

# 802.3ch Communication Link Access Latency – Table 78-4

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# Wake latency issues with 802.3cy D2.1 – Comment #804

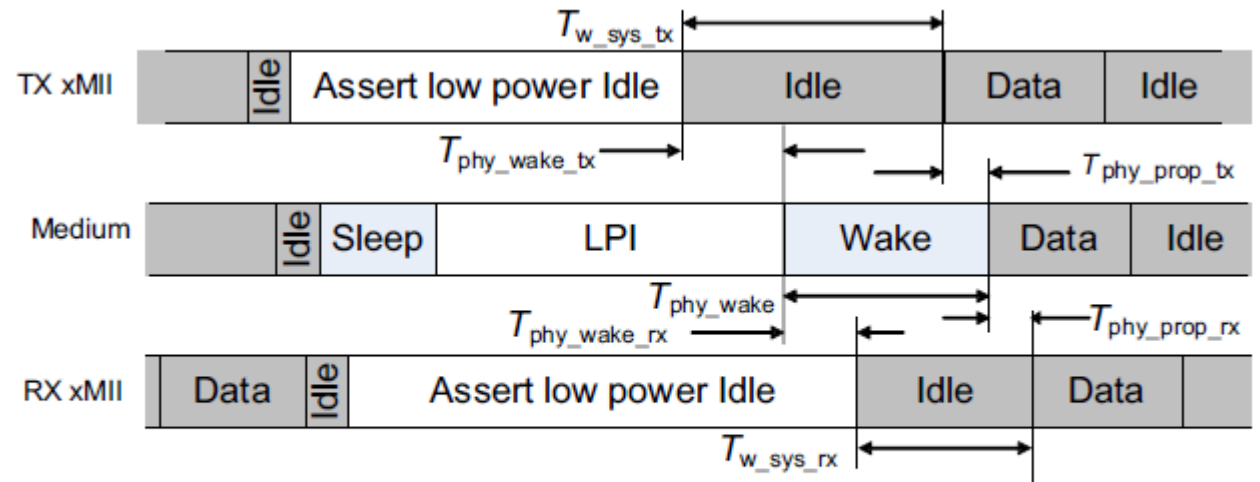
- Some of the latencies in Table 78-4 need to be changed
- The following is based on Graba\_3ch\_01a\_0719.pdf
  - Presented in the 802.3ch July 10, 2019 Ad Hoc
  - Accounted for 802.3ch -> 802.3cy modifications

Table 78–4—Summary of the LPI timing parameters for supported PHYs or interfaces

PHY or interface type	Case	$T_{w\_sys\_tx}$ (min) ( $\mu$ s)	$T_{w\_phy}$ (min) ( $\mu$ s)	$T_{phy\_shrink\_tx}$ (max) ( $\mu$ s)	$T_{phy\_shrink\_rx}$ (max) ( $\mu$ s)	$T_{w\_sys\_rx}$ (min) ( $\mu$ s)
...						
25GBASE-T1	Case-1	13.31	13.31	6.656	0	6.656
	Case-2	7.987	7.987	1.332	0	6.656
	Case-3	42.59	42.59	35.95	0	6.656
	Case-4	37.27	37.27	30.62	0	6.656
...						

# Key equations and parameters

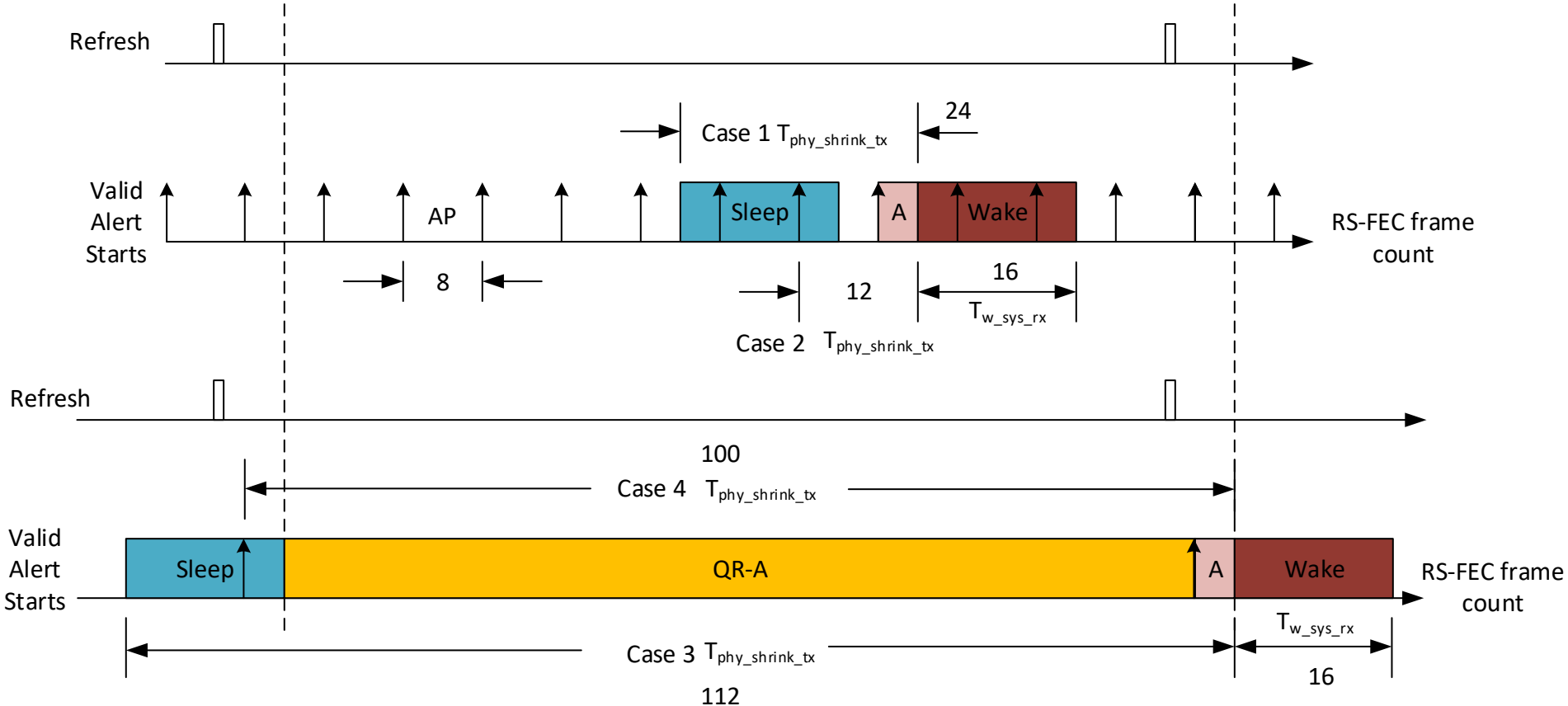
- $T_{w\_sys\_rx} = T_{phy\_wake}$  (already in D2.0)
- $T_{phy\_shrink\_rx} = 0$ . Received Wake length on the MDI is the same as the received length on the xMII.
- From Figure 78-5 – LPI timing parameters ...
  - $T_{w\_sys\_tx} = T_{w\_sys\_rx} + T_{phy\_shrink\_tx} + T_{phy\_shrink\_rx}$
  - $T_{w\_phy} = T_{phy\_wake} + T_{phy\_shrink\_tx}$
  - $T_{w\_sys\_tx} = T_{w\_phy}$



$$\begin{aligned} T_{w\_sys\_tx} (\text{min}) &= T_{w\_sys\_rx} (\text{min}) + T_{phy\_shrink\_tx} (\text{max}) + T_{phy\_shrink\_rx} (\text{max}) \\ T_{w\_phy} (\text{min}) &= T_{phy\_wake} (\text{min}) + T_{phy\_shrink\_tx} \end{aligned}$$

# Graphical measurement of Table 78-4 LPI timing parameters

- Use Figures 165-11 and 165-12



# Latencies in units of RS-FEC frame counts

- Use below to generate LPI latencies

<b>Setup</b>				Sleep	16	(Frames)
DR (Gb/s)	25			Alert	4	(Frames)
Frame (us)	0.3328			Wake	16	(Frames)
				Alert_period	8	(Frames)
				QR	96	(Frames)
<b>Latencies (frames)</b>						
Data Rate	Case	$T_{w\_sys\_tx}$	$T_{w\_phy}$	$T_{phy\_shrink\_tx}$	$T_{phy\_shrink\_rx}$	$T_{w\_sys\_rx}$
Normalized	Case-1	40	40	24	0	16
	Case-2	28	28	12	0	16
	Case-3	128	128	112	0	16
	Case-4	116	116	100	0	16

# Latencies in microseconds, changes to D2.1 highlighted

<u>Latencies (us)</u>		Table 78-4				
Data Rate	Case	$T_{w\_sys\_tx}$	$T_{w\_phy}$	$T_{phy\_shrink\_tx}$	$T_{phy\_shrink\_rx}$	$T_{w\_sys\_rx}$
25 Gb/s	Case-1	13.31	13.31	7.987	0	5.325
25 Gb/s	Case-2	9.318	9.318	3.994	0	5.325
25 Gb/s	Case-3	42.60	42.60	37.27	0	5.325
25 Gb/s	Case-4	38.60	38.60	33.28	0	5.325