Non-HT Transmission

Non-HT duplicate transmission is defined by IEEE 802.11ac. It is used to transmit to non-HT OFDM STAs, HT STAs, or VHT STAs that may be present in a part of a 40 MHz, 80 MHz or 160 MHz channel. The L-STF, L-LTF, and L-SIG fields shall be transmitted in the same way as in the VHT transmission, while the VHT-SIG-A, VHT-STF, VHT-LTF, and VHT-SIG-B fields are not transmitted. The data transmission duplicates the transmission of a 20 MHz 802.11a signal over every 20 MHz frequency segment. For example, an 80 MHz non-HT transmission consists of four 20 MHz 802.11a signals placed next to each other, as shown in the following figure. To reduce the PAPR, a different phase rotation is applied to each 20 MHz segment (e.g., ±90 degrees, 180 degrees).

80 MHz non-HT transmission

For reading convenience, the following equation for the Data field is excerpted from the standard (IEEE P802.11ac/D4.0, October, 2012)

$$r_{\text{non-HT},BW}^{i_{TX}}(t) = \frac{1}{\sqrt{N_{\text{NON\_HT\_DUP\_OFDM-Data}}^{\text{Tone}}}} \sum_{n=0}^{N_{SYM}-1} w_{T_{SYM}}(t - nT_{SYM})$$

$$\cdot \sum_{i_{BW}=0}^{N_{20MHz}-1} \left(\sum_{k=-26}^{26} \Upsilon_{(k-K_{\text{Shift}}(i_{BW})),BW}(D_{k,n} + p_{n+1}P_k) \right.$$
$$\left. \cdot \exp(j2\pi(k-K_{\text{Shift}}(i_{BW}))\Delta_F(t - nT_{SYM} - T_{GI} - T_{CS}^{i_{TX}})) \right)$$

(22-96)

where

N_{20MHz} and $K_{\text{Shift}}(i)$ are defined in 22.3.8.1.4 (L-SIG definition)

P_k and p_n are defined in 18.3.5.10 (OFDM modulation)

$D_{k,n}$ is defined in Equation (22-22)

$\Upsilon_{k,BW}$ is defined in Equation (22-12) and Equation (22-13)

$T_{CS}^{i_{TX}}$ represents the cyclic shift for transmitter chain i_{TX} with a value given in Table 22-10 (Cyclic