

Annexure IV: Optical budget/link loss

SITES (A)	SITE (B)	DWDM CH	Fiber Distance (km) G.652D	Per DWDM Mux / Demux Loss (5 dB)	Power Transmit (dBm) at A	Received Rx (dBm) at B	Power Budget (dB)
Thimphu	Rurichu	31	49	10	1.17	-16.8	17.97
		32			1.5	-16.9	18.4
		33			1.31	-19.6	20.91
		46			1.72	-16.09	17.81
		57			1.93	-28.54	30.47
		59			1.57	-19.67	21.24
Ruirchu	Thimphu	31	49	10	0.61	-17.12	17.73
		32			0.99	-18.63	19.62
		33			0.91	-17.4	18.31
		46			1.79	-16.56	18.35
		57			1.61	-20.66	22.27
		59			1.9	-19.14	21.04
Wangdue	Rurichu	33	22	10	1.06	-9.85	10.91
		57			1.5	-17.21	18.71
Rurichu	Wangdue	33			1.5	-11.27	12.77
		57			1.48	-18.8	20.28
Rurichu	Tsirang	31	51	10	0.87	-15.3	16.17
		32			0.78	-8.31	9.09
		46			1.1	-11.28	12.38
		59			1.49	-18.4	19.89
Tsirang	Ruirchu	31	51	10	1.89	-13.64	15.53
		32			1.8	-11.05	12.85
		46			1.69	-11.28	12.97
		59			1.8	-9.96	11.76
Tsirang	Gelephu	31	51	10	1.86	-11.05	12.91
		32			1.24	-13.35	14.59
		33			1.49	-10.19	11.68
		34			1.3	-12.14	13.44
		46			1.43	-10.69	12.12
		59			2	-11.2	13.2
Gelephu	Tsirang	31	51	10	1.6	-11.31	12.91
		32			1.11	-13.49	14.6
		33			0.9	-10.17	11.07
		34			1.29	-14.06	15.35
		46			1.79	-9.01	10.8
		59			1.3	-12	13.3
Tsirang	Dagana	33	25	10	0.95	-17.24	18.19
		52			0.6	-15.2	15.8
Dagana	Tsirang	33			1.37	-13.33	14.7
		52			1.3	-31	32.3
Gelephu	Zhemgang	31	48	10	1.57	-11.77	13.34
		32			1.49	-12.58	14.07
		33			1.08	-14.34	15.42
		46			1.13	-12.06	13.19
		58			1.2	-20.81	22.01
Zhemgang	Gelephu	31	48	10	0.87	-12.56	13.43
		32			1.15	-10.07	11.22
		33			1.31	-8.48	9.79
		46			1.75	-8.64	10.39
		58			1.31	-11.1	12.41

Zhemgang	Panbang	31	56	10	0.65	-19.51	20.16		
		32			1.28	-19.51	20.79		
		33			1.4	-13.07	14.47		
		59			1.11	-16.36	17.47		
Panbang	Zhemgang	31					0.86	-14.18	15.04
		32					1.32	-15.73	17.05
		33					1.49	-17.4	18.89
		59					1.49	-20.97	22.46
Panbang	Nganglam	31	28	10	1.34	-16.13	17.47		
		32			1.15	-16.56	17.71		
		33			0.86	-14.69	15.55		
		59			1.53	-8.99	10.52		
Nganglam	Panbang	31					0.86	-17.83	18.69
		32					0.88	-17.72	18.6
		33					1.26	-17.47	18.73
		59					1.19	-23.98	25.17
Nganglam	Pemagatshel	31	32	10	0.85	-14.27	15.12		
		32			1.36	-15.69	17.05		
		33			1.11	-15.72	16.83		
		59			1.55	-14.93	16.48		
Pemagatshel	Nganglam	31					1.5	-15.95	17.45
		32					0.57	-18.57	19.14
		33					0.62	-15.02	15.64
		59					2.1	-17.03	19.13

NOTES:

1. 40CH Sopto DWDM Mux/DeMux Module is used in the network.
2. Optical Transmit Power (Tx) and Received Power (Rx) given in the Table is recorded using Sopto 10G DWDM XFP/SFP+ ZR 80kms transceivers - 100Ghz (Mixture of Tunable and fixed XFP and SFP+)
3. Sopto 1G DWDM CH39 is in use in the DWDM Network for OOB Mgt of all SNMP supported devices.
4. Passive Attenuators are used in some of links.