## 38.3.22 UHR transmit procedure

There are four paths for the PHY transmit procedure.

The first three paths, for which typical transmit procedures are shown in [Figure 38-xx0 (PHY transmit](#_bookmark319) [procedure for a UHR MU PPDU)](#_bookmark319), [Figure 38-xx1 (PHY transmit procedure for a UHR TB PPDU)](#_bookmark320) and [Figure 38-xx2 (PHY transmit procedure for a UHR ELR PPDU)](#_bookmark320), are selected if the FORMAT field of the PHY-TXSTART.request(TXVECTOR) primitive is equal to UHR\_MU, UHR\_TB or UHR\_ELR, respectively.



[Figure 38-xx0 PHY transmit](#_bookmark319) [procedure for a UHR MU PPDU](#_bookmark319)



[Figure 38-xx1 PHY transmit procedure for a UHR TB PPDU](#_bookmark320)



[Figure 38-xx2 PHY transmit procedure for a UHR ELR PPDU](#_bookmark320)

The fourth path is to follow the transmit procedure in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) if the FORMAT parameter of the PHY-TXSTART.request(TXVECTOR) primitive is NON\_HT and the NON\_HT\_MODULATION parameter is NON\_HT\_DUP\_OFDM, except that the signal is generated simultaneously on each of the 20 MHz channels identified by the CH\_BANDWIDTH parameter as defined in [38.3.15 (UHR preamble)](#_bookmark88) and [38.yyy (Non-HT duplicate](#_bookmark264) [transmission)](#_bookmark264).

NOTE 1—For an UHR MU PPDU the A-MPDU is per user in the MAC sublayer and the UHR-STF and UHR-LTF, and Data are per user in the PHY in [Figure 38-75 (PHY transmit procedure for an UHR MU PPDU)](#_bookmark319).

NOTE 2—The transmission of NON\_HT, HT\_MF, HT\_GF, VHT, HE and UHR formats is specified in [38.zz (Support for](#_bookmark8) [non-HT, HT, VHT, and HE formats)](#_bookmark8).

In all paths, in order to transmit data, the MAC generates a PHY-TXSTART.request primitive, which causes the PHY entity to respond with a PHY-TXSTART.confirm primitive and enter the transmit state. Further, the PHY is set to operate at the appropriate frequency through station management via the PLME, as specified in [38.4 (UHR PLME)](#_bookmark329). Other transmit parameters, such as UHR-MCS, coding types, and transmit power, are set via the PHY-SAP using the PHY-TXSTART.request(TXVECTOR) primitive, as described in

[38.2.2 (TXVECTOR and RXVECTOR parameters)](#_bookmark3). After transmitting a PPDU that carries a Trigger frame, the MAC sublayer issues a PHY-TRIGGER.request with a TRIGVECTOR parameter that provides the PHY entity with the information needed to demodulate the expected UHR TB PPDU response. The remainder of the subclause applies to the first three paths.

The PHY indicates the state of the primary channel and other channels (if any) via the PHY-CCA.indication primitive (see [38.3.25.6 (CCA sensitivity)](#_bookmark316) and 8.3.5.12 (PHY-CCA.indication)). Transmission of the PPDU shall be initiated by the PHY after receiving the PHY-TXSTART.request(TXVECTOR) primitive. The TXVECTOR parameters for the PHY-TXSTART.request primitive are specified in [Table 38-1 (TXVECTOR](#_bookmark4) [and RXVECTOR parameters)](#_bookmark4).

After the PHY preamble transmission is started, the PHY entity immediately initiates scrambling and encoding of the SERVICE field and PSDU. The encoding method for the Data field is based on the FEC\_CODING, CH\_BANDWIDTH, NUM\_STS, MCS, RU\_ALLOCATION, and STA\_ID parameters of

the TXVECTOR, as described in [38.3.4 (UHR PPDU formats)](#_bookmark47).

The data shall be exchanged between the MAC and the PHY through a series of PHY-DATA.request(DATA) primitives issued by the MAC, and PHY-DATA.confirm primitives issued by the PHY. PHY padding bits are appended to the PSDU to make the number of bits in the coded PSDU an integral multiple of the number of coded bits per OFDM symbol.

Transmission can be prematurely terminated by the MAC through the PHY-TXEND.request primitive. PSDU transmission is terminated by receiving a PHY-TXEND.request primitive. Each PHY-TXEND.request primitive is acknowledged with a PHY-TXEND.confirm primitive from the PHY.

A packet extension and/or a signal extension may be present in the PPDU. The PHY-TXEND.confirm primitive is generated at the latest of the actual ending time of the PPDU, the end of the packet extension if present, and the end of the signal extension if present.

In the PHY, the GI with GI duration indicated in the GI\_TYPE parameter of the TXVECTOR is inserted in every data OFDM symbol as a countermeasure against delay spread.

Once the PPDU transmission is completed the PHY entity enters the receive state.

A typical state machine implementation for the transmission of an UHR PPDU is shown in [Figure 38-xx3](#_bookmark321) [(PHY transmit state machine for an UHR PPDU)](#_bookmark321). Request (.request) and confirmation (.confirm) primitives are issued once per state as shown.

