802.3ch Communication link access latency – Table 78-4

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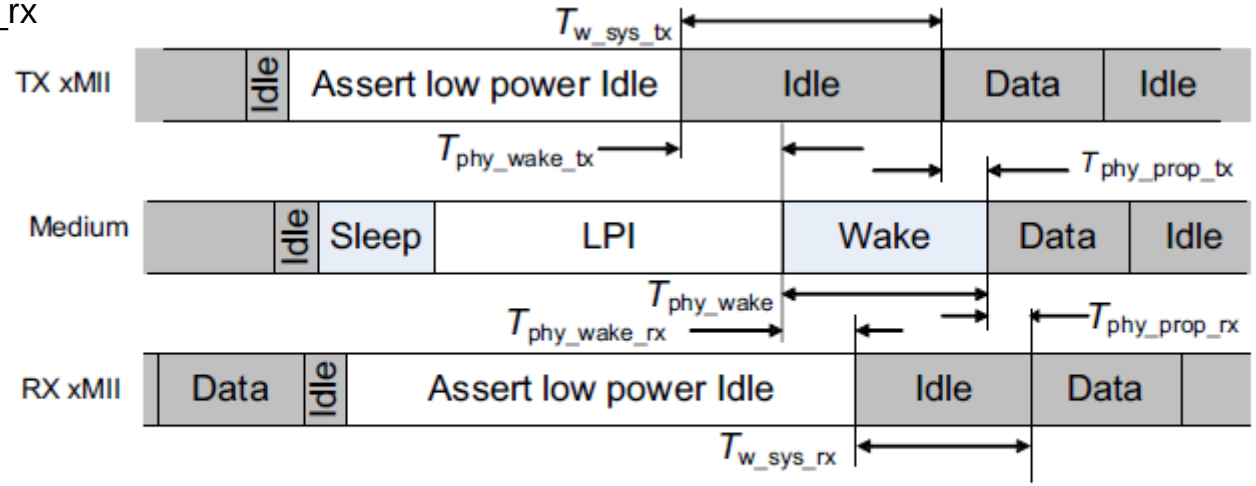
Motivation

- Pete Anslow generated a comment (#22) on D2.0, Table 78-4 proposing to populate the blank columns.
  - I agree that the columns shouldn't be blank.
  - But only the $T_{phy\_shrink\_rx}$ column should be zero.
  - The $T_{phy\_shrink\_tx}$ column should be non-zero.
- Outside comment #22 scope
  - $T_{w\_sys\_tx}$ and T_{w_phy} columns' intersection with Case-3 and Case-4 should be different
- Reasoning and values follow.

Key equations and parameters

- The LPI latency pattern is the same as for 2.5G/5G/10G
- $T_{w\_sys\_rx} = T_{phy\_wake}$ (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 …
  - $T_{w\_sys\_tx} = T_{w\_sys\_rx} + T_{phy\_shrink\_tx} + T_{phy\_shrink\_rx}$
  - $T_{w\_phy} = T_{phy\_wake} + T_{phy\_shrink\_tx}$
  - $T_{w\_sys\_tx} = T_{w\_phy}$



$T_{w\_sys\_tx}$ (min) = $T_{w\_sys\_rx}$ (min) + $T_{phy\_shrink\_tx}$ (max) + $T_{phy\_shrink\_rx}$ (max)
T_{w_phy} (min) = T_{phy_wake} (min) + $T_{phy\_shrink\_tx}$

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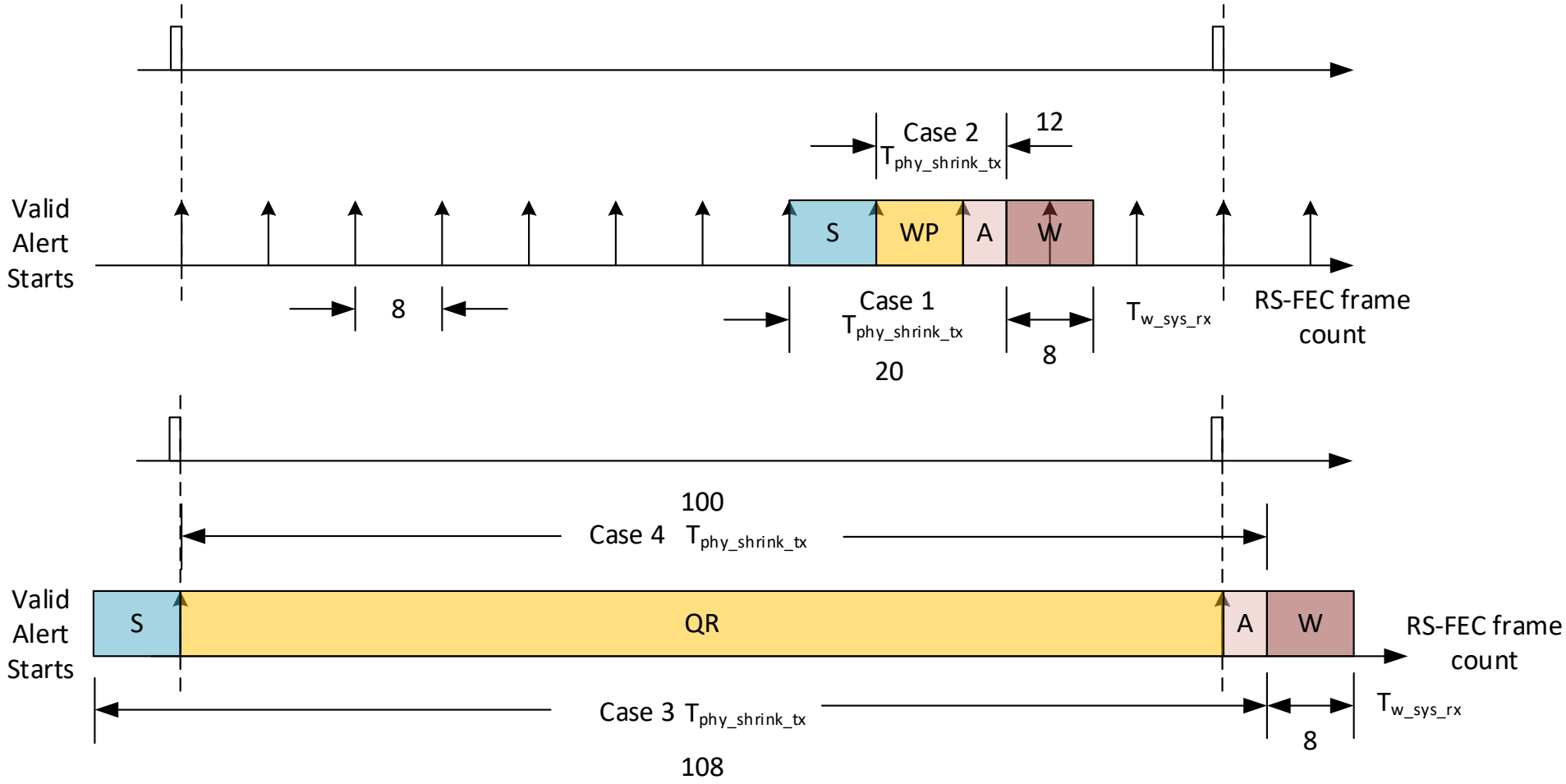
Graphical measurement of Table 78-4 LPI timing parameters

- Use Figures 149-13 and 149-14.



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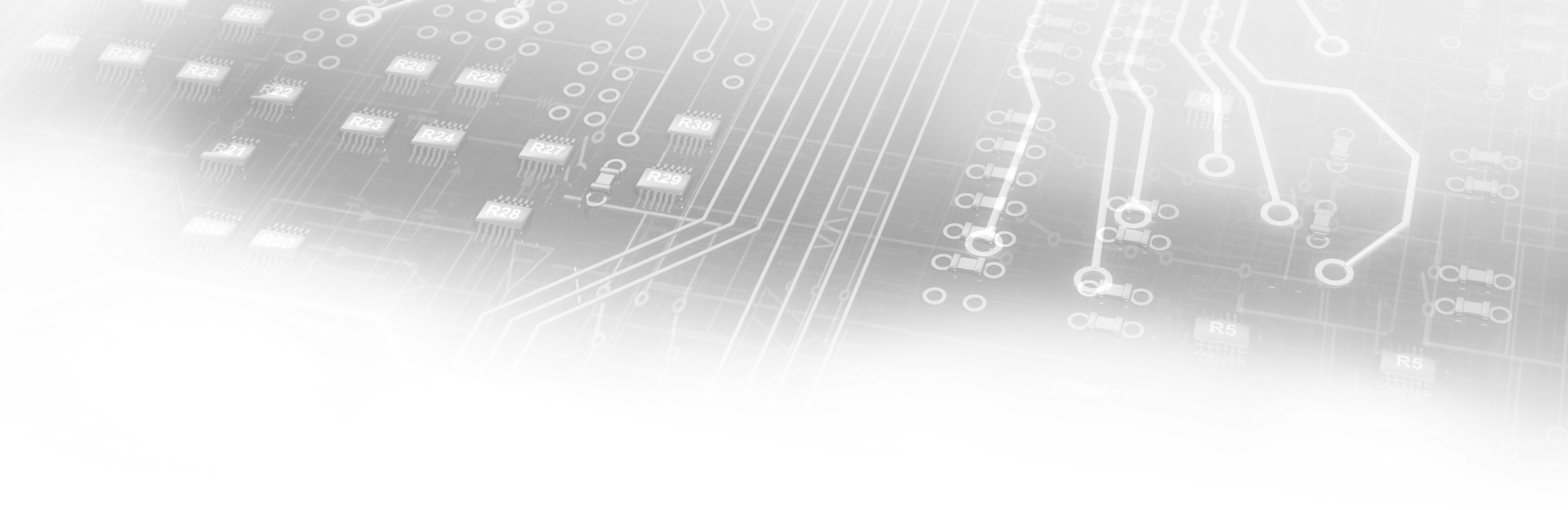
Latencies in units of RS-FEC frame counts

- Use below to generate LPI latencies

Setup				**Sleep**	8	(Frames)
DR (Gb/s)	**10**	**5**	**2.5**	**Alert**	4	(Frames)
Frame (us)	0.32	0.64	1.28	**Wake**	8	(Frames)
				Wake_perioc	8	(Frames)
				QR	96	(Frames)
Latencies (frames)						
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	28	28	20	0	8
	Case-2	20	20	12	0	8
	Case-3	116	116	108	0	8
	Case-4	108	108	100	0	8

Latencies in microseconds, changes to D2.0 highlighted

Latencies (us)		Table 78-4				
Data Rate	**Case**	**$T_{w\_sys\_tx}$**	**T_{w_phy}**	**$T_{phy\_shrink\_tx}$**	**$T_{phy\_shrink\_rx}$**	**$T_{w\_sys\_rx}$**
2.5	Case-1	35.84	35.84	25.6	0	10.24
2.5	Case-2	25.6	25.6	15.36	0	10.24
2.5	Case-3	148.48	148.48	138.24	0	10.24
2.5	Case-4	138.24	138.24	128	0	10.24
Data Rate	**Case**	**$T_{w\_sys\_tx}$**	**T_{w_phy}**	**$T_{phy\_shrink\_tx}$**	**$T_{phy\_shrink\_rx}$**	**$T_{w\_sys\_rx}$**
5	Case-1	17.92	17.92	12.8	0	5.12
5	Case-2	12.8	12.8	7.68	0	5.12
5	Case-3	74.24	74.24	69.12	0	5.12
5	Case-4	69.12	69.12	64	0	5.12
Data Rate	**Case**	**$T_{w\_sys\_tx}$**	**T_{w_phy}**	**$T_{phy\_shrink\_tx}$**	**$T_{phy\_shrink\_rx}$**	**$T_{w\_sys\_rx}$**
10	Case-1	8.96	8.96	6.4	0	2.56
10	Case-2	6.4	6.4	3.84	0	2.56
10	Case-3	37.12	37.12	34.56	0	2.56
10	Case-4	34.56	34.56	32	0	2.56



THANK YOU