27 | "If set to 1, then the SIG field format isshown in Figure 23-21" -- huh? This makes no sense, since the table this statement is in is all about the SIG field format | Change to "If set to 1, ignore eveything else in this subclause and look at Figure 23-21 instead." | RevisedHere in this subclause, it is better to focus on the original purpose of S1G SIG field contents of a non NDP CMAC frame.As for an NDP CMAC frame, the corresponding indication is moved to 9.9 (NDP CMAC frames(11ah)) of MAC spec. TGm Editor: make changes according to this document 11-19-0261-07-00m Resolutions to S1G PHY |
| 2312 | 3337.27 | "Used to indicate that frame is an NDP CMACframe(#1143). If set to 1," -- not clear what if set to 0 | At the end of the para add "If set to 0, then the SIG format is undefined." | Revised.Here in this subclause, it is better to focus on the original purpose of S1G SIG field contents of a non NDP CMAC frame.As for an NDP CMAC frame, the corresponding indication is moved to 9.9 (NDP CMAC frames(11ah)) of MAC spec. TGm Editor: make changes according to this document 11-19-0261-07-00m Resolutions to S1G PHY |

***Discussion***

As for CID 2313, NDP for sounding is defined only using the S1G\_SHORT, and NDP for sounding is not allowed for 1 MHz transmissions at 3374.46. NDP CMAC frames may either use an S1G\_SHORT, or an S1G\_1M.

As for CID 2312, in case a value of an NDP Indicaton field in S1G\_SHORT preamble is set to 0, specific settings in SIG field are described at 3375.02 as below

 

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***To TGm Editor:*** ***P3338L27*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

**Table 23-11—Fields in the SIG field of short preamble**

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| --- | --- | --- | --- |
| Symbol | Bit | Field | **Description** |
|  |  |  |  |
| SIG-2 | B13 | NDPIndication | Differentiate the PPDU from an NDP CMAC frame:Set to 0 to indicate that the PPDU is not an NDP CMAC frame~~Used to indicate that frame is an NDP CMAC frame. If set to 1, then the SIG field format is shown in Figure 23-21 (SIG field format for ≥ 2 MHz NDP CMAC frame(11ah)) (in 23.3.11) and the SIG field contents follow the description in 9.9 (NDP CMAC frames(11ah)).~~ (#2312 and #2313) |

***------------- End Text Changes -----------------------***

***To TGm Editor:*** ***P3358L38*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

**Table 23-18—Fields in the SIG field of S1G\_1M PPDU**

|  |  |  |  |
| --- | --- | --- | --- |
| Symbol | Bit | Field | **Description** |
|  |  |  |  |
| SIG-5 | B25 | NDPIndication | Differentiate the PPDU from an NDP CMAC frame:Set to 0 to indicate that the PPDU is not an NDP CMAC frame~~Used to indicate that frame is an NDP CMAC frame(#1143). If set to 1, then the SIG field format is shown in Figure 23-20 (SIG field format for 1 MHz NDP CMAC frame(11ah)) (in 23.3.11) and the SIG field contents follow the description in 9.9 (NDP CMAC frames(11ah)).~~ (#2312 and #2313) |

***------------- End Text Changes -----------------------***

***To TGm Editor:*** ***P1670L01*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

**9.9 NDP CMAC frames(11ah)**

**9.9.1 General**

The format of NDP CMAC frames that use the S1G\_1M format is shown in Figure 23-19 (S1G NDP CMAC frame for 1 MHz(11ah)). Figure 23-20 (SIG field format for 1 MHz NDP CMAC frame(11ah)) shows the SIG field format that contains the NDP CMAC frame body field. B25 of the SIG field (the second bit of the fifth symbol) is set to 1 to indicate an NDP CMAC frame. The NDP CMAC frame body field is 25 bits for NDP CMAC frames that are transmitted using the S1G\_1M format (NDP\_1M). (#2312 and #2313)

The format of NDP CMAC frames that use the S1G\_SHORT format is shown in Figure 23-18 (S1G NDP CMAC frame for ≥ 2 MHz(11ah)). Figure 23-21 (SIG field format for ≥ 2 MHz NDP CMAC frame(11ah)) shows the SIG field format that contains the NDP CMAC frame body field. B37 of the SIG field (the 14th bit of the second symbol) is set to 1 to indicate an NDP CMAC frame. The NDP CMAC frame body field is 37 bits for NDP CMAC frames that are transmitted using the S1G\_SHORT format (NDP\_2M). (#2312 and #2313)

***------------- End Text Changes -----------------------***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2311 | 3356.08 | "The SIG field format of NDP CMAC frames is described in Figure 23-20 (SIG field format for 1 MHzNDP CMAC frame(11ah)) (in 23.3.11)" | Append "and Figure 23-21" | Revised.Put the appended text before the parenthesis.TGm Editor: make changes according to this document 11-19-0261-03-00m Resolutions to S1G PHY |

***To TGm Editor:*** ***P3357L01*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

**23.3.8.3.4 SIG definition**

The SIG field carries information required to interpret S1G\_1M PPDUs. The structure of the 6 symbol SIG field (which carries 6 information bits per symbol) is shown in Figure 23-16 (Structure of the 6 symbol SIG field of S1G\_1M PPDU(11ah)). Note that unlike other SIG field structures the indexing of the bits incorporates all the SIG field symbols, i.e., B0–B5 denote the first symbol, B6–B11 the second, and so on. The SIG field format of NDP CMAC frames is described in Figure 23-20 (SIG field format for 1 MHz NDP CMAC frame(11ah)) and Figure 23-21 (SIG field format for ≥ 2 MHz NDP CMAC frame(11ah)) (in 23.3.11).

***------------- End Text Changes -----------------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2261 | 3402.62 | What is the "8." in equations 23-65 and 23-67? | Delete "8." in equations 23-65 and 23-67. | Revised.In order to convert byte (unit in LENGTH field) to bit to get *N­SYM*, 8 is a required element in both Equation (23-65) and Equation (23-67)TGm Editor: make changes according to this document 11-19-0261-03-00m Resolutions to S1G PHY |

***Discussion***

In order to convert byte (unit in LENGTH field) to bit to get *N­SYM*, 8 is a required element in both Equation (23-65) and Equation (23-67) with minor modification of multiplication symbol “$∙$”

***To TGm Editor:*** ***P3403L62*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***



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***------------- End Text Changes -----------------------***

***To TGm Editor:*** ***P3404L27*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

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***------------- End Text Changes -----------------------***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2270 | 3406.55 | In Table 23-36, dot11S1GTravelingPilotOptionActivated should indicate it is Dynamic. | Change "Static" to "Dynamic" for dot11S1GTravelingPilotOptionActivated row | Accepted.  |

***Discussion***

At 3408.52, there is a definition of S1G PHY MIB attributes as below

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Dynamic MIB can be changed during the lifetime of a BSS. Generally, if written by PHY, MAC-ACCESS is read-only, and if written by management entity, MAC-ACCESS is read-write.

At 4211.64, there is a description on dot11S1GTravelingPilotOptionActivated as belw

dot11S1GTravelingPilotOptionActivated OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS (#1246)read-write

STATUS current

DESCRIPTION

"This is a control variable.

It is written by an external management entity.

Changes take effect as soon as practical in the implementation.

This attribute, when true, indicates that the traveling pilot option is

enabled."

DEFVAL { false }

::= { dot11PhyS1GEntry 27 }

***To TGm Editor:*** ***P3407L56*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

**Table 23-36—S1G PHY MIB attributes *(continued)***

|  |  |  |
| --- | --- | --- |
| Managed object | Default value/range | Operational semantics |
| … | … | … |
| dot11S1GMaxNTxChainsActivated | Implementationdependent | Dynamic |
| d ot11S1GTravelingPilotOptionImplemented | Implementationdependent | Static |
| dot11S1GTravelingPilotOptionActivated | Implementationdependent | ~~Static~~Dynamic |

***------------- End Text Changes -----------------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2323 | 4086.43 | "dot11S1GControlFieldOptionImplemented [...]This attribute, when true, indicates that the STA implementation iscapable of receiving the VHT variant HT Control field." -- this is rather counter-intuitive | After the cited text add "See 10.8." At the end of 10.8 add a para "An S1G shall not use an HT Control field other than a VHT variant HT Control field. An S1G STA shall not use a VHT variant HT Control field for any purpose other than link adaptation (see 10.33.3)." | Accepted.TGm Editor: make changes according to this document 11-19-0261-03-00m Resolutions to S1G PHY |

***To TGm Editor:*** ***P4089L43*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

dot11S1GControlFieldOptionImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute, when true, indicates that the STA implementation is

capable of receiving the VHT variant HT Control field." See 10.8.(Ed)

::= { dot11S1GStationConfigEntry 3 }

***------------- End Text Changes -----------------------***

***To TGm Editor:*** ***P1772L06*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

(11ah)If the value of dot11S1GControlFieldOptionImplemented is true, an S1G STA shall set the +HTC-VHT

Capable subfield of the S1G Capabilities Information field of the S1G Capabilities element that it transmits to 1.

An S1G shall not use an HT Control field other than a VHT variant HT Control field. An S1G STA shall not use a VHT variant HT Control field for any purpose other than link adaptation (see 10.33.3).

***------------- End Text Changes -----------------------***