Update Table 101-4 to include US Filling Threshold F_T column:

Upstream (US) Downstream (DS)	Codeword F_C [bits]	Payload F_P [bits]	Parity F_R [bits]	US Filling Threshold F_T [bits] (65-bit blocks)	Payload		
					65-bit blocks B_Q	CRC bits	Padding bits B_P
US/DS	16200	14400	1800	6601 (102)	220	40	60
DS	5940	5040	900	1601 (25)	76	40	60
DS	1120	840	280	1 (1)	12	40	20

Insert new text below for Upstream Codeword Filling:

Upstream Codeword Filling

Overview

Upstream bursts are necessarily variable in length and as EPON can concatenate in the upstream, an EPoC upstream burst may contain more than one MAC frame. The upstream makes use of three different LDPC codeword sizes as described Table 101–4. Each codeword size has an associate US Filling Threshold F_T with a specific threshold for each codeword size.

CNU upstream encoding overview

Note that this is overview is presented in an abstract manner and does not imply any particular implementation.

Starting with a 16200 (long) codeword:

1. If there are enough 65-bit blocks B to create and encode a full long codeword (B_Q = 220 for long). Repeat create and encode using long codewords if $B \geq B_Q$ = 220 blocks are available.

2. If remaining B blocks in burst ~~≤~~ < B_Q = 220 blocks and ≥ ~~6601 bits~~102 blocks, use a long codeword, shorten to remaining blocks and end the burst with this encoded codeword.

3. If remaining B blocks are < ~~6601 bits~~102 blocks and ≥ ~~1601 bits~~76 blocks, create and encode a medium codeword. Repeat create and encode using medium codewords if $B \geq B_Q$ = 76 blocks are available.

4. If remaining B blocks in burst ~~≤~~ < B_Q = 76 blocks and ≥ ~~1601 bits~~25 blocks, use a medium codeword, shorten to remaining blocks and end the burst with this encoded codeword.

5. If remaining B blocks are < ~~1601 bits (*convert to blocks*)~~25 blocks and ≥ ~~1 bits~~12 blocks, create and encode a short codeword. Repeat create and encode using short codewords if B ≥ B_Q = 12 block~~s~~ are available.

6. If remaining B blocks in burst ~~≤~~ < B_Q = 12 blocks and ≥ 1 ~~bit~~block, use a short codeword, shorten to remaining blocks and end the burst with this encoded codeword.

Every codeword in the burst will have a length ~~of~~ determined by the number B of 65-bit blocks encoded:

Codeword Length = B * 65 bits + 40 bits CRC + F_R parity bits

B can be from 1 to ~~to~~ B_Q blocks maximum, where B_Q is 220, 76, and 12 and F_R is 1800, 900, and 280 for 16200, 5940, 1120 LDPC codewords sizes respectively (see Table 101-4).

All codeword encoding follows the same procedures as the downstream with the following differences:

1. The appropriate values from Table 101-4 are used for the corresponding codeword size being encoded
2. The burstStart indication in the PMA_UNITDATA.request() corresponds to the first bit in the concatenated burst.
3. The burstEnd indication in the PMA_UNITDATA.request() corresponds to the last bit of the concatenated burst.
4. The nominal data rate of the PMA_UNITDATA_request() is US_DataRate, as configured via PHY Link management.

CLT upstream decoding overview

Note that this is overview is presented in an abstract manner and does not imply any particular implementation.

The CLT receiving PCS process receives an upstream burst from a CNU from the PMA Client of a length of R bits.

Start with B_Q = 220, CRC = 40, and F_R = 1800 for long codewords:

- If R ≥ B_Q * 65 + 40 + F_R bits, decode a full long codeword. Repeat and decode using long codewords if remaining bits ≥ B_Q * 65 + 40 + F_R bits. End processing burst if remaining bits ≤ 0.
- If remaining bits < (B_Q = 220) * 65 + 40 + (F_R = 1800) and ≥ (F_T = 6601) + 40 + (F_R = 1800), decode a shortened long codeword. End processing burst if remaining bits ≤ 0.
- If remaining bits ~~≥~~<u><</u> (B_Q = 76) * 65 + 40 + (F_R = 900) ~~and ≥ (F_T = 1601) + 40 + (F_R = 900)~~, decode a medium codeword. Repeat and decode using medium codewords if remaining bits ≥ (B_Q = ~~12~~<u>76</u>) * 65 + 40 + (F_R = 900) bits. End processing burst if remaining bits ≤ 0.
- If remaining bits < (B_Q = 76) * 65 + 40 + (F_R = 900) and ≥ (F_T = 1601) + 40 + (F_R = 900), decode a shortened medium codeword. End processing burst if remaining bits ≤ 0.
- If remaining bits ~~≥~~<u><</u> (B_Q = 12) * 65 + 40 + (F_R = 280) ~~and ≥ (F_T = 1) + 40 + (F_R = 280)~~, decode a short codeword. <u>Repeat and decode using short codewords if remaining bits ≥ (B_Q = 12) * 65 + 40 + (F_R = 280) bits.</u>~~If remaining bits ≥ (F_T = 1) + 40 + (F_R = 280), decode a short codewords.~~ End processing burst if remaining bits ≤ 0.
- If remaining bits ≥ 65 + 40 + 280, decode a <u>shortened</u> short codeword.
- If remaining bits, declare receiver burst error.

All codeword decoding follows the same procedures as the downstream with the following differences:

1. The appropriate values from Table 101-4 are used for the corresponding codeword size being decoded
2. The burstStart indication in the PMA_UNITDATA.indication() corresponds to the first bit in the concatenated burst received from a CNU.
3. The burstEnd indication in the PMA_UNITDATA.indication() corresponds to the last bit of the concatenated burst received from a CNU.
4. The nominal data rate of the PMA_UNITDATA_request() is US_DataRate calculated by the CLT (see section 100.2.x.x).