Table 141-8 — OLT PMD Transmit Characteristics

Description	25/10GBASE-PQ11G-D3 25/10GBASE-PQ11X-D3 25GBASE-PQ11G-D3 25GBASE-PQ11X-D3	50/10GBASE-PQ21G-D3 50/10GBASE-PQ21X-D3 50/25GBASE-PQ21G-D3 50/25GBASE-PQ21X-D3 50GBASE-PQ22X-D3 50GBASE-PQ22G-D3	Unit
Signaling speed (range)	25.78125 ± 100 ppm		GBd
Lane wavelengths (range)	1356 to 1360	1340 to 1344 1356 to 1360	nm
Side Mode Suppression Ratio (min)	30		dB
Total average launch power (max)	—	10.8	dBm
Average launch power, each lane (max)	7.8		dBm
Average launch power, each lane [a] (min)	3.3		dBm
Optical Modulation Amplitude (OMA), each lane (min) [b]	5.4		dBm
Difference in launch power between any two lanes (OMA) (max)	—	3	dB
Launch power in OMA minus TDP, each lane (min)	4.9		dBm
Transmitter and dispersion penalty (TDP), each lane (max)	1.5		dB
Average launch power of OFF transmitter, each lane (max)	TBD		dBm
Extinction ratio (min)	8		dB
$RIN_{15}OMA$ (max)	TBD		dB/Hz
Optical return loss tolerance (max)	TBD		dB
Transmitter reflectance [c] (max)	TBD		dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	TBD		UI
Decision timing offset for transmitter and dispersion penalty	TBD		UI

[a] Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.

[b] Even if the TDP < 0.5 dB, the OMA (min) must exceed this value.

[c] Transmitter reflectance is defined looking into the transmitter.

Table 141-14 — ONU PMD Receive Characteristics

Description	25/10GBASE-PQ11G-U3 25/10GBASE-PQ11X-U3 25GBASE-PQ11G-U3 25GBASE-PQ11X-U3	50/10GBASE-PQ21G-U3 50/10GBASE-PQ21X-U3 50/25GBASE-PQ21G-U3 50/25GBASE-PQ21X-U3 50GBASE-PQ22X-U3 50GBASE-PQ22G-U3	Unit
Signaling speed (range)	25.78125 ± 100 ppm		GBd
Lane wavelengths (range)	1356 to 1360	1340 to 1344 1356 to 1360	nm
Bit error ratio (max) [a]	10^{-2}		-
Damage threshold [b]	-6.2		dBm
Average receive power, each lane (max)	-7.2		dBm
Average receive power, each lane [c] (min)	-25.7		dBm
Receiver reflectance (max)	TBD		dB
Receiver sensitivity (OMA), each lane [d] (max)	-23.6		dBm
Signal detect threshold, each lane (min)	TBD		dBm
Stressed receiver sensitivity (OMA), each lane [e] (max)	-22.6		dBm
Conditions of stressed receiver sensitivity test:			
Vertical eye closure penalty,[f] each lane	1.5		dB
Stressed eye J2 Jitter,[f] each lane	TBD		UI
Stressed eye J9 Jitter,[f] each lane	TDB		UI

[a] The BER of 10^{-12} is achieved by the utilization of FEC as described in 142.2.2.5.

[b] The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level. Direct ONU–OLT connection may result in damage of the receiver.

[c] Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

[d] Receiver sensitivity (OMA), each lane (max) is informative and is defined for a transmitter with VECP = 0.5 dB.

[e] Measured with conformance test signal at TP3 (see 141.7.12) for BER = 10^{-2}.

[f] Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Table 141-12 — ONU PMD Transmit Characteristics

Description	25GBASE-PQ11G-U3 50/25GBASE-PQ21G-U3	25GBASE-PQ11X-U3 50/25GBASE-PQ21X-U3	50/25GBASE-PQ21G-U3 50GBASE-PQ22G-U3	50/25GBASE-PQ21X-U3 50GBASE-PQ22X-U3	Unit
Signaling speed (range)	25.78125 ± 100 ppm				GBd
Lane wavelengths (range)	1260 to 1280	1290 to 1310	1260 to 1280 1290 to 1310	1290 to 1310 1340 to 1344	nm
Side Mode Suppression Ratio (min)	30				dB
Total average launch power (max)	–		12		dBm
Average launch power, each lane (max)	9				dBm
Average launch power, each lane [a] (min)	2.6				dBm
Optical Modulation Amplitude (OMA), each lane (min) [b]	4.7				dBm
Difference in launch power between any two lanes (OMA) (max)	–		3		dB
Launch power in OMA minus TDP, each lane (min)	4.2				dBm
Transmitter and dispersion penalty (TDP), each lane (max)	2				dB
Average launch power of OFF transmitter, each lane (max)	TBD				dBm
Extinction ratio (min)	5				dB
$RIN_{15}OMA$ (max)	TBD				dB/Hz
Optical return loss tolerance (max)	TBD				dB
Transmitter reflectance [c] (max)	TBD				dB
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}	TBD				UI
Turn-on time (max)	128				ns
Turn off time (max)	128				ns
Decision timing offset for transmitter and dispersion penalty	TBD				UI

[a] Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.

[b] Even if the TDP < 0.5 dB, the OMA (min) must exceed this value.

[c] Transmitter reflectance is defined looking into the transmitter.

Table 141-10 — OLT PMD Receive Characteristics

Description	25GBASE-PQ11G-D3 50/25GBASE-PQ21G-D3	25GBASE-PQ11X-D3 50/25GBASE-PQ21X-D3	50/25GBASE-PQ21G-D3 50GBASE-PQ22G-D3	50/25GBASE-PQ21X-D3 50GBASE-PQ22X-D3	Unit
Signaling speed (range)	25.78125 ± 100 ppm				GBd
Lane wavelengths (range)	1260 to 1280	1290 to 1310	1260 to 1280 1290 to 1310	1290 to 1310 1340 to 1344	nm
Bit error ratio (max) [a]	10^{-2}				-
Damage threshold [b]	-5				dBm
Average receive power, each lane (max)	-6				dBm
Average receive power, each lane [c] (min)	-26.4				dBm
Receiver reflectance (max)	TBD				dB
Receiver sensitivity (OMA), each lane [d] (max)	-24.3				dBm
Signal detect threshold, each lane (min)	TBD				dBm
Stressed receiver sensitivity (OMA), each lane [e] (max)	-22.8				dBm
Receiver settling time (max)	TBD				ns
Conditions of stressed receiver sensitivity test:					
Vertical eye closure penalty,[f] each lane	2				dB
Stressed eye J2 Jitter,[f] each lane	TBD				UI
Stressed eye J9 Jitter,[f] each lane	TBD				UI

[a] The BER of 10^{-12} is achieved by the utilization of FEC as described in 142.2.2.5.

[b] The receiver shall be able to tolerate, without damage, continuous exposure to an optical input signal having this average power level. Direct ONU–OLT connection may result in damage of the receiver.

[c] Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.

[d] Receiver sensitivity (OMA), each lane (max) is informative and is defined for a transmitter with VECP = 0.5 dB.

[e] Measured with conformance test signal at TP3 (see 141.7.12) for BER = 10^{-2}.

[f] Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.