

# Update on the Downstream Control Multiplexer and Idle Deletion

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# Modify PMD Overhead Function

- PMD Overhead contains FEC\_Overhead and Derating\_Overhead

$$PMD\_Overhead(length, \beta) = FEC\_Overhead(length) + Derating\_Overhead(length, \beta)$$

$$FEC\_Overhead(length) = 12 + FEC\_PARITY\_SIZE \times \left\lfloor \frac{fecOffset + length}{FEC\_PAYLOAD\_SIZE} \right\rfloor$$

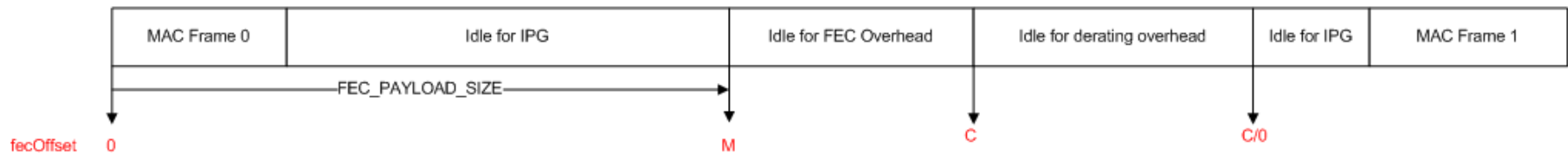
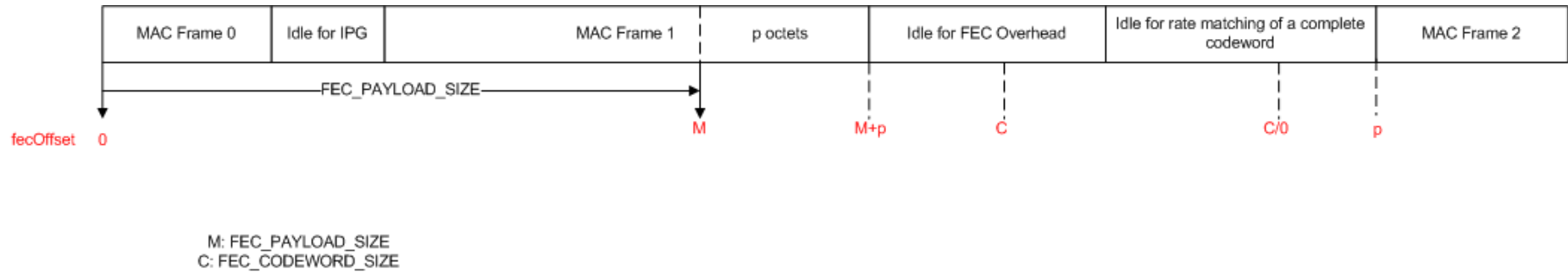
$$Derating\_Overhead(length, \beta) = \left\lceil (\beta - 1) \times FEC\_CODEWORD\_SIZE\_FRAC \times \left\lfloor \frac{fecOffset + length}{FEC\_PAYLOAD\_SIZE} \right\rfloor \right\rceil$$

- FEC\_PAYLOAD\_SIZE: 1760 bytes
- FEC\_PARITY\_SIZE: 227 bytes = ceil(2944/13)
- FEC\_CODEWORD\_SIZE: 1760+227=1987 bytes
- FEC\_CODEWORD\_SIZE\_FRAC: 1760+2944/13

# Mechanism for fecOffset

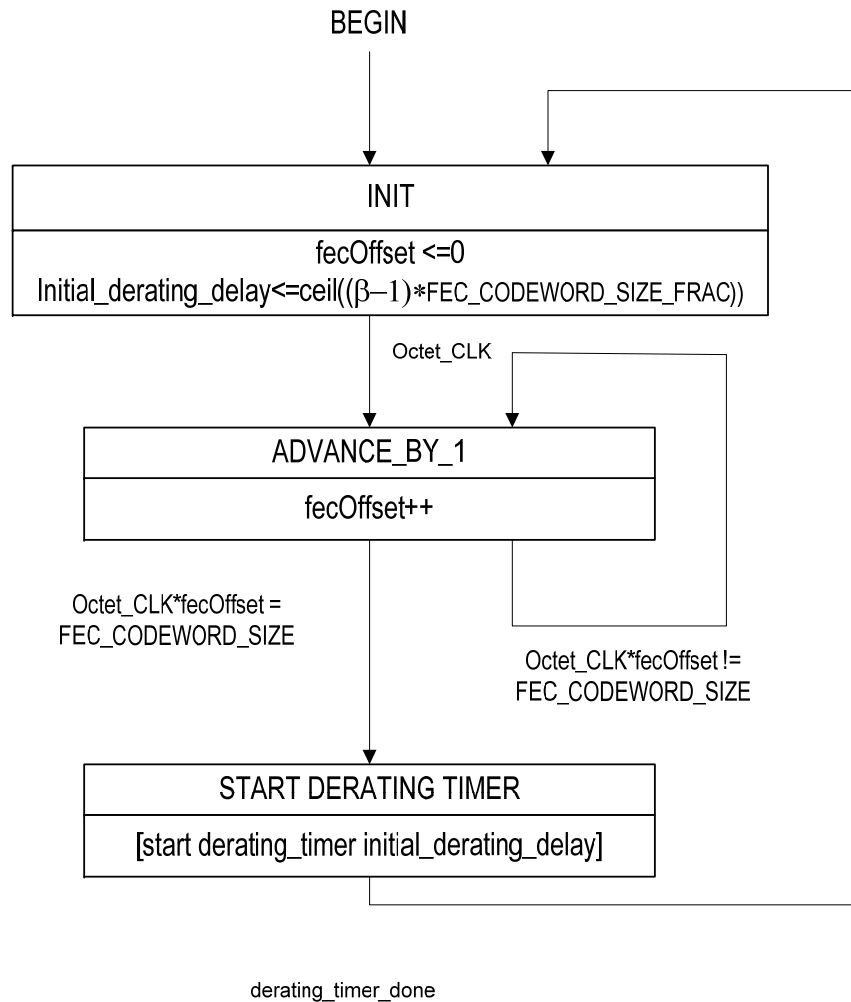
- fecOffset is used to track the collection of FEC payload within the stream of MAC data.
- fecOffset advances by 1 for each octet within FEC payload and FEC overhead.
- Upon fecOffset=FEC\_CODEWORD\_SIZE, it is on hold for the period of de-rating overhead, and wrap around to zero.

# Example of Modified PMD Overhead

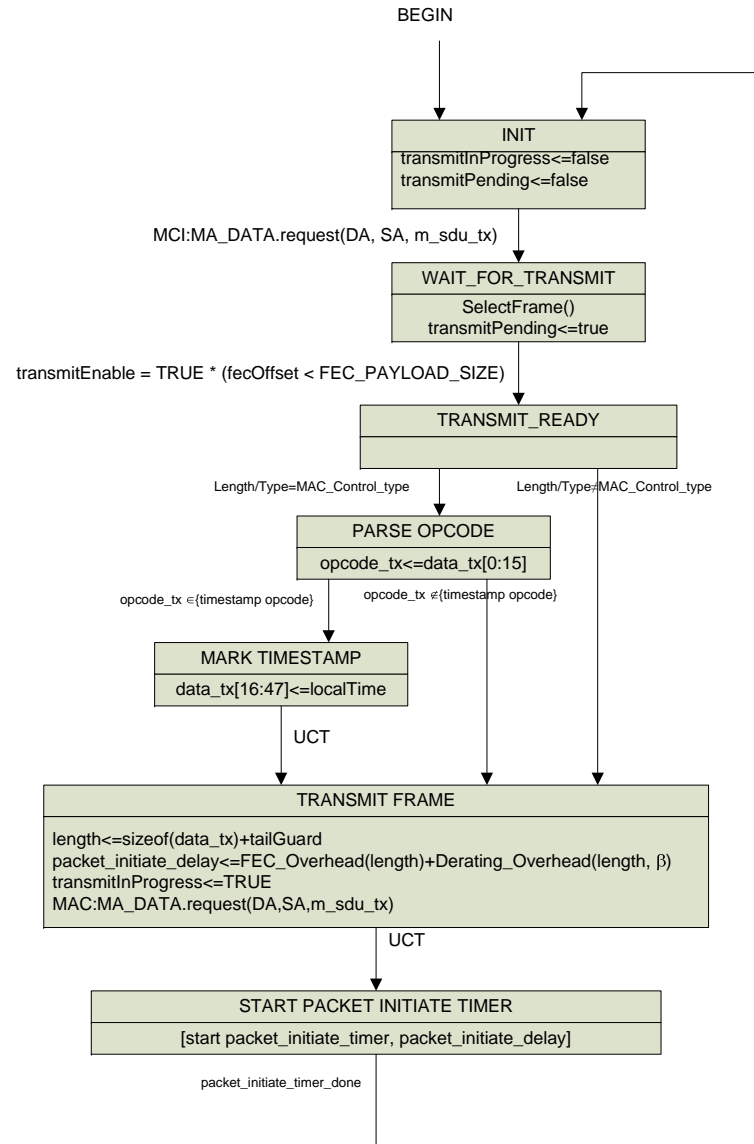


FEC Overhead is a fixed number, so is the rate matching overhead

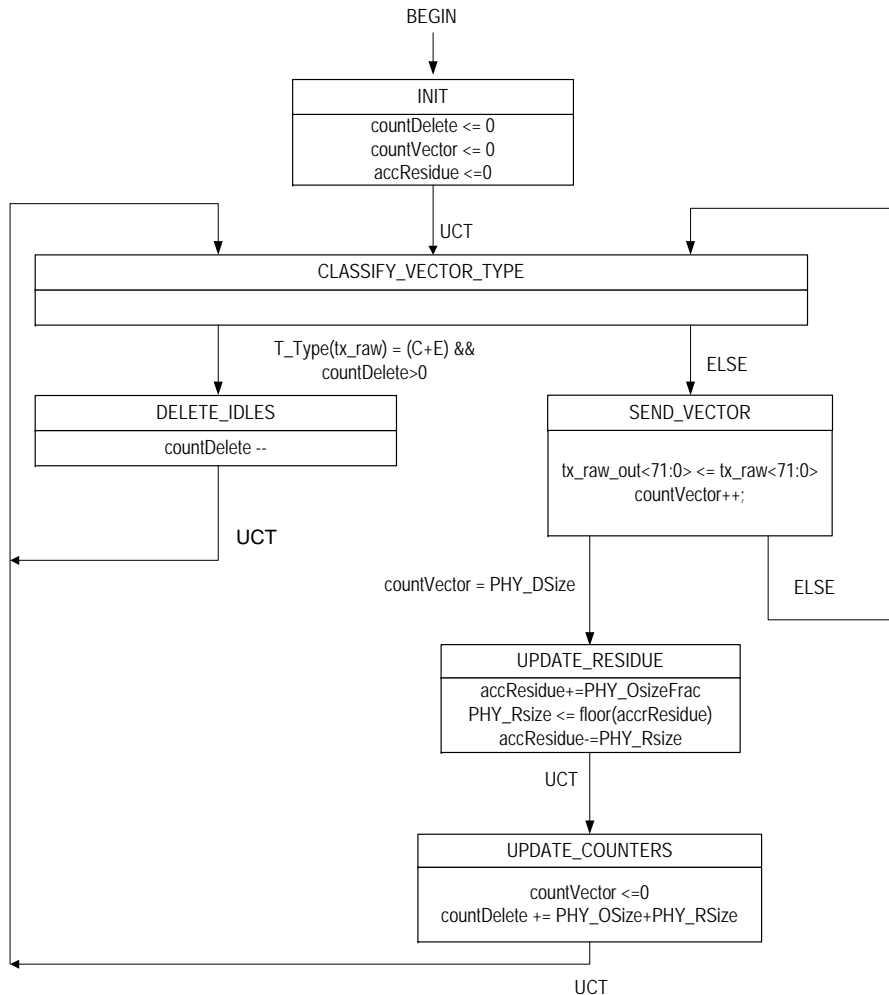
# fecOffset State Diagram



# Modified Control Multiplexer



# Modified Idle Deletion



- `accResidue`: a fractional number to accumulate the residue.

- `PHY_Rsize`: binary number, 1 or 0

- `PHY_DSize`: integer 220

- `FEC_OSize`: 1840/65 (fractional)

- `PHY_OSize`:

$$\text{PHY\_OSize} = \left\lfloor \frac{\text{XGMII\_Rate} - \text{PCS\_Rate}}{\text{PCS\_Rate}} \times (\text{PHY\_DSize} + \text{FEC\_OSize}) + \text{FEC\_OSize} \right\rfloor$$

- `PHY_OSizeFrac`: fractional part of the actual `PHY_OSize`. Its precision is implementation dependent.

$$\text{PHY\_OSizeFrac} = \frac{\text{XGMII\_Rate} - \text{PCS\_Rate}}{\text{PCS\_Rate}} \times (\text{PHY\_DSize} + \text{FEC\_OSize}) + \text{FEC\_OSize} - \text{PHY\_OSize}$$

$$\text{PCS\_Rate} = \text{PMD\_Rate} \times \frac{64}{65}$$

$$\text{PMD\_Rate} = \frac{\text{PLCTotalBits}}{\text{PLCTotalCycles}} \times \text{OFDM\_SampleFreq}$$

# Motion #1

- Adopt page 2, 5 and 6 as baseline for EPoC downstream CLT control multiplexer
- Yes:
- No:
- Abstain:



# Motion #2

- Adopt the page 7 as base line for the EPoC downstream Idle deletion
- Yes
- No
- Abstain