

**Table 91–12—Illustrative PR10, PR20 and PR30 channel insertion loss and penalties
 (symmetric, 10 Gb/s power budget classes)**

Description	PR10		PR20		PR30		Unit
	US ^a	DS ^a	US ^a	DS ^a	US ^a	DS ^a	
Fiber Type	B1.1, B1.3 SMF						
Measurement wavelength for fiber	1270	1590 ^b	1270	1590 ^b	1270	1577 ^c	nm
Nominal distance ^d	10		20		20		km
Available power budget ^e	23	21.5	27	25.5	32	30.5	dB
Channel insertion loss (max) ^f	20		24		29		dB
Channel insertion loss (min) ^g	5		10		15		dB
Allocation for penalties ^h	3	1.5	3	1.5	3	1.5	dB
Optical return loss of ODN (min)	20						dB

^aUS stands for Upstream, DS stands for Downstream

^bThe nominal transmit wavelength is 1590 nm.

^cThe nominal transmit wavelength is 1577 nm.

^dNominal distance refers to the expected maximum distance a PMD will be capable of achieving in a typical ODN, numerous ODN implementation practices may result is longer or shorter distances being actually achievable in a users' network.

^eThe available power budget already accounts for @@xx@@ dB of FEC gain.

^fThe channel insertion loss is based on the cable attenuation at the target distance and nominal measurement wavelength. The channel insertion loss also includes the loss for connectors, splices and other passive components such as splitters.

^gThe power budgets for PR10, PR20 and PR30 power budget classes are such that a minimum insertion loss is assumed between transmitter and receiver. This minimum attenuation is required for PMD testing.

^hThe allocation for penalties is the difference between the available power budget and the channel insertion loss; insertion loss difference between nominal and worst case operating wavelength is considered a penalty. This allocation may be used to compensate for transmission related penalties. Further details are given in Clause @@91.8.2@@.

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**Table 91–13—Illustrative PRX10, PRX20 and PRX30 channel insertion loss and penalties
 (asymmetric, 10 Gb/s downstream, 1 Gb/s upstream power budget classes)**

Description	PRX10		PRX20		PRX30		Unit
	US ^a	DS ^a	US ^a	DS ^a	US ^a	DS ^a	
Fiber Type	B1.1, B1.3 SMF						
Measurement wavelength for fiber	1310	1590 ^b	1310	1590 ^b	1310	1577 ^c	nm
Nominal distance ^d	10		20		20		km
Available power budget ^e	23.0	21.5	26.0	25.5	30.4	30.5	dB
Channel insertion loss (max) ^f	20		24		29		dB
Channel insertion loss (min) ^g	8	5	8	10	15	15	dB
Allocation for penalties ^h	3	1.5	3	1.5	1.4	1.5	dB
Optical return loss of ODN (min)	20						dB

^aUS stands for Upstream, DS stands for Downstream

^bThe nominal transmit wavelength is 1590 nm.

^cThe nominal transmit wavelength is 1577 nm.

^dNominal distance refers to the expected maximum distance a PMD will be capable of achieving in a typical ODN, numerous ODN implementation practices may result is longer or shorter distances being actually achievable in a users' network.

^eThe available power budget already accounts for @@xx@@ dB of FEC gain.

^fThe channel insertion loss is based on the cable attenuation at the target distance and nominal measurement wavelength. The channel insertion loss also includes the loss for connectors, splices and other passive components such as splitters.

^gThe power budgets for PRX10, PRX20 and PRX30 power budget classes are such that a minimum insertion loss is assumed between transmitter and receiver. This minimum attenuation is required for PMD testing.

^hThe allocation for penalties is the difference between the available power budget and the channel insertion loss; insertion loss difference between nominal and worst case operating wavelength is considered a penalty. This allocation may be used to compensate for transmission related penalties. Further details are given in Clause @@91.8.2@@.

NOTE—The budgets include an allowance for –12 dB reflection at the receiver.