IEEE P802.11
Wireless LANs

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| Comment Resolution on clause 30.11 WUR Discovery |
| Date: 2019-03-07 |
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Abstract

This submission proposes resolutions of comments received from TGba comment collection (TGba Draft 2.0).

* CIDs: 2047, 2513, 2514, 2651, 2701, 2750, 2751 (7 CIDs)

Revisions:

* Rev 0: Initial version of the document.
1. **Introduction**

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 TGba Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

***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 existing 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.***

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| CID | Commenter | Page.Line  | Clause | Comment | Proposed Change | Resolution |
| 2047 | Alfred Asterjadhi | 81.38 | 30.11 | The AP shall periodically schedule WUR Discovery frames when it intends to be discoverable, not all the time. Please add "that intends to be discovered" after "equal to true". Also the rest of this paragraph is unclear. Please state clearly that these quantities (discovery channel, periodicity) are declared in the element's field if the AP includes the element in MGMT frames it transmits. | As in comment. | **Revised.**Regarding the first point, agree with the commenter that WUR Discovery frames may not be transmitted by all WUR APs. However, this “intention” is controlled by the MIB dot11WURDiscoveryImplemented and can be set to false if the AP does not intend to transmit WUR Discovery frames and hence it is not necessary to add the phrase "that intends to be discovered." Regarding the second point, agree that frame names are missing. Moved the relevant sentences from the 4th paragraph to the 1st paragraph for better readability. TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2047. |
| 2513 | Osama Aboulmagd | 81.40 | 30.11 | It is not clear when receiving the WUR Discovery frame what the WUR non-AP STA should do. What are the rules for the WUR Discovery frame processing? | as in comment | **Revised.**Agree in principle with the commenter. Non-AP behaviour related to WUR scanning is added. The primitives related to WUR scanning are described in 19/0327. TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2513. |
| 2514 | Osama Aboulmagd | 82.8 | 30.11 | The term "WUR Scanning" needs to be defined and add the definition to clause 3.2 | as in comment | **Revised.**Agree in principle with the commenter. Definition of WUR Scanning is added. TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2514. |
| 2651 | Stephen McCann | 81.54 | 30.11 | Why is WUR discovery not supported in the 3.5 GHz band, which is defined in Table E-4. I don't see any reason to not support this band, as the PAR does not limit band operation. | Change the last sentence of the cited paragraph to read "The WUR discovery channel(s) that are used to transmit the WUR Discovery frames should be either channel 1 in the 2.4 GHz frequency band, channel 133 in the 3.5 GHz frequency band or selected from channels 40, 44, 149 and 153 in the 5 GHz frequency band as specified in Table E-4 in Annex E." | **Revised.**The cited sentence intentionally recommends channels in the 2.4 GHz and 5 GHz band as the common Discovery channels to facilitate faster WUR Scanning. 3.5GHz band is not recommended since it is only available in certain regions. A NOTE is added to clarify this intention. TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2651. |
| 2701 | Xiaofei Wang | 19.20 | 3.2 | The definition of WUR discovery channel seems to be associated with a BSS. This is not very clear from the definition. Maybe the definition can be better defined simlar to how primary channel is defined in RevMD. | Please provide a more clear and precise definition for WUR Discovery channel. | **Rejected.**WUR discovery channels are used to transmit WUR Discovery frames that advertise the presence of WUR APs and hence its usage is very different from that of a primary channel. The current definition reflects this. |
| 2750 | Xiaofei Wang | 82.4 | 30.11 | The WUR Information subfield should be named "WUR AP Information subfield". | as in comment. | **Revised.**Agree with the commenter that the name of the subfield is wrong. Also, the word information should be capitalized, and hence revised instead of accepted.TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2750. |
| 2751 | Xiaofei Wang | 81.37 | 30.11 | The definition of WUR mode seems to explicitly exclude the case that the STA cannot enter the low power mode for scanning for WUR discovery frames while not associated with an AP. This may have a big impact on power consumptions for STAs that are in the unassociated state when scanning for new APs to associate with. | Provide a definition for WUR mode or description that will at least not exclude the operation in which an unassociated STA can enter the low power mode WUR mode and trying to scan for WUR discovery frames | **Revised.**WUR scanning is independent of the WUR mode negotiation and may be performed by an unassociated STA at any time. Also, an unassociated STA cannot be in WUR mode. To clarify this, a NOTE is added to clarify that a WUR non-AP STA may perform WUR scanning at any time outside of the WUR Duty cycle schedule.TGba editor to make the changes shown in 11-19/0329r0 under all headings that include CID 2751. |

**Discussion:** None

**Propose:**

Revised for CIDs 2047, 2513, 2514, 2651, 2750, 2571 as per discussion and editing instructions in 11-19/0329r0.

* Definitions, acronyms, and abbreviations
* Definitions specific to IEEE Std 802.11 (CIDs 2514)

TGba editor: Insert the following definition maintaining alphabetical order:

**wake-up radio (WUR) scanning:** The process of scanning WUR discovery channels for WUR Discovery frames. (#2514)

30.11 WUR Discovery (CIDs 2047, 2513, 2514, 2651, 2750, 2751)

***TGba editor: Modify the section as the following (Track Changes ON):***

A WUR AP with dot11WURDiscoveryImplemented equal to true shall periodically schedule WUR Discovery frames on the WUR AP’s WUR discovery channel for transmission to assist WUR non-AP STAs in WUR AP discovery. The WUR AP may transmit a WUR Discovery element in Beacon and Probe Response frames to indicate the WUR discovery channel used by the WUR AP to transmit WUR Discovery frames. The WUR AP may include a WUR Discovery element in a Probe Response frame that is transmitted in response to a Probe Request frame that contains a WUR Capability element. (#2047) The WUR AP’s WUR discovery channel may be indicated in the transmitted WUR Discovery elements by the WUR Discovery Operating Class and WUR Discovery Channel fields in the WUR AP Information subfield in which the Transmitting WUR AP subfield is set to 1. WUR Discovery frames shall be scheduled for transmission by the WUR AP with a periodicity as indicated in the WUR Discovery Period field in the WUR AP Parameters subfield of the WUR Discovery element in which the Transmitting WUR AP subfield is set to 1.(#150, #434, #910, #860)

NOTE—Though the transmission of a WUR Discovery frame might be delayed because of CSMA deferrals, subsequent WUR Discovery frames are scheduled at the undelayed nominal WUR Discover Period value indicated in the WUR AP Parameters subfield. (#150, 434)

The WUR discovery channel(s) that are used to transmit the WUR Discovery frames should be selected from channel 1 in the 2.4 GHz frequency band and channel 40, 44, 149 and 153 in the 5 GHz frequency band as specified in Table E-4 in Annex E.

NOTE—The purpose of the above recommendation is to encourage adoption of a common set of WUR discovery channels that are available in most of the regulatory domains to reduce WUR scanning latency. (#2651)

A WUR AP with dot11WURNeighborDiscoveryImplemented equal to true may transmit a WUR Discovery element in Beacon and Probe Response frames to advertise the WUR discovery channel(s) used by neighboring WUR APs. The WUR AP may include a WUR Discovery element in a Probe Response frame that is transmitted in response to a Probe Request frame that contains a WUR Capability element. A WUR AP may use the WUR Discovery elements transmitted by neighboring WUR APs to compile the WUR discovery channel(s) used by the neighboring WUR APs. A WUR AP should include a single WUR AP Information (#2750) subfield for a WUR discovery channel in a WUR Discovery element. (#2047) (#783, #793, #607)

A WUR non-AP STA with dot11WURDiscoveryImplemented equal to true may scan WUR discovery channels for WUR Discovery frames.(#2514) Upon receipt of the MLME-WURSCAN.request primitive, a WUR non-AP STA with dot11WURDiscoveryImplemented equal to true shall perform WUR scanning. The WUR non-AP STA shall scan for WUR Discovery frames on each channel specified within the ChannelList parameter of the MLME-WURSCAN.request for no longer than a maximum duration defined by the MaxChannelTime parameter. The CompressedBSSID parameter, when set to a non-zero value, indicates the CompressedBSSID for which to scan. The CompressedSSID parameter, when set to a non-zero value, indicates the CompressedSSID for which to scan. The WUR non-AP STA shall return all unique WUR Discovery frames matching the desired CompressedBSSID and CompressedSSID in the WURAPDescriptionSet parameter of the corresponding MLME-WURSCAN.confirm primitive. When the CompressedBSSID parameter is set to a non-zero value, CompressedBSSID is considered matching if the ID field (transmitter ID) matches the 12 LSBs of the CompressedBSSID parameter and the Type Dependent Control field matches the 12 MSBs of the CompressedBSSID parameter. When the CompressedSSID parameter is set to a non-zero value, CompressedSSID is considered matching if the Compressed SSID field matches the CompressedSSID parameter. When either the CompressedBSSID parameter or the CompressedSSID parameter is set to zero, the WUR non-AP STA shall not filter WUR Discovery frames based on the parameter. (#2513)

Upon completion of WUR Scanning, an MLME-WURSCAN.confirm primitive is issued by the MLME indicating all the discovered WUR APs, each WURAPDescription in the WURAPDescriptionSet parameter identifying one WUR AP. (#2513)

NOTE— A WUR non-AP STA may perform WUR scanning at any time except during any active WUR Duty cycle schedule agreed between the WUR non-AP STA and the WUR AP. (#2751)

A WUR non-AP STA with dot11WURDiscoveryImplemented equal to true receiving the WUR Discovery element may use the information of the WUR discovery channels to schedule WUR scanning. The WUR non-AP STA may limit the WUR scanning to the WUR discovery channels listed in the WUR Discovery element. (#2513)

ASN.1 encoding of the MAC and PHY MIB

* MIB Detail (CIDs 2513)

***TGba editor: Modify the section as the following (Track Changes ON):***

dot11WURDiscoveryImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

 "This is a capability variable. This attribute when true, indicates that for an AP implementation, the STA is capable of transmitting WUR Discovery frames; and for a non-AP implementation, the STA is capable of WUR Scanning (i.e. receiving WUR Discovery frames) (see 30.11 (WUR Discovery)). The capability is disabled otherwise." (#2513)

 DEFVAL { false }

::= { dot11StationConfigEntry 189}