IEEE P802.11 Wireless LANs

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| Proposed Resolution to the Assigned CC8 Comments 1123 and 1461 |
| Date:2013-07-03 |
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Abstract

This submission proposes resolutions to the assigned CC8 comments, #1123 and #1461, as indicated in document 13/0495r10 [Ref-3].

# Introduction

In TGai CC8 comment database, 13/0495r10 [Ref-3], Comments #1123 and #1461 are assigned to the contributor of this contribution. Those two comments are shown below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause Number(C)** | **Page(C)** | **Line(C)** | **Type of Comment** | **Comment** | **Proposed Change** |
| 1123 | Jarkko Kneckt | 8.5.8.34 | 54 | 46 | T | The Supported Minimum Rates 6Mbps should be clarified. If hte minimum rate is 6Mbps is 11Mbps (.11b radio) supported in BSS. To me it sounds natural that in this case the .11b radio is not supported by the BSS. When the .11b radio is not supported, the efficiency of the network increases. | Add text to clarify that when the minimum rate is 6 Mbps, 11Mbps rate is not supported in the BSS. |
| 1461 | Santosh Ghanshyam Pandey | 10.25.2 | 71 | 45 | T | As the FD field may be carrying a lot of fields in Tgai, it may grow large. Also Tgai use cases deal with high density environment with many possible over the air collisions. Hence a higher data rate for the FD frames may be advisable. | Insert a paragraph at the end of subclase 10.25.2 indicating that the FD frames will be sent at a data rate of 6 Mbps or higher |

This contribution proposes resolutions to the above assigned CC8 comments #1123 and #1461.

# 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

**Comment 1123:**

Comment 1123 proposes to add a clarification that the 11Mbps data rate is not supported, if the supported minimum data is 6Mbps. Based on the comment text, it seems that the purpose of such a clarification is to eliminate the use of 802.11b radio, by setting the minimum rate to 6Mbps, for a better network efficiency.

The following aspects are worth further discussions:

1. Eliminate the use of 802.11b radio: based on lots of discussions in 802.11 community, it seems a good idea to eliminate the use of 802.11b radio for a better network efficiency. It may be even more desirable in the 11ai use cases. It can be properly signalled through the PHY Type subfield.
2. PHY Type subfield in the FD Capability field: it indicates the PHY type of the STA transmitting the FD frame. Its encoding has been changed as follows (based on TGai comment resolution in 802.13-May meeting):

**Table 8-221i — PHY Type subfield**

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

Note that the supported rates of the PHY type is now deterministic, due to the differentiation between DSSS and OFDM PHY, for 802.11g systems. For example, for PHY type of HR/DSSS, the supported rates are 1, 2, 5.5 and 11 Mbps, not that 6Mbps is not in this list.

1. Supported Minimum Rate capability field: it indicates the minimum rate supported by the STA transmitting the FD frame. It is used to allow the STA to select a minimum rate that may be different from the minimum rate implied by the PHY type, e.g., for the PHY type of HT, the minimum rate subfield can be set to 13Mbps, not necessary to be 6.5Mbps.

Based on the above discussion, the proposed change of Comment 1123 seems not necessary, i.e., we don’t need to add text to clarify that when the minimum rate is 6 Mbps, 11Mbps rate is not supported in the BSS. If we would like to eliminate the use of 802.11b radio in 11ai-enabled systems, then let the 11ai-capable AP to set its PHY type to ERP-OFDM, or HT, or VHT, i.e., not HR/DSSS.

**Comment 1461:**

Comment 1461 proposes to transmit the FD frame at a data rate of 6Mbps or higher, which basically suggests to eliminate the use of FD frame in 11b based systems. Considering the TGai use cases, it seems a reasonable suggestion, as the 802.11b based AP/BSS is obviously not a good choice to serve the high density areas with a large number of non-AP STAs entering the ESS in a short time interval, e.g., 100 non-AP STAs entering ESS within 1 second [Ref-4].

This contribution recommends to accept it and also proposes detailed text below.

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

 *To resolve comments: 1461*

*Instructions to Editor: change the paragraph in line 45 on page 7, in Section 10.25.2, as follows.*

The FILS Discovery (FD) frame is a Public Action frame that contains the information to support a quick AP/Network Discovery for a fast initial link setup. The FD frame may be transmitted by a STA that transmits Beacon frames and has dot11FILSActivated equal to true. If transmitted, the FD frame shall be transmitted at a data rate of 6Mbps or higher.

# References:

1. IEEE Std 802.11 – 2012
2. IEEE Std 802.11ai/D0.5
3. 11-13-0495-10-00ai-tgai-d0-5-call-for-comments-responses-resolutions-cc08
4. 11-11-0745-05-00ai-tgai-functional-requirements