

1. Power & MTBF Calculations:

Card Description	Power Dissipation (Watts)	MTBF (In Years) Non-Redundant
Common Cards		
- Control Card (Processor Sub-System Card)	5	24
- Management Interface Card (MIC)	6	41
- Cross Connect Card	8	17
Optical Interface Cards		
- STM-1 Card	8	14
- STM-4 Card	10	14
Tributary Interface Cards		
- 21 E1 Tributary Card	5	28
- 8 Port Ethernet Tributary Card (ETC)	35	23
- 1 E3/DS3 card (TE31)	5	44

2. Fiber Loss Calculations:

G.652 Fiber		
- Drum Length	4	Km
- Splice Loss	0.05	dB/splice
- Fiber Loss (1310nm)	0.35	dB/Km
- Fiber Loss (1550nm)	0.24	dB/Km
- Total Fiber Loss (1310nm)	0.3625	dB/Km
- Total Fiber Loss (1550nm)	0.2525	dB/Km

3. Optical Budgets:

G.652 Fiber	
- Fiber Loss (dB/km) at 1310nm	0.3625
- Fiber Loss (dB/km) at 1550nm	0.2525
- Dispersion Loss (ps/nm/km) at1310nm	3
- Dispersion Loss (ps/nm/km) at1550nm	18
- Connector Loss per end (dB)	1
- Additional Loss Margin (dB)	3

4. Distance

Card Type	Wavelength (nm)	Dispersion Penalty (dB)	Transmit Power (dBm)	Receiver Sensitivity (dBm)	Laser Dispersion Limit (ps/nm)	Power Limit (dB)	Dispersion Limit (km)	Reach (Km)
STM-1, S1.1	1310	1	-15	-36	246	15	82	41
STM-1, L1.1	1310	1	-5	-36	246	25	82	68
STM-1, L1.2	1550	1	-5	-36	19000	25	1055.566	99
STM-4, S4.1	1310	1	-15	-30	109	9	36.333	24
STM-4, L4.1	1310	1	-3	-30	109	21	36.333	36
STM-4, L4.2	1550	1	-3	-30	4800	21	226.6667	83
STM-4, V4.2	1550	1	-3	-30	4800	21	226.6667	118