141.1.2 Power budget classes

Clause 141 defines the following power budget classes:

— Medium power budget class supports a P2MP media channel insertion loss of ≤ 24 dB e.g., a PON with the split ratio of at least 1:16 and the distance of at least 20 km or a PON with the split ratio of at least 1:32 and the distance of at least 10 km.

— High power budget class supports a P2MP media channel insertion loss of ≤ 29 dB e.g., a PON with the split ratio of at least 1:32 and the distance of at least 20 km.

141.1.3 PHY Link Types

Table 141-1 –PHY links supporting 25 Gb/s downstream and 10 Gb/s upstream

Description	25/10-PQ20G	25/10-PQ20X	25/10-PQ30G	25/10-PQ30X	Units
Number of Fibers	1				
Nominal downstream line rate	25.78125				GBd
Nominal upstream line rate	10.3125				GBd
Downstream wavelength	1358 ± 2				nm
Upstream wavelength	1270 ± 10	1300 ± 10	1270 ± 10	1300 ± 10	nm
Maximum reach	≥ 20				km
Maximum channel insertion loss	24		29		dB
Minimum channel insertion loss	10		15		dB
Coexistent PON technology	GPON	10G-EPON	GPON	10G-EPON	

Table 141-2 – PHY links supporting 25 Gb/s downstream and 25 Gb/s upstream

Description	25/25-PQ20G	25/25-PQ20X	25/25-PQ30G	25/25-PQ30X	Units
Number of Fibers	1				
Nominal downstream line rate	25.78125				GBd
Nominal upstream line rate	25.78125				GBd
Downstream wavelength	1358 ± 2				nm
Upstream wavelength	1270 ± 10	1300 ± 10	1270 ± 10	1300 ± 10	nm
Maximum reach	≥ 20				km
Maximum channel insertion loss	24		29		dB
Minimum channel insertion loss	10		15		dB
Coexistent PON technology	GPON	10G-EPON	GPON	10G-EPON	

Table 141-3 – PHY links supporting 50 Gb/s downstream and 10 Gb/s upstream

Description	50/10-PQ20G	50/10-PQ20X	50/10-PQ30G	50/10-PQ30X	Units
Number of Fibers	1				
Nominal downstream line rate	25.78125				GBd
Nominal upstream line rate	10.3125				GBd
Downstream wavelengths	1) 1358 ± 2 2) 1342 ± 2				nm
Upstream wavelength	1270 ± 10	1300 ± 10	1270 ± 10	1300 ± 10	nm
Maximum reach	≥ 20				km
Maximum channel insertion loss	24		29		dB
Minimum channel insertion loss	10		15		dB
Coexistent PON technology	GPON	10G-EPON	GPON	10G-EPON	

Table 141-4 – PHY links supporting 50 Gb/s downstream and 25 Gb/s upstream

Description	50/25-PQ20G	50/25-PQ20X	50/25-PQ30G	50/25-PQ30X	Units
Number of Fibers	1				
Nominal downstream line rate	25.78125				GBd
Nominal upstream line rate	25.78125				GBd
Downstream wavelengths	1) 1358 ± 2 2) 1342 ± 2				nm
Upstream wavelength	1270 ± 10	1300 ± 10	1270 ± 10	1300 ± 10	nm
Maximum reach	≥ 20				km
Maximum channel insertion loss	24		29		dB
Minimum channel insertion loss	10		15		dB
Coexistent PON technology	GPON	10G-EPON	GPON	10G-EPON	

Table 141-5 – PHY links supporting 50 Gb/s downstream and 50 Gb/s upstream

Description	50/50-PQ20G	50/50-PQ20X	50/50-PQ30G	50/50-PQ30X	Units
Number of Fibers	1				
Nominal downstream line rate	25.78125				GBd
Nominal upstream line rate	25.78125				GBd
Downstream wavelengths	1) 1358 ± 2 2) 1342 ± 2				nm
Upstream wavelengths	1) 1270 ± 10 2) 1300 ± 10	1) 1300 ± 10 2) 1320 ± 2	1) 1270 ± 10 2) 1300 ± 10	1) 1300 ± 10 2) 1320 ± 2	nm
Maximum reach	≥ 20				km
Maximum channel insertion loss	24		29		dB
Minimum channel insertion loss	10		15		dB
Coexistent PON technology	n/a	10G-EPON	n/a	10G-EPON	

Table 141-6 – Supported combinations of OLT and ONU PMDs and the resulting PHY Link types, medium power budget

		ONU PMD				
		25/10GBASE-PQ11*-U2	**50/10GBASE-PQ21*-U2**	**25/25GBASE-PQ11*-U2**	**50/25GBASE-PQ21*-U2**	**50/50GBASE-PQ22*-U2**
OLT PMD	**25/10GBASE-PQ11*-D2**	25/10-PQ20		n/a		
	50/10GBASE-PQ21*-D2		50/10-PQ20			
	25/25GBASE-PQ11*-D2	n/a		25/25-PQ20		
	50/25GBASE-PQ21*-D2				50/25-PQ20	
	50/50GBASE-PQ22*-D2					50/50-PQ20

(*) - All OLT and ONU PMDs support the same coexistence mode, either X or G.

Table 141-7 – Supported combinations of OLT and ONU PMDs and the resulting PHY Link types, high power budget

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="5">ONU PMD</th></tr>
<tr><th>25/10GBASE-PQ11*-U3</th><th>50/10GBASE-PQ21*-U3</th><th>25/25GBASE-PQ11*-U3</th><th>50/25GBASE-PQ21*-U3</th><th>50/50GBASE-PQ22*-U3</th></tr>
<tr><td rowspan="5">OLT PMD</td><td>25/10GBASE-PQ11*-D3</td><td colspan="2" rowspan="2">25/10-PQ30</td><td colspan="3" rowspan="2">n/a</td></tr>
<tr><td>50/10GBASE-PQ21*-D3</td><td>50/10-PQ30</td></tr>
<tr><td>25/25GBASE-PQ11*-D3</td><td colspan="2" rowspan="3">n/a</td><td colspan="3">25/25-PQ30</td></tr>
<tr><td>50/25GBASE-PQ21*-D3</td><td colspan="2">50/25-PQ30</td></tr>
<tr><td>50/50GBASE-PQ22*-D3</td><td>50/50-PQ30</td></tr>
</table>

(*) - All OLT and ONU PMDs support the same coexistence mode, either X or G.