IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolution for Clause 4, 4.12, 4.13, 4.14, 4.3 | | | | |
| Date: 2014-3-1 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Zander Lei | I2R | 1 Fusionopolis Way #21-01 Connexis | +65 6408 2436 | leizd@i2r.a-star.edu.sg |

Abstract

This submission proposes resolutions for comments in Clause 4 of TGah Draft 1.0 with the following CIDs:

Clause 4: 2540, 2541, 2542, 2593,

Subclause 4.12: 1007, 1807, 2317, 2318

Subclause 4.13: 1818

Subclause 4.14: 1820, 1822

Subclause 4.3: 2607

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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page.Line** | **Clause** | **Comment** | **Propose Change** | **Resolution** |
| 2540 | 3.1 | 4 | "As the S1G PHY is based on the VHT PHY, most of the features and behaviors of VHT STAs specified in Clause 8 to Clause 10, and Clause 13 apply to S1G STAs as well.  It is necessary to add description of S1G STA in subclause 4.3 to specify the application of VHT features and behaviors." | "Insert a new subclause 4.3.10c ""Sub 1GHz (S1G) STA"" following 4.3.10b ""Television very high throughput (TVHT) STA"".  Detailed proposed changes are provided in 11/13-1316." | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 2541 | 3.1 | 4 | It is better to provide a general description of a Sensor type STA to describe recommended capabilities of the Sensor type STA. | "Add new subclause 4.11f which describes Sensor type STA.  Detailed proposed changes are provided in 11/13-1316." | Reject.  “Sensor type STA” is defined in clause 3.2. The functionalities a sensor-type STA has are implementation-dependent. |
| 2542 | 3.1 | 4 | It is better to provide a general description of Subchannel Selective Transmission (SST) to describe the benefit (reason) of SST. | "Add new subclause 4.17 which describes SST.  Detailed proposed changes are provided in 11/13-1316." | Reject.  It is not necessary to introcude all features in this clause. There are many MAC features introduced in 11ah. They are described in each of the respectively subclauses. Only a few features that are deviated far from legacy specs are briefly introduced here. |
| 2593 | 3.1 | 4 | It is better to provide a general description of OBSS mitigation to describe the reason. | "Add new subclause 4.18 which describes OBSS mitigation.  Detailed proposed changes are provided in 11/13-1316." | Reject.  It is not necessary to introcude all features in this clause. There are many MAC features introduced in 11ah. They are described in each of the respectively subclauses. Only a few features that are deviated far from legacy 11 specs are briefly introduced here. |
| 1007 | 3.08 | 4.12 | The extra features described here in 4.12-4.16 are all features of an S1G STA. They are inherently specific to an S1G STA, because they are managed by frames sent only by S1G STAs. This is no apparent from the introduction. | Add a 4.12 and 4.12.1 section for S1G that summarises the features of an S1G STA. Demote 4.12-4.16 to become siblings of the new 4.12.1. | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 1807 | 25.08 | 4.12 | 4.12 Relay. I am not sure this is the correct place fo rhtis. Shouldn't it be in 4.3? Also this is too much for Clause 4. Clause 9 is where the description is given. | Move to 4.3.x. Drastically edit and cut down. A general description is required here. No diagram. I would also consider that one section in 4.3 is used "Procedures for Sub 1GHz Licence Exempt Operation" and then have the individual features as sub clauses. | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 2317 | 3.01 | 4.12 | The descriptions in 4.12-4.16 are really an extension to the architectural concepts in 4.3. Move this new text to be new sections at the end of 4.3. | Change this text addition to be at the end of 4.3 instead of the end of subclause 4 | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 2318 | 3.01 | 4.12 | The extra features described here in 4.12-4.16 are all features of an S1G STA. They are inherently specific to an S1G STA, because they are managed by frames sent only by S1G STAs. This is no apparent from the introduction. | This would be easier to understand with an overview of sub-1GHz operation. | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 1818 | 26.35 | 4.13 | The extra features described here in 4.12-4.16 are all features of an S1G STA. They are inherently specific to an S1G STA, because they are managed by frames sent only by S1G STAs. This is no apparent from the introduction. | This section 4.13 should be in 4.3. | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 1820 | 26.59 | 4.14 | Again this belongs in 4.3. | Move to 4.3 | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 1822 | 27.09 | 4.14 | Cut it down and move to 4.3 | Move to 4.3 and delete everything after the first sentence. | Revised:  TGah editor to make changes shown in 11-14-0321r1 |
| 2607 | 3.01 | 4.3 | There is no description of S1G STA in cluase 4.3. Need to add a general description of a S1G STA similar to those of HT and VHT STAs | Add a description of S1G STA in clause 4.3 | Agree in principle with the commenter.  Revised:  TGah editor to make changes shown in 11-14-0321r1 |

### [CID 2540, 1007, 1807, 2317, 2318, 1818, 1820, 1822, 2607]

### Discussions

There should be a general overview session for S1G Specification under in subclause 4.3.10c. As a reference, the general description for 11ac is in subsection 4.3.10a and that for 11af is in 4.3.10b.

**Instruction to TGah editor: Please insert subclause 4.3.10c under clause 4 as the following:**

### 4.3.10c Sub 1 GHz (S1G) STA

### 4.3.10c.1 Overview

The subclause 4.3.10c summarizes the normative requirements for an IEEE 802.11 S1G STA stated elsewhere in this standard.

The IEEE 802.11 STA operates in frequency bands below 1 GHz excluding the TV White Space bands.

An S1G STA supports S1G features identified in Clause8 (Frame formats), Clause9 (MAC sublayer functional description), Clause10 (MLME), Clause 11 (Security) and Clause 24 (Sub 1 GHz (SIG) PHY specification).

The main PHY features in an S1G STA are the following:

* Mandatory support for 1 MHz and 2 MHz channel width
* Mandatory support for S1G\_1M, S1G\_SHORT PPDU
* Mandatory support for S1G\_LONG PPDU if ≥4MHz channel width is supported
* Mandatory support for the detecting and decoding of SIG-A field of the S1G\_LONG preamble
* Mandatory support for single spatial stream MCS 0 to 2 and MCS10 (for 1 MHz PPDU only)
* Mandatory support for single spatial stream MCS 3 to 7 for an SIG AP
* Mandatory support for Binary convolutional coding
* Mandatory support for Normal Guard Interval
* Mandatory support for Fixed Pilots
* Optional support for 2 or more spatial streams (transmit and receive)
* Optional support for 2MHz, 4MHz, 8MHz and 16MHz PPDU with S1G\_LONG preamble
* Optional support for Beamforming sounding (by sending an S1G NDP frame)
* Optional support for Respond to transmit beamforming sounding (compressed beamforming feedback)
* Optional support for STBC, LDPC (transmit and receive)
* Optional support for S1G MU PPDUs (transmit and receive)
* Optional support for 4 MHz, 8 MHz, or 16 MHz channel width
* Optional support for MCSs 8 and 9 (transmit and receive)
* Optional support for Short Guard Interval
* Optional support for Traveling Pilots

The main MAC features supported for S1G STA are the following\*:

* NDP frames and short MAC frames
* Second virtual carrier sensing - RID
* RAW
* Relay
* Grouping on non-AP STA and Multicast AID
* TWT
* Speed Frame Exchange
* Sectorization
* Non-TIM STA operation
* Asymmetric Block Ack operation, Fragment Block Ack operation
* TIM, Page slicing, Dynamic AID assignment
* Authentication control
* SST
* Extended Max Idle periods, listen intervals, WNM-sleep intervals
* Rescheduling STA’s doze/awake cycle
* Sensor type STA, non-Sensor type STA, Small battery operated STA

\*Note: whether a STA has mandatory support or optional support to each of the features above is indicated in **AnnexB.**

Most S1G features, among other benefits, either reduce the energy consumption of an STA or increase the achievable range between an S1G AP and an S1G non-AP STA. There are mainly two service types: sensor type and offloading type. An SIG AP may provide either or both of the services.

An S1G STA is also a QoS STA, but does not support HCCA.

**Instruction to TGah editor: Please move subclause 4.12, 4.13, 4.14, 4.15, 4.16 to 4.3.10c.2, 4.3.10c.3, 4.3.10c.4, 4.3.10c.5, and 4.3.10c.6 respectively and change the corresoponding subclause numbers (including table numbers) as the following:**

### ~~4.12~~ 4.3.10c.2 Relay

### ~~4.13~~ 4.3.10c.3 Grouping of non-AP STAs

### ~~4.14~~ 4.3.10c.4 Target Wake Time

### ~~4.15~~ 4.3.10c.5 Speed Frame Exchange

### ~~4.16~~ 4.3.10c.6 Sectorizaiton