IEEE P802.11bb
Wireless LANs

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| Draft text for multiple transmitters and multiple receivers |
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**Abstract:** This contribution contains text for multiple transmitters and receivers in LC.

Revision history:

R0: Initial revision

32.3.2.2. Multiple transmitters and receivers

In LC HT, LC VHT and LC HE PHY modes, the LC PHY supports the use of multiple transmitters and receivers.

Figure 32-3 shows an example of the LC PHY TX connected to multiple LC optical TX antennas and Figure 32-4 shows an example of multiple LC optical RX antennas connected to the LC PHY RX.

When the LC TX PHY uses multiple transmitters and receivers, the number of transmit chains NTX is the same as the number of optical TX antennas and the number of receive chains NRX is the same as the number of optical RX antennas.

LC optical TX antennas shall be synchronized to the same reference clock used for the LC TX PHY. LC optical RX antennas shall be synchronized to the same reference clock used for the LC RX PHY.

LC optical TX antennas may operate at the same wavelength. In this case, the LC optical TX antennas should have sufficient spatial separation (spatial diversity) or point into different directions (angular diversity).

LC optical TX antennas may operate at different wavelengths. In this case, spatial separation or direction may be the same but spectral overlap between the LC optical TX antennas should be minimized. Optical filtering should be used at the LC optical RX antennas.

When operating the LC PHY with multiple optical TX antennas in the LC HT PHY mode, the LC PHY Tx shall be the same as in 19.3 (HT PHY), see

* Figure19-2 (Transmitter block diagram 1), and
* Figure 19-3 (Transmitter block diagram 2).

When operating the LC PHY with multiple optical TX antennas in the LC VHT PHY mode, the LC PHY Tx shall be the same as in 21.3 (VHT PHY), see

* Figure 21-5 (Transmitter block diagram for the L-SIG and VHT-SIG-A fields),
* Figure 21-6 (Transmitter block diagram for the VHT-SIG-B field of a 20 MHz, 40 MHz, and 80 MHz VHT SU PPDU),
* Figure 21-7 (Transmitter block diagram for the VHT-SIG-B field of a 20 MHz, 40 MHz, and 80 MHz VHT MU PPDU),
* Figure 21-8 (Transmitter block diagram for the VHT-SIG-B field of a 160 MHz VHT SU PPDU),
* Figure 21-9 (Transmitter block diagram for the VHT-SIG-B field of an 80+80 MHz VHT SU PPDU),
* Figure 21-10 (Transmitter block diagram for the Data field of a 20 MHz, 40 MHz, or 80 MHz VHT SU PPDU with BCC encoding),
* Figure 21-11 (Transmitter block diagram for the Data field of a 20 MHz, 40 MHz, or 80 MHz VHT SU PPDU with LDPC encoding),
* Figure 21-12 (Transmitter block diagram for the Data field of a 20 MHz, 40 MHz, or 80 MHz VHT MU PPDU),
* Figure 21-13 (Transmitter block diagram for the Data field of a 160 MHz VHT SU PPDU with BCC encoding),
* Figure 21-14 (Transmitter block diagram for the Data field of a 160 MHz VHT SU PPDU with LDPC encoding),
* Figure 21-15 (Transmitter block diagram for the Data field of an 80+80 MHz VHT SU PPDU with BCC encoding), and
* Figure 21-16 (Transmitter block diagram for the Data field of an 80+80 MHz VHT SU PPDU with LDPC encoding).

When operating the LC PHY with multiple optical TX antennas in the LC HE PHY mode, the LC PHY Tx shall be the same as in 27.3 (HE PHY), see

* Figure 27-13 (Transmitter block diagram for the L-SIG, RL-SIG and HE-SIG-A fields for an HE SU PPDU and HE ER SU PPDU if the Beam Change subfield is 1),
* Figure 27-14 (Transmitter block diagram for the L-SIG, RL-SIG and HE-SIG-A fields for an HE SU PPDU and HE ER SU PPDU if the Beam Change subfield is 0),
* Figure 27-15 (Transmitter block diagram for the L-SIG, RL-SIG and HE-SIG-A fields of an HE TB PPDU),
* Figure 27-16 (Transmitter block diagram for the HE-SIG-B field),
* Figure 27-17 (Transmitter block diagram for the UL transmission or DL non-MU-MIMO transmission of a Data field with BCC encoding on a 26-, 52-, 106- or 242-tone RU),
* Figure 27-18 (Transmitter block diagram for the UL transmission or DL non-MU-MIMO transmission of a Data field with LDPC encoding on a 26-, 52-, 106-, 242-, 484- or 996-tone RU),
* Figure 27-19 (Transmitter block diagram for the DL MU-MIMO transmission of a Data field with BCC encoding on a 106- or 242-tone RU),
* Figure 27-20 (Transmitter block diagram for the DL MU-MIMO transmission of a Data field with LDPC encoding on a 106-, 242-, 484- or 996-tone RU),
* Figure 27-21 (Transmitter block diagram for the Data field of an HE SU PPDU in 160 MHz with LDPC encoding), and
* Figure 27-21 (Transmitter block diagram for the Data field of an HE SU PPDU in 80+80 MHz with LDPC encoding).



1. —Connecting the LC PHY TX to multiple optical TX antennas



1. **—Connecting multiple optical RX antennas to the LC PHY RX**