IEEE P802.11
Wireless LANs

|  |
| --- |
| Clause 10.2 Comment Resolution |
| Date: 2017-08-02 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Osama Aboul-Magd | Huawei Technologies Canada Co. Ltd. | 303 Terry Fox DriveOttawa, ONT, CANADAK2K-3J1 |  | Osama.aboulmagd@huawei.com  |
|  |  |  |  |  |

Abstract

This submission includes resolutions to CIDs 4746, 5373, and 8207. The three CIDs belong to the **MAC** Group.

R0: Initial draft

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

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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4746 | 113.03 | 10.2.1 | Need to update the MAC architecture (Figure 10-1) and respective definitions to host the enhancements for HE (UL MU, etc). | As in comment. | Revised.TGax Editor to make changes proposed in <this document> |
| 5373 | 113.05 | 10.2.1 | Update Figure 10-1--Non-DMG STA MAC architecture with new 11ax features (OFDMA, HE PHY, etc) | As in comment | Revised.TGax Editor to make changes proposed in <this document> |
| 8207 | 113.04 | 10.2 | The 802.11ax amendment introduces MU transmissions which is not supported by any of the control functions in Figure 10-1 of the 802.11-2016. There is a need to introduce a ne MU access function and add to the Figure. | as in comment. | Revised.TGax Editor to make changes proposed in <this document> |

***TGax Editor: replace Figure 10-1 (Non DMG STA MAC Architecture) with the Figure in the embedded power point slide***.



* **MAC architecture**
* **General**

The MAC architecture is shown in Figure 10-1 (Non-DMG STA MAC architecture) and Figure 10-2 (DMG STA MAC architecture)

In a non-DMG STA:

* The MAC provides the PCF, HCF and MCF service using the services of the DCF.
* The PCF is optionally present in nonmesh STAs and absent otherwise.
* The HCF is present in QoS STAs and absent otherwise.
* The MCF is present in mesh STAs and absent otherwise.
* The MUCF is present in HE STAs and absent otherwise. (#4746, #5373, #8207)
* Hybrid coordination function (HCF)
* General

***TGac Editor: Change clause 10.2.4.1 as follows***

The QoS facility includes an additional coordination function called *HCF* that is usable only in QoS network configurations. The HCF shall be implemented in all QoS STAs except mesh STAs and HE STAs. Instead, mesh STAs implement the MCF and HE STAs implement the MUCF. The HCF combines functions from the DCF and PCF with some enhanced, QoS-specific mechanisms and frame subtypes to allow a uniform set of frame exchange sequences to be used for QoS data transfers during both the CP and CFP. The HCF uses both a contention based channel access method, called the *enhanced distributed channel access (EDCA)* mechanism for contention based transfer and a controlled channel access, referred to as the *HCF controlled channel access (HCCA)* mechanism, for contention free transfer.

A STA may obtain a TXOP using one or both of the channel access mechanisms specified in 10.22 (HCF). If a TXOP is obtained using the contention based channel access, it is defined as *EDCA TXOP*. If a TXOP is obtained using the controlled channel access, it is defined as *HCCA TXOP*. If an HCCA TXOP is obtained due to a QoS (+)CF-Poll frame from the HC, the TXOP is defined as a *polled TXOP*.

Time priority Management frames are transmitted outside of the normal MAC queuing process as per individually described transmission rules. Frames listed in Table 9-350 (HT Action field values) and Table 9-435 (VHT Action field values) with a value of “Yes” in the “Time priority” column are time priority Management frames. No other frames are time priority Management frames.

* **Mesh coordination function (MCF)**

The mesh facility includes an additional coordination function called *MCF* that is usable only in an MBSS. A mesh STA shall implement the MCF only. MCF has both a contention based channel access and contention free channel access mechanism. The contention based mechanism is EDCA and the contention free mechanism is called the *MCF controlled channel access (MCCA)*. MCF uses the default values for the PTKSA, GTKSA and STKSA Replay Counters. The operation rules of the EDCA are defined in 10.22.2 (HCF Contention based channel access (EDCA)). The operation rules of the MCCA are defined in in 10.23.2 (MCF controlled channel access (MCCA)).

***TGax Editor: Create new subclause 10.2.5a***

### 10.2.5a Multi-User coordination function (MUCF)

An HE BSS allows the schedule of MU PPDUs in the UL and the DL directions. An HE AP shall implement MUCF. MUCF has a contention based channel access, a multi-user controlled channel access mechanism, and an UL OFDMA-based random acess mechanism. The operation rules of the EDCA are defined in 10.22.2 and 27.2.5. The multi-user controlled channel access mechanism allows an HE AP STA to assign to a group of its associated non-AP STAs resource units to participate in either HE DL MU or HE UL MU operations as described in 27.2 and 27.5.1.

UL OFDMA-based randsom acces is a mechanism that allows HE STAs to randomly select resource units assigned by an HE AP STA as described in 27.5.4.

* **Combined use of DCF, PCF, HCF, and MUCF**

The DCF and a centralized coordination function (either PCF,HCF, or MUCF) are defined so they may operate within the same BSS. When a PC is operating in a BSS, the PCF and DCF access methods alternate, with a CFP followed by a CP. This is described in greater detail in10.4 (PCF). When an HC is operating in a BSS, it may generate an alternation of CFP and CP in the same way as a PC, using the DCF access method only during the CP. The HCF access methods (controlled and contention based) operate sequentially when the channel is in CP. Sequential operation allows the polled and contention based access methods to alternate, within intervals as short as the time to transmit a frame exchange sequence, under rules defined in 10.22 (HCF)

**References:**