802.11ba Draft Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proposed Text for Mandatory and Optional Description | | | | |
| Date: 2018-07-08 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel | 2200 Mission College Blvd, Santa Clara, CA 95054 | +1-765-418-6733 | po-kai.huang@intel.com |
| Robert Stacey |  |  |  |
| Dan Bravo |  |  |  |
| Shahrnaz Azizi |  |  |  |
| Vinod Kristem |  |  |  |
| Thomas Kenney |  |  |  |

Abstract

This submission contains spec text to be incorporated in P802.11ba D0.4 related to description of mandatory and optional main features.

Revision History:

* Rev 0: Initial version of the document
* Rev 1: Revise support of transmitting HDR WUR PPDU to be mandatory based on straw poll result. Add the reference for the non-HT preamble. Editorial revision based on the suggestion from Xiaofei.
* Rev 2: Add another bullet “Transmit the 80 MHz preamble punctured WUR PPDU” for the optional feature of WUR AP. Changes are marked with Green.

***Straw Poll 1:***

***Which option do you support?***

* Option 1: For a WUR AP, “Transmit 20 MHz WUR PPDU with High Data Rate” is a mandatory feature
* Option 2: For a WUR AP, “Transmit 20 MHz WUR PPDU with High Data Rate” is an optional feature
* Abstain

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

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

**TGba Editor: *Instruction: Modify 4.3.15a as the following: (Track Change on)***

* Components of the IEEE Std 802.11 architecture

***Insert a new subclause after subclause 4.3.15 as follows:***

* Wake-up radio (WUR) STA

A WUR AP has the capability to transmit WUR PPDU.

NOTE – Since a WUR PPDU has non-HT preamble at the beginning (see 32.2.2 (WUR PPDU format)), a WUR AP also has the capability to transmit non-HT preamble.

A WUR non-AP STA includes a PCR component and a WURx, which has the capability to receive WUR PPDU.

A WUR non-AP STA does not have the capability to transmit WUR PPDU.

A WUR STA supports WUR features identified in Clause 9, Clause 31, and Clause 32.

A WUR AP has the following mandatory main features:

* Transmit 20 MHz WUR PPDU with Low Data Rate.
* Transmit 20 MHz WUR PPDU with High Data Rate.
* WUR power management procedure.
* WUR Wake-up operation.
* WUR Duty cycle operation.
* Transmit an unprotected WUR Wake-up frame with WUR ID and without Frame Body field.
* Transmit an unprotected WUR Wake-up frame with Transmit ID and without Frame Body field.
* Transmit a WUR Beacon frame.

A WUR AP has the following optional main features:

* Transmit 40 MHz or 80 MHz WUR PPDU.
* Transmit 80 MHz preamble punctured WUR PPDU
* Transmit a WUR frame with nonzero length Frame Body field.
* Transmit a protected WUR frame.
* Transmit a WUR Wake-up frame with Group ID.
* Transmit a WUR Discovery frame.
* Transmit a WUR Vendor Specific frame.

A WUR non-AP STA has the following mandatory main features:

* Receive 20 MHz WUR PPDU with Low Data Rate.
* WUR power management procedure.
* WUR Wake-up operation.
* Receive an unprotected WUR Wake-up frame with WUR ID and without Frame Body field.
* Receive an unprotected WUR Wake-up frame with Transmit ID and without Frame Body field.
* Receive a WUR Beacon frame.

A WUR non-AP STA has the following optional main features:

* Receive 20 MHz WUR PPDU with High Data Rate.
* Allow allocated channel for receiving WUR Wake-up frame different from the channel for receiving WUR Beacon frame.
* WUR Duty cycle operation with on duration smaller than duty cycle period.
* Receive a WUR frame with nonzero length Frame Body field.
* Receive a protected WUR frame.
* Receive a WUR Wake-up frame with Group ID.
* Receive a WUR Discovery frame.
* Receive a WUR Vendor Specific frame.

A WUR non-AP STA negotiates with a WUR AP to setup WUR Mode operation parameters. A WUR AP sends a WUR Wake-up frame, which identifies one or more WUR non-AP STAs that are in WUR Mode and have PCR component in the doze state to participate in the wake-up operation, to indicate availability of individually addressed BU(s), group addressed buffered BU(s), or critical update of PCR’s BSS parameters. A WUR AP sends a WUR Beacon frame to enable synchronization and WUR duty cycle operation. A WUR AP sends a WUR Discovery frame to notify compressed PCR BSS information and PCR operating channel.

Among other benefits, different combinations of these WUR features can keep the PCR component of the WUR non-AP STAs in power save, react to incoming traffic and critical update of PCR’s BSS parameters through a WURx with low latency for associated WUR non-AP STAs, and enhance BSS discovery. A WURx has an expected active receiver power consumption of less than 1 mW.

**TGba Editor: *Instruction: Modify title of 31.6 to WUR power management procedure***