IEEE P802.11  
Wireless LANs

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| Text for CC39 comment 11 | | | | |
| Date: 2021-10-25 | | | | |
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Abstract

R0: Proposed text to resolve comment 11 in 11-21-1662-00-00bb-comments-from-cc-against-d0-6.

R1: in 31.2, change added text to normative, copy in table from 11-21/1455r3 (i.e. merge in all of 1455r3), and add explanation of what “Optional” in the table means.

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| CID | Name | Comment | Page | Subclause | Line | Proposed Change |
| 11 | Matthias Wendt | MAC clause 10, 11, 26 include text specifying behavior of e.g. an HE STA:  10.6.6.2 Rate selection for Control frames that initiate a TXOP  An HT STA shall select an MCS ...  10.6.6.6 Channel Width selection for Control frames  If a VHT or HE STA transmits...the transmitting VHT or HE STA shall set...  11.5.10 NAV assertion in 20/40 MHz BSS  An HT STA shall update its NAV... | 12 | 31.2 | 8 | add text in 31.2 clarifying that behavior specified for a non-HT STA applies to an LC STA using the LC MAC that supports the LC CM PHY mode; same for HT STA and LC HT PHY mode, VHT STA and LC VHT PHY mode, and HE STA and LC HE PHY mode  Also add sentences for each PHY mode to specify relationship to non-HT STA, HT STA, VHT STA, and HE STA. e.g. "an LC STA is also an HE STA when the LC STA is using LC HE PHY mode. Except features XYZ, RF aspects don't apply (reuse text where we state which subclauses don't apply) |

The following changes are proposed relative to D0.6.

* + 1. Light Communication (LC) STA

An LC STA is comprised of an LC MAC as defined in Clause 31 and an LC PHY as defined in Clause 32. The LC PHY is same as the OFDM, HT, VHT and HE PHY except that the LC PHY operates in the optical band using wavelengths between 800 nm and 1000 nm as described in 32.3.3.3.2 (LC CM Light interface).

An LC STA supports features identified in Clauses 10 (MAC sublayer functional description), 11 (MLME), 12 (Security), 31 (Light Communication (LC) MAC specification), and 32 (Light Communication (LC) PHY specification). Except where other behavior is specified, an LC STA using the LC CM PHY mode is also a non-HT STA, an LC STA using the LC HT PHY mode is also an HT STA, an LC STA using the LC VHT PHY mode is also a VHT STA, and an LC STA using the LC HE PHY mode is also an HE STA.

The main PHY features in an LC STA that are not present in an STA are the following:

* Optical front end (OFE)

The main MAC features in an LC STA that are not present in a STA are the following:

* Optional support for fast session transfer (FST) in the multi-band capable devices supporting both light and RF bands
  1. LC MAC specification

The LC MAC that supports different LC PHY modes shall consist of a subset of functionalities in Clause 10 (MAC sublayer functional description) and may require the Clause 26 (High Efficiency (HE) MAC specification).

Behavior specified for a non-HT STA shall apply to an LC STA using the LC CM PHY mode as shown in Table 31-1.

Behavior specified for an HT STA shall apply to an LC STA using the LC HT PHY mode as shown in Table 31-1.

Behavior specified for a VHT STA shall apply to an LC STA using the LC VHT PHY mode as shown in Table 31-1.

Behavior specified for an HE STA shall apply to an LC STA using the LC HE PHY mode as shown in Table 31-1.

Table 31-1 shows the requirements on MAC functions by different PHY modes of an LC STA, where Optional means a feature that may be supported by an LC STA but is not mandatory for its operations.

Table 31-1 —Requirements on MAC functions by an LC STA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sub-clause** | **LC CM PHY** | **LC HT PHY** | **LC VHT PHY** | **LC HE PHY** |
| 10.2 (MAC architecture) | Mandatory | Mandatory | Mandatory | Mandatory |
| 10.3 (DCF) | Mandatory | Mandatory | Mandatory | Mandatory |
| 10.4 (MSDU and MMPDU fragmentation) | Mandatory | Mandatory | Mandatory | Mandatory |
| 10.5 (MSDU and MMPDU defragmentation) | Mandatory | Mandatory | Mandatory | Mandatory |
| 10.6 (Multirate support) | Mandatory | Mandatory | Mandatory | Mandatory |
| 10.7 (MSDU transmission restrictions) | - | Mandatory | Mandatory | Mandatory |
| 10.8 (HT Control field operation) | - | Mandatory | Mandatory | Mandatory |
| 10.9 (Control Wrapper operation) | - | Mandatory | Mandatory | Mandatory |
| 10.10 (MSDU processing) | - | - | - | Mandatory |
| 10.11 (A-MSDU operation) | - | Mandatory | Mandatory | Mandatory |
| 10.12 (A-MPDU operation) | - | Mandatory | Mandatory | Mandatory |
| 10.13 (PPDU duration constraint) | - | Mandatory | Mandatory | Mandatory |
| 10.15 (Low-density parity check code (LDPC) operation) | - | Mandatory | Mandatory | Mandatory |
| 10.16 (STBC operation) | - | Mandatory | Mandatory | Mandatory |
| 10.17 (Short GI operation) | - | Mandatory | Mandatory | Mandatory |
| 10.18 (Greenfield operation) | - | Mandatory | Mandatory | Mandatory |
| 10.19 (Group ID and partial AID in VHT and CMMG(11aj) PPDUs) | - | - | Mandatory | Mandatory |
| 10.22 (Operation across regulatory domains) | - | Optional | Optional | Optional |
| 10.23 (HCF) | - | Mandatory | Mandatory | Mandatory |
| 10.25 (Block acknowledgment (block ack)) | - | Mandatory | Mandatory | Mandatory |
| 10.26 (No Acknowledgment (No Ack) | - | Mandatory | Mandatory | Mandatory |
| 10.27 (Protection mechanisms) | - | Mandatory | Mandatory | Mandatory |
| 10.28 (MAC frame processing) | - | Mandatory | Mandatory | Mandatory |
| 10.29 (Reverse Direction Protocol) | - | Mandatory | Mandatory | Mandatory |
| 10.30 (PSMP Operation) | - | Optional | Optional | Optional |
| 10.31 (Sounding PPDUs) | - | Optional | Optional | Optional |
| 10.32 (Link adaptation) | - | Mandatory | Mandatory | Mandatory |
| 10.34 (Transmit beamforming) | - | Optional | Optional | Optional |
| 10.35 (Antenna selection (ASEL)) | - | Optional | Optional | Optional |
| 10.36 (Null data packet (NDP) sounding) | - | Optional | Optional | Optional |
| 10.47 (Target wake time (TWT)(11ah)) | - | - | - | Mandatory |
| 26 (High Efficiency (HE) MAC specification) | - | - | - | Mandatory |

* + 1. LC Common mode (LC CM)
       1. Introduction

Subclause 32.3.3 (LC Common mode (LC CM)) specifies the PHY entity when operating the LC PHY in the LC Common mode. The LC CM PHY is the same as Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) PHY and behavior specified for a non-HT STA shall apply to an LC STA using the LC CM PHY mode, except when the specifications in subclause 32.3.3 supersede corresponding text in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification).

An LC STA shall support the mandatory features defined in Clause 17, except the following subclauses: 17.3.8.3 (Regulatory requirements), 17.3.8.4 (Operating channel frequencies), 17.3.9.3 (Transmit spectrum mask), 17.3.9.7.2 (Transmitter center frequency leakage), 17.3.10.3 (Adjacent channel rejection) and 17.3.10.4 (Nonadjacent channel rejection).

The CM PHY may support a relayed CCA mechanism to aid channel sensing in light communications which is described in 32.3.2.5 (Relayed CCA mechanism).

* + 1. LC High Throughput (LC HT) mode

32.3.4.1 Introduction

Subclause 32.3.4 (LC High Throughput (HT) mode) specifies the PHY entity when operating the LC PHY in the LC HT mode. The LC HT mode PHY shall be the same as Clause 19 (High-throughput (HT) PHY specification) and behavior specified for an HT STA shall apply to an LC STA using the LC HT PHY mode, except when the specifications in subclause 32.3.4 (LC High Throughput (LC HT) mode) supersede corresponding text in Clause 19 (High-throughput (HT) PHY specification).

The following subclauses may not apply to the LC HT PHY mode: 19.3.12 (Beamforming), 19.3.14 (Regulatory requirements) and 19.3.15 (Channel numbering and channelization). Note: LC supporting MIMO with separate spatial streams is out of scope of this specification.

32.3.5 LC Very High Throughput (LC VHT) mode

32.3.5.1 Introduction

Subclause 32.3.5 (LC Very High Throughput (VHT) mode) specifies the PHY entity when operating the LC PHY in the LC VHT mode. The LC VHT mode PHY shall be the same as Clause 21 (Very high throughput (VHT) PHY specification) and behavior specified for an VHT STA shall apply to an LC STA using the LC VHT PHY mode, except when the specifications in subclause 32.3.5 (LC Very High Throughput (LC VHT) mode) supersede corresponding text in Clause 21 (Very high throughput (VHT) PHY specification).

The following subclauses in Clause 21 (Very high throughput (VHT) PHY specification) may not apply to the LC VHT PHY: 21.3.11 (SU-MIMO and DL-MU-MIMO Beamforming), 21.3.13 (Regulatory requirements) and 21.3.14 (Channelization).

Note: LC supporting MIMO with separate spatial streams is out of scope of this specification.

32.3.6 LC High Efficiency (LC HE) mode

32.3.6.1 Introduction

Subclause 32.3.4 (LC High Efficiency (LC HE) mode) specifies the PHY entity when operating the LC PHY in the LC HE mode. The LC HE mode is the same as Clause 27 (High Efficiency (HE) PHY specification) and behavior specified for an HE STA shall apply to an LC STA using the LC HE PHY mode, except when the specifications in subclause 32.3.6 (LC High Efficiency (LC HE) mode) supersede corresponding text in Clause 27 (High Efficiency (HE) PHY specification).

The following subclauses in 27.3 do not apply to the LC HE PHY: 27.3.16 (SU-MIMO and DL MU-MIMO beamforming), 27.3.23 (Channel numbering), 27.3.24 (Regulatory requirements).

The LC HE PHY may support 32.3.2.5 (Relayed CCA mechanism).

Note: LC supporting MIMO with separate spatial streams is out of scope of this specification.