IEEE P802.11 Wireless LANs

|  |
| --- |
| Proposed Resolution to the Assigned CC8 Comments 1326 and 1045 |
| Date:2013-07-11 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Lei Wang | InterDigital Communications | 781 Third Ave., King of Prussia, PA 19406 | 1 858 205 7286 | leiw@billeigean.com |
| Mitsuru Iwaoka | Yokogawa Electric Co. | 2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750 Japan | 81 422 52 5519 | Mitsuru.Iwaoka@jp.yokogawa.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions to the assigned CC8 comments, #1326 and #1045, as indicated in document 13/0495r11[Ref-3].

# Introduction

In TGai CC8 comment database, 13/0495r11 [Ref-3], Comments #1326 and #1045 is assigned to the contributor of this contribution. They are as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1326 | Mitsuru Iwaoka | 8.5.8.34 | 54 | 38 | In Table 8-221j, Supported Minimum Rate is defined by bitrate. Though, P802.11af and P802.11ah will have different bitrate set. | Replace bitrate by MCS code and optional PHY type.. |
| 1045 | Graham Smith | 34 | 54 |  | Supported minimum supported rate - Is this supposed to be a poor man's Basic Rate Set? All it is really saying is whether the AP supports 11b or not. I think that 6, 12 and 24 are mandatory for OFDM or if not, effectively so. So it probably comes down to setting a 1 or a 0 and if 5GHz it is a 1. Of course a beacon would tell you this straightaway and also, presumeably an FD. Hence, I would suggest cutting down to 1 bit or getting rid of altogether. | 1 bit or delete. |

This contribution proposes resolutions to the above assigned CC8 comments.

In addition, based on a request from the commenter of CC8 Comment #1325, this contribution also includes a proposal to revise the comment resolution for Comment #1325.

# Conventions

In this contribution, the proposed 802.11ai Specification Document text will be presented as changes to the current TGai draft specification, 11ai/D0.5[Ref-2]. The following format conventions are used:

1. The new added text is marked as blue underline text;
2. The deleted text is marked as ~~red strikethrough text~~;
3. The unchanged baseline standard text stays in black text in the context of proposed TGai specification text;
4. The editorial instruction is marked as *italic text highlighted by Yellow*; and
5. Any other text, e.g., discussions, proposed motions, etc., is in black text, but not in the context of proposed TGai specification text.

# Discussions of the Proposed Resolutions

**Comment #1326:**

It raises two issues:

1. Use MCS setting values, not bit rate values, in Table 8-221j; and
2. Consider adding the minimum supported PHY rates of 11af and 11ah in Table 8-221j.

It is a good point of using MCS settings for those PHYs that specify their throughput in MCS settings, e.g., 11n and 11ac. However, not all the 802.11 PHYs use MCS setting values, e.g., 11a/b/g use bit rates. Therefore, the proposed resolution to address the raised issue 1) is to make Table 8-221j with PHY-specific columns for each PHY type specified in Table 8-221i.

Since 11ah and 11af have not been finally approved yet and also they are not included in the PHY Type subfield in Table 8-221i, in the current 11ai draft spec, 11ai/D0.5 [Ref-2], further discussions should be held in TGai to decide whether or not to include the supported minimum data rates information in Table 8-221j in11ai spec. Therefore, this contribution does not propose any changes required to include minimum supported PHY rates of 11ah and 11af.

In addition, this contribution also includes one proposed change to the resolution for CC8 Comment 1325, i.e., add “Clause 18” to PYH Type=1 in the PHY type subfield definition table, Table 8-221i, based on the EPR-OFDM PHY specifications in the 802.11 standards. Please note that the proposed revised resolution to CC8 Comment 1325 is intended to overwrite the resolution in Contribution 13/0575r1[Ref-4], which was approved in TGai 2012-May meeting.

**Comment #1045**

It questions the necessity of having a 3-bit Supported Minimum Rate subfield in FD Capability field, considering the PHY type is already in FD Capability field. The commenter has a good point that PHY type gives the information of the mandatory PHY rates of the PHY, in which the minimum rate information is included. However, the intention of the Supported Minimum Rate subfield in FD Capability field is not to indicate the minimum PHY rate, instead, it is intended to indicate the minimum rate that the AP transmitting FD frame is used for FILS capable STAs, which is allowed to be a higher rate than the minimum PHY rate among the mandatory date rates of the PHY. The confusion comes from the term, Supported Minimum Rate, used in the current 802.11ai draft spec. The proposed resolution includes:

1. Change the term, Supported Minimum Rate subfield in FD frame, to FILS Minimum Rate;
2. Add clarification text to specify the intended use of the FILS Minimum Rate subfield in FD Capability field.

# Proposed Changes to 802.11ai/D0.5 Specification Text

*To resolve comments: 1326 and 1045*

*Instructions to Editor: make the following change in line 15 on page 5, Figure 8-460p as follows.*

Change the subfield “Supported Minimum Rate” to “FILS Minimum Rate”. [comment #1045]

*Instructions to Editor: change the paragraph in line 34 on page 54 as follows.*

The 3-bit ~~Supported~~ FILS Minimum Rate subfield specifies the minimum rate, as coded in Table 8-221j, which is used by the AP transmitting the FD frame to communicate with FILS STAs. [comment #1045]

Depending on the PHY Type subfield values specified in Table 8-221i, the FILS minimum rate is represented as a bit rate value or as an MCS value in Table 8-221j. If an MCS value is provided, then the FILS Minimum Rate can be derived from the MCS value and the PHY Type in the FD Capability field. [comment #1326, #1045]

*Instructions to Editor: replace Table 8-221j in line 38 on page 54 by the following table.*

**Table 8-221j —FILS Minimum Rate subfield** [comment #1326, #1045]

|  |  |
| --- | --- |
| **FILS Minimum Rate subfield (3 bits)** | **FILS Minimum Rate / MCS** |
| **If PHY type=0 (HR/DSSS)** | **If PHY type=1 (ERP-OFDM)** | **If PHY type=2 (HT)** | **If PHY type=3 (VHT)** |
| 0 | 1 Mbps | 6 Mbps | MCS=0 | MCS=0 |
| 1 | 2 Mbps | 9 Mbps | MCS=1 | MCS=1 |
| 2 | 5.5 Mbps | 12 Mbps | MCS=2 | MCS=2 |
| 3 | 11 Mbps | 18 Mbps | MCS=3 | MCS=3 |
| 4  | Reserved | 24 Mbps | MCS=4 | MCS=4 |
| 5 – 7  | Reserved  | Reserved | Reserved | Reserved |

*The following is a revised propose to resolve CC8 Comment 1325, where the original proposal was in Contribution 13/0575r2:*

*Instructions to Editor: make the following changes in PHY Type descriptions in Table 8-221i in line 16 on page 54.*

**Table 8-221i — PHY Type subfield** [comment 1325]

|  |  |
| --- | --- |
| **PHY Type subfield****(3 bits)** | **PHY Type** |
| 0 | ~~DSSS/HR (11b)~~HR/DSSS (Clause 17) |
| 1 | ~~OFDM/ERP (11a/g)~~ERP-OFDM (Clause 18 &Clause 19) |
| 2 | HT ~~(11n)~~(Clause 20) |
| 3 | VHT ~~(11ac)~~(Clause 22) |
| 4 – 7  | Reserved |

# References

1. IEEE Std 802.11 – 2012
2. IEEE Std 802.11ai/D0.5
3. 11-13-0495-11-00ai-tgai-d0-5-call-for-comments-responses-resolutions-cc08
4. 11-13-0575-01-00ai-Proposed-Resolutions-to-Assigned-CC8-Comments