IEEE P802.11bb
Wireless LANs

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| Proposed text for introduction subclause for LC PHY |
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**Abstract**

This document contains the proposed text input for the subclause to introduce the LC PHY for the TGbb draft D0.5.

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32.3.2 LC PHY modes

The LC PHY can be operated in three principal modes, referred to as LC Common mode, LC HE mode and LC Optimized mode.

The LC Common mode (CM) is transmitted in the wavelength range between 800 and 1000 nm in single input single-output (SISO) operation. In the LC Common mode, data subcarriers are modulated using BPSK, QPSK, 16-QAM, or 64-QAM. Forward error correction (FEC) is based on convolutional coding with code rate of ½, 2/3, or 3/4. The LC Common mode provides support for 20 MHz bandwidth only.

The LC High Throught (HT) mode is transmitted in the wavelength range between 800 and 1000 nm. In the LC HT mode, data subcarriers are modulated using BPSK, QPSK, 16-QAM, and 64-QAM. FEC coding (convolutional coding) is used with a coding rate of 1/2, 2/3, 3/4, or 5/6. LDPC codes are added as an optional feature. The LC HT mode provides support for 20 MHz and 40 MHz contiguous channel widths.

The LC Very High Throught (VHT) mode is transmitted in the wavelength range between 800 and 1000 nm. In the LC VHT mode, data subcarriers are modulated using BPSK, QPSK, 16-QAM, 64-QAM, and 256-QAM. FEC coding (convolutional or LDPC coding) is used with coding rates of 1/2, 2/3, 3/4, and 5/6. The LC VHT mode PHY provides support for 20 MHz, 40 MHz, 80 MHz, and 160 MHz contiguous channel widths and support for 80+80 MHz noncontiguous channel width.

The LC High Efficiency (HE) mode is transmitted in the wavelength range between 800 and 1000 nm. In the LC HE mode, data subcarriers are modulated using BPSK, BPSK DCM, QPSK, QPSK DCM, 16-QAM, 16- QAM DCM, 64-QAM, 256-QAM and 1024-QAM. Forward error correction (FEC) coding (convolutional or LDPC coding) is used with coding rates of 1/2, 2/3, 3/4 and 5/6. The LC HE mode provides support for 20 MHz and 40 MHz, 80 MHz and 160 MHz contiguous channel widths, 80+80 MHz non contiguous channel width.

The LC Optimized (LCO) mode is transmitted between 380 nm and 1000 nm. In the LC optimized mode, data subcarriers are modulated using 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 bits per symbol and forward error correction (FEC) coding is used based on LDPC with code rates of 1/2, 2/3, 5/6, 16/18 and 20/21. The LC optimized mode provides support for 50 MHz, 100 MHz and 200 MHz contiguous channel width. The LC optimized mode supports adaptive bitloading and distributed MIMO natively.

32.3.2.1 Channel numbering

32.3.2.1.1 Channelization for LC CM PHY mode

The LC CM PHY shall operate at a center frequency of 26 MHz. The CM bandwidth shall be 20 MHz.

32.3.2.1.2 Channelization for the other PHY modes

Channel center frequencies are defined at every integer multiple of 5 MHz above the channel starting frequency. The relationship between center frequency and channel number is given in Equation (1)

Channel center frequency = Channel starting frequency + 5 x nch (MHz) (1)

where nch = 1,…, 61 and Channel starting frequency = 21 MHz.

*Editor’s note: TBD. Call for contributions to define the channelization. (e.g., need to add the numbers of channels for LC HT PHY and LC VHT PHY, 61 is for LC HE PHY. )*

32.3.2.2 Regulatory RequirementsWireless LANs (WLANs) implemented in accordance with this standard are subject to equipment certification and operating requirements established by regional and national regulatory administrations. The PHY specification establishes minimum technical requirements for interoperability, based upon established regulations at the time this standard was issued. These regulations are subject to revision or may be superseded. Requirements that are subject to local geographic regulations are annotated within the PHY specification. Regulatory requirements that do not affect interoperability are not addressed in this standard. Implementers are referred to the regulatory sources in Annex D for further information. Operation in countries within defined regulatory domains might be subject to additional or alternative national regulations.