

TTC TS-1000 Optical Spec update and overview

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TTC TS-1000 Class S Spec

	unit	Upstream	Downstream
Transmit Wavelength	nm	1260 to 1360	1480 to 1580
Receive Wavelength	nm	1480 to 1580	1260 to 1360
Maximum RMS width	nm	6	7.7
Transmit power (max)	dBm	-8	-8
Transmit power (min)	dBm	-14	-14
Receive Power (max)	dBm	-8	-8
Receive Sensitivity	dBm	-30	-30
Extinction ratio (min)	dB	8.2	8.2
Pulse mask		Compliant to G.957 STM-1 (4 th or 5 th order Bessel-Thomson filter with cut-off frequency of 125MHz x 0.75 shall be used. 155.52MHz x 0.75 may be used as well.)	

TTC TS-1000 Class S Spec (cont'd)

	unit	Upstream	Downstream
S/X tolerance (max)	BER	1x10 ⁻¹⁰ under the reflection of 14dB return loss	
Return Loss (min)	dB	14dB	14dB
Test pattern		Not specified. The short continuous random pattern specified in IEEE802.3 Annex 36A.5 may be used.	
Transmit Jitter (max)	nm	1 [recommendation]	1 [recommendation]
Receiver Jitter tolerance (min)	nm	2.5 [recommendation]	2.5 [recommendation]
Signal Detect		Signal detect threshold should be set to such value that an open optical connector will not cause false link establishment due to the reflection.	
Optical connector		TTC TS-1000 does not specify optical connector.	

Notes on TTC TS-1000 Spec

- Line coding
 - TS-1000 assumes the use of 4B/5B coding defined for 100BASE-FX
- Baseline wander
 - TS-1000 does not consider specifically the effect of baseline wander.
- Link Loss budget
 - TS-1000 considers that 15dB will be sufficient for 7 to 10km distance over Japanese access fiber, while there is not much economic reason to adopt less than 15dB.
 - TTC is considering longer distance optical specs (Class-A (20km) and Class-B (30km)) in addition to the current TS-1000 (Class-S)
 - Detail specs are under study and not yet open
- Wavelength Window
 - TS-1000 specifies the use of 1480-1580nm wavelength for downstream, while it allows the use of 1500-1600nm for economic reason (optional)