

अनिवार्य आवश्यकताएँ

संख्या : TEC37682111

Essential Requirements

ER No. : TEC37682111

Router

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MTCTE के तहत जारी:

Issued under MTCTE by:

दूरसंचार अभियांत्रिकी केंद्र

भारत सरकार

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Telecommunication Engineering Centre

Government of India

Khurshid Lal Bhawan, Janpath, New Delhi-110001, INDIA

Essential Requirements for:

Router

Certification Scheme: **GCS**

Product Fee Group: **C**

This ER covers all types of Routers

Note: Annexures referred to in this ER are Annexures as mentioned in "Annexures to ERs" No. TEC/SD/DD/TCP-222/02/June19 as updated from time to time and available on MTCTE portal.

This product has the following variants:

1. BNG or BRAS Router
2. Cloud Control Capable Router
3. IPV4 Router
4. IPV6 Router
5. MPLS Router

1. Variant 1 : BNG or BRAS Router

1.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
1.1.1	BGP for IPV6	RFC 2545. Annex-P11
1.1.2	BGP4 as per RFC 4271 and MBGP	RFC 4271 4760. Annex-P11
1.1.3	Conducted And Radiated Emission - Class A	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
1.1.4	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
1.1.5	Immunity to DC Voltage Dips and Short	EN/IEC:61000-4-29. Annex-B

	Interruptions	
1.1.6	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2. Annex-B
1.1.7	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B
1.1.8	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
1.1.9	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
1.1.10	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B
1.1.11	IPV6	RFC 2460 or 8200 4861 4862 1981 4443 Annex-P11
1.1.12	IT Equipment Safety	IS 13252-1 or IEC:60950-1 or IEC 62368-1. Annex-A1
1.1.13	Manageability SNMP V2 or V3	RFC 3410 3416 Annex-P11
1.1.14	OSPFv2	RFC 2328 Annex-P11
1.1.15	OSPFv3 for IPV6	RFC 2740 Annex-P11
1.1.16	PPPoE	RFC 2516. Annex-P11
1.1.17	Radius as per RFC 2865	RFC 2865. Annex-P11

1.2 Interface 1 : 1 G Optical Ethernet

S.No.	Parameter Name	Standard Name
1.2.1	Average Launch power for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
1.2.2	Receiver Sensitivity 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
1.2.3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H

1.3 Interface 2 : 10 100 1000 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
1.3.1	Link Speed and Autonegotiation Test GE	IEEE 802.3. Annex-H

1.4 Interface 3 : 10 100 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
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1.4.1	Link Speed and Autonegotiation Test FE	IEEE 802.3 Annex-H
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1.5 Interface 4 : 10 G Optical Ethernet

S.No.	Parameter Name	Standard Name
1.5.1	Average Launch power for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
1.5.2	Receiver Sensitivity 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
1.5.3	Wavelength for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H

1.6 Interface 5 : 100 G Optical Ethernet

S.No.	Parameter Name	Standard Name
1.6.1	Average Launch power for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
1.6.2	Receiver Sensitivity 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
1.6.3	Wavelength for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H

1.7 Interface 6 : 2 Mbps - E1

S.No.	Parameter Name	Standard Name
1.7.1	Input Jitter Tolerance for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
1.7.2	Input Return Loss for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.3.1. Annex-I
1.7.3	Nominal Bit Rate with Tolerance for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.3. Annex-I
1.7.4	Output Jitter for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
1.7.5	Pulse Mask for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.1. Annex-I

1.8 Interface 7 : 34 Mbps - E3

S.No.	Parameter Name	Standard Name
1.8.1	Input Jitter Tolerance for 34 Mbps Int	ITU-T G.823. Annex-I
1.8.2	Input Return Loss for 34 Mbps Int	ITU-T G.703. Annex-I
1.8.3	Nominal Bit Rate with Tolerance for 34 Mbps Int	ITU-T G.703 Annex-I
1.8.4	Output Jitter for 34 Mbps Int	ITU-T G.823. Annex-I
1.8.5	Pulse Mask for 34 Mbps Int	ITU-T G.703. Annex-I

1.9 Interface 8 : 40 G Optical Ethernet

S.No.	Parameter Name	Standard Name
1.9.1	Average Launch power for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
1.9.2	Receiver Sensitivity 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
1.9.3	Wavelength for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H

1.10 Interface 9 : 45 Mbps

S.No.	Parameter Name	Standard Name
1.10.1	DC power	ITU-T G.703. Annex-I
1.10.2	Input Jitter Tolerance for 45 Mbps Int	ITU-T G.824. Annex-I
1.10.3	Nominal Bit Rate with Tolerance for 45 Mbps Int	ITU-T G.703 Annex-I
1.10.4	Output Jitter for 45 Mbps Int	ITU-T G.824 Annex-I
1.10.5	Pulse Mask for 45 Mbps Int	ITU-T G.703. Annex-I

1.11 Interface 10 : 64 kbps

S.No.	Parameter Name	Standard Name
1.11.1	Input Jitter Tolerance for 64 kbps Int	ITU-T G.823. Annex-I
1.11.2	Input Return Loss for 64 kbps Int	ITU-T G.703. Annex-I
1.11.3	Nominal Bit Rate with Tolerance for 64 kbps Int	ITU-T G.703 Annex-I
1.11.4	Output Jitter for 64 kbps Int	ITU-T G.823. Annex-I
1.11.5	Pulse Mask for 64 kbps Int	ITU-T G.703. Annex-I

1.12 Interface 11 : ADSL

S.No.	Parameter Name	Standard Name
1.12.1	Bit Rate for ADSL Int	ANSI.T1.413-2. Annex-J1
1.12.2	Impulse Noise Protection for ADSL Int	Annex-J1
1.12.3	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
1.12.4	Insulation Test for ADSL Int	Annex-J1
1.12.5	Line Port impedance for ADSLx Int	Annex-J1

1.12.6	Loop resistance for ADSLx	ETSI EN 300 001. Annex-J1
1.12.7	PSD for ADSL Int	G.992.3 G992.5. Annex-J1
1.12.8	Transmitted Power At ATU-C for ADSLx Int	Annex-J1

1.13 Interface 12 : Fast Ethernet Optical

S.No.	Parameter Name	Standard Name
1.13.1	Average Launch power for FE Opt	IEEE 802.3u. Annex-H
1.13.2	Receiver Sensitivity for FE Opt	IEEE 802.3u. Annex-H
1.13.3	Wavelength for FE Opt	IEEE 802.3u. Annex-H

1.14 Interface 13 : ISDN BRI

S.No.	Parameter Name	Standard Name
1.14.1	Layer-III BRI Specification - Call Clearing	Q.931. Annex-D1
1.14.2	Layer-III BRI Specification - Call Setup	Q.931. Annex-D1

1.15 Interface 14 : ISDN PRI

S.No.	Parameter Name	Standard Name
1.15.1	Bit Rate Tolerance for PRI	G.703 Cl. 11.1 ETSI TBR-4 Cl. 9.2.3. Annex-I
1.15.2	Input Jitter Tolerance for PRI	G.823 I.431 ETSI TBR-4. Annex-I
1.15.3	Input Return Loss for PRI	G.703 Cl. 11.3 ETSI TBR-4 Cl. 9.3.1. Annex-I
1.15.4	Layer-III PRI Specification - Call Clearing	Q.931. Annex-D1
1.15.5	Layer-III PRI Specification - Call Setup	Q.931. Annex-D1
1.15.6	Output Jitter for PRI	G.823 I.431 ETSI TBR-4. Annex-I
1.15.7	Pulse Mask for PRI	G.703 Cl. 11.2 ETSI TBR-4 Cl. 9.2.1. Annex-I

1.16 Interface 15 : NX64 kbps

S.No.	Parameter Name	Standard Name
1.16.1	Input Jitter Tolerance for NX64 kbps Int	ITU-T G.823. Annex-I
1.16.2	Input Return Loss for NX64 kbps Int	ITU-T G.703. Annex-I
1.16.3	Nominal Bit Rate with Tolerance for NX64	ITU-T G.703. Annex-I

	kbps Int	
1.16.4	Output Jitter for NX64 kbps Int	ITU-T G.823. Annex-I
1.16.5	Pulse Mask for NX64 kbps Int	ITU-T G.703. Annex-I

1.17 Interface 16 : SHDSL

S.No.	Parameter Name	Standard Name
1.17.1	Impedance Unbalance About Earth for SHDSL Int	G.991.2. Annex-J1
1.17.2	Insulation Resistance for SHDSL int	G.991.2. Annex-J1
1.17.3	LCL for SHDSL Interface	G.991.2. Annex-J1
1.17.4	PSD for SHDSL Int	G.991.2. Annex-J1
1.17.5	Return Loss for SHDSL	G.991.2. Annex-J1
1.17.6	Throughput for SHDSL Interface	G.991.2. Annex-J1
1.17.7	Transmitted Power for SHDSL Int	G.991.2. Annex-J1

1.18 Interface 17 : STM-1 Electrical

S.No.	Parameter Name	Standard Name
1.18.1	Input Jitter Tolerance STM-1 Electrical	ITU-T G.825. Annex-K
1.18.2	Input Return Loss for STM-1 Electrical	ITU-T G.703. Annex-K
1.18.3	Nominal Bit Rate with Tolerance STM-1 Electrical Int	ITU-T G.703. Annex-K
1.18.4	Output Jitter for STM-1 Electrical Int	ITU-T G.825. Annex-K
1.18.5	Pulse Mask for STM-1 Electrical Int	ITU-T G.703. Annex-K

1.19 Interface 18 : STM-1 Optical

S.No.	Parameter Name	Standard Name
1.19.1	Input Jitter Tolerance for STM-1 Opt	ITU-T G.825. Annex-K
1.19.2	Mean Launched Power for STM-1 Opt Int	ITU-T G.957. Annex-K
1.19.3	Nominal Bit Rate with Tolerance STM-1 Opt Int	ITU-T G.957. Annex-K
1.19.4	Operating Wavelength Range for STM-1 Opt Int	ITU-T G.957. Annex-K
1.19.5	Output Jitter for STM-1 Opt Int	ITU-T G.783 G.825 Annex-K

1.19.6	Receiver Overload for STM-1 Opt Int	ITU-T G.957. Annex-K
1.19.7	Receiver Sensitivity for STM-1 Opt Int	ITU-T G.957. Annex-K

1.20 Interface 19 : STM-16 Optical

S.No.	Parameter Name	Standard Name
1.20.1	Input Jitter Tolerance for STM-16 Opt	G.825. Annex-K
1.20.2	Mean Launched Power for STM-16 Opt Int	ITU-T G.957. Annex-K
1.20.3	Nominal Bit Rate with Tolerance STM-16 Opt Int	ITU-T G.957. Annex-K
1.20.4	Operating Wavelength Range for STM-16 Opt Int	ITU-T G.957. Annex-K
1.20.5	Output Jitter for STM-16 Opt Int	ITU-T G.783. Annex-K
1.20.6	Receiver Overload for STM-16 Opt Int	ITU-T G.957. Annex-K
1.20.7	Receiver Sensitivity for STM-16 Opt Int	ITU-T G.957. Annex-K

1.21 Interface 20 : STM-4 Optical

S.No.	Parameter Name	Standard Name
1.21.1	Input Jitter Tolerance for STM-4 Opt	ITU-T G.825. Annex-K
1.21.2	Mean Launched Power for STM-4 Opt Int	ITU-T G.957. Annex-K
1.21.3	Nominal Bit Rate with Tolerance STM-4 Opt Int	ITU-T G.957 Annex-K
1.21.4	Operating Wavelength Range for STM-4 Opt Int	ITU-T G.957. Annex-K
1.21.5	Output Jitter for STM-4 Opt Int	ITU-T G.783. Annex-K
1.21.6	Receiver Overload for STM-4 Opt Int	ITU-T G.957. Annex-K
1.21.7	Receiver Sensitivity for STM-4 Opt Int	ITU-T G.957. Annex-K

1.22 Interface 21 : STM-64 Optical

S.No.	Parameter Name	Standard Name
1.22.1	Input Jitter Tolerance for STM-64 Opt	ITU-T G.825. Annex-K
1.22.2	Mean Launched Power for STM-64 Opt Int	ITU-T G.691. Annex-K
1.22.3	Nominal Bit Rate with Tolerance STM-64 Opt Int	ITU-T G.707 Annex-K

1.22.4	Operating Wavelength Range for STM-64 Opt Int	ITU-T G.691. Annex-K
1.22.5	Output Jitter for STM-64 Opt Int	ITU-T G.783. Annex-K
1.22.6	Receiver Overload for STM-64 Opt Int	ITU-T G.691. Annex-K
1.22.7	Receiver Sensitivity for STM-64 Opt Int	ITU-T G.691. Annex-K

1.23 Interface 22 : VDSL

S.No.	Parameter Name	Standard Name
1.23.1	Bit Rate for VDSLx Int	G.993.1 and G993.2. Annex-J1
1.23.2	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
1.23.3	Line Port impedance for VDSLx Int	Annex-J1
1.23.4	Loop resistance for VDSLx	ETSI EN 300 001. Annex-J1
1.23.5	Profiles for VDSLx	G.993.2(cl 7.2). Annex-J1
1.23.6	PSD for VDSLx Int	G.993.1(cl 6.2). G.993.2(cl 7.2) Ann-A B C. Annex-J1
1.23.7	Return Loss for VDSLx	G.993.1 Cl. 6.5. Annex-J1
1.23.8	Transmitted Power At ATU-C for VDSLx Int	Annex-J1

2. Variant 2 : Cloud Control Capable Router

2.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
2.1.1	Conducted And Radiated Emission - Class A	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
2.1.2	Conducted And Radiated Emission - Class B	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
2.1.3	Dynamic Routing OSPF or BGP or ISIS	RFC2328 (OSPFv2) RFC5340 (OSPFv3) RFC2545 (BGP for IPv6) RFC4271 (BGP4) RFC1195 (IS IS) Annex P11
2.1.4	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
2.1.5	Immunity to DC Voltage Dips and Short Interruptions	EN/IEC:61000-4-29. Annex-B
2.1.6	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2.

		Annex-B
2.1.7	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B
2.1.8	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
2.1.9	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
2.1.10	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B
2.1.11	IPV6 Complete Suite	RFC 2460 or 8200 4861 4862 1981 4443 Annex-P11
2.1.12	IPv6 Dual Stack as per RFC 4213	RFC 4213 clause 2.1 and 2.2. Annex-P6
2.1.13	IT Equipment Safety	IS 13252-1 or IEC:60950-1 or IEC 62368-1. Annex-A1
2.1.14	Manageability SNMP V2 or V3 or Netconf or YANG	RFC3410 RFC3416 Annex-P11or RFC6241 RFC6020
2.1.15	Static Routing	Annex-P11
2.1.16	TCP Parameters	RFC 793. Annex-P11

2.2 Interface 1 : 1 G Optical Ethernet

S.No.	Parameter Name	Standard Name
2.2.1	Average Launch power for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
2.2.2	Receiver Sensitivity 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
2.2.3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H

2.3 Interface 2 : 10 100 1000 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
2.3.1	Link Speed and Autonegotiation Test GE	IEEE 802.3. Annex-H

2.4 Interface 3 : 10 100 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
2.4.1	Link Speed and Autonegotiation Test FE	IEEE 802.3 Annex-H

2.5 Interface 4 : 10 G Optical Ethernet

S.No.	Parameter Name	Standard Name
2.5.1	Average Launch power for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
2.5.2	Receiver Sensitivity 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
2.5.3	Wavelength for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H

2.6 Interface 5 : 100 G Optical Ethernet

S.No.	Parameter Name	Standard Name
2.6.1	Average Launch power for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
2.6.2	Receiver Sensitivity 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
2.6.3	Wavelength for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H

2.7 Interface 6 : 2 Mbps - E1

S.No.	Parameter Name	Standard Name
2.7.1	Input Jitter Tolerance for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
2.7.2	Input Return Loss for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.3.1. Annex-I
2.7.3	Nominal Bit Rate with Tolerance for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.3. Annex-I
2.7.4	Output Jitter for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
2.7.5	Pulse Mask for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.1. Annex-I

2.8 Interface 7 : 200 G optical

S.No.	Parameter Name	Standard Name
2.8.1	Average Launch Power for 200 GE Opt	IEEE 802.3cn Cl 121 Cl 122
2.8.2	Receiver Sensitivity for 200 GE Opt	IEEE 802.3cn Cl 121 Cl 122
2.8.3	Wavelength for 200 GE Opt	IEEE 802.3cn Cl 121 Cl 122

2.9 Interface 8 : 25 G Optical Ethernet

S.No.	Parameter Name	Standard Name
2.9.1	Average Launch Power for 25 GE Opt	IEEE 802.3 - 2018 Cl. 114
2.9.2	Receiver Sensitivity for 25 GE Opt	IEEE 802.3 - 2018 Cl. 114

2.9.3	Wavelength for 25 GE Opt	IEEE 802.3 - 2018 Cl. 114
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2.10 Interface 9 : 34 Mbps - E3

S.No.	Parameter Name	Standard Name
2.10.1	Input Jitter Tolerance for 34 Mbps Int	ITU-T G.823. Annex-I
2.10.2	Input Return Loss for 34 Mbps Int	ITU-T G.703. Annex-I
2.10.3	Nominal Bit Rate with Tolerance for 34 Mbps Int	ITU-T G.703 Annex-I
2.10.4	Output Jitter for 34 Mbps Int	ITU-T G.823. Annex-I
2.10.5	Pulse Mask for 34 Mbps Int	ITU-T G.703. Annex-I

2.11 Interface 10 : 40 G Optical Ethernet

S.No.	Parameter Name	Standard Name
2.11.1	Average Launch power for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
2.11.2	Receiver Sensitivity 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
2.11.3	Wavelength for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H

2.12 Interface 11 : 400 G optical

S.No.	Parameter Name	Standard Name
2.12.1	Average Launch Power for 400 GE Opt	IEEE 802.3cn Cl 122 Cl 124
2.12.2	Receiver Sensitivity for 400 GE Opt	IEEE 802.3cn Cl 122 Cl 124
2.12.3	Wavelength for 400 GE Opt	IEEE 802.3cn Cl 122 Cl 124

2.13 Interface 12 : 45 Mbps

S.No.	Parameter Name	Standard Name
2.13.1	DC power	ITU-T G.703. Annex-I
2.13.2	Input Jitter Tolerance for 45 Mbps Int	ITU-T G.824. Annex-I
2.13.3	Nominal Bit Rate with Tolerance for 45 Mbps Int	ITU-T G.703 Annex-I
2.13.4	Output Jitter for 45 Mbps Int	ITU-T G.824 Annex-I
2.13.5	Pulse Mask for 45 Mbps Int	ITU-T G.703. Annex-I

2.14 Interface 13 : ADSL

S.No.	Parameter Name	Standard Name
2.14.1	Bit Rate for ADSL Int	ANSI.T1.413-2. Annex-J1
2.14.2	Impulse Noise Protection for ADSL Int	Annex-J1
2.14.3	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
2.14.4	Insulation Test for ADSL Int	Annex-J1
2.14.5	Line Port impedance for ADSLx Int	Annex-J1
2.14.6	Loop resistance for ADSLx	ETSI EN 300 001. Annex-J1
2.14.7	PSD for ADSL Int	G.992.3 G992.5. Annex-J1
2.14.8	Transmitted Power At ATU-C for ADSLx Int	Annex-J1

2.15 Interface 14 : Fast Ethernet Optical

S.No.	Parameter Name	Standard Name
2.15.1	Average Launch power for FE Opt	IEEE 802.3u. Annex-H
2.15.2	Receiver Sensitivity for FE Opt	IEEE 802.3u. Annex-H
2.15.3	Wavelength for FE Opt	IEEE 802.3u. Annex-H

2.16 Interface 15 : ISDN BRI

S.No.	Parameter Name	Standard Name
2.16.1	Layer-III BRI Specification - Call Clearing	Q.931. Annex-D1
2.16.2	Layer-III BRI Specification - Call Setup	Q.931. Annex-D1

2.17 Interface 16 : ISDN PRI

S.No.	Parameter Name	Standard Name
2.17.1	Bit Rate Tolerance for PRI	G.703 Cl. 11.1 ETSI TBR-4 Cl. 9.2.3. Annex-I
2.17.2	Input Jitter Tolerance for PRI	G.823 I.431 ETSI TBR-4. Annex-I
2.17.3	Input Return Loss for PRI	G.703 Cl. 11.3 ETSI TBR-4 Cl. 9.3.1. Annex-I
2.17.4	Layer-III PRI Specification - Call Clearing	Q.931. Annex-D1
2.17.5	Layer-III PRI Specification - Call Setup	Q.931. Annex-D1

2.17.6	Output Jitter for PRI	G.823 I.431 ETSI TBR-4. Annex-I
2.17.7	Pulse Mask for PRI	G.703 Cl. 11.2 ETSI TBR-4 Cl. 9.2.1. Annex-I

2.18 Interface 17 : LTE or LTE-A

S.No.	Parameter Name	Standard Name
2.18.1	Int Parameters for LTE or LTE-A	3GPP TS 36.521-1 or EN 301 908-13. Annex-F12
2.18.2	Operating Frequency for LTE or LTE-A Int	NFAP. Annex-F

2.19 Interface 18 : NX64 kbps

S.No.	Parameter Name	Standard Name
2.19.1	Input Jitter Tolerance for NX64 kbps Int	ITU-T G.823. Annex-I
2.19.2	Input Return Loss for NX64 kbps Int	ITU-T G.703. Annex-I
2.19.3	Nominal Bit Rate with Tolerance for NX64 kbps Int	ITU-T G.703. Annex-I
2.19.4	Output Jitter for NX64 kbps Int	ITU-T G.823. Annex-I
2.19.5	Pulse Mask for NX64 kbps Int	ITU-T G.703. Annex-I

2.20 Interface 19 : SHDSL

S.No.	Parameter Name	Standard Name
2.20.1	Impedance Unbalance About Earth for SHDSL Int	G.991.2. Annex-J1
2.20.2	Insulation Resistance for SHDSL int	G.991.2. Annex-J1
2.20.3	LCL for SHDSL Interface	G.991.2. Annex-J1
2.20.4	PSD for SHDSL Int	G.991.2. Annex-J1
2.20.5	Return Loss for SHDSL	G.991.2. Annex-J1
2.20.6	Throughput for SHDSL Interface	G.991.2. Annex-J1
2.20.7	Transmitted Power for SHDSL Int	G.991.2. Annex-J1

2.21 Interface 20 : STM-1 Electrical

S.No.	Parameter Name	Standard Name
2.21.1	Input Jitter Tolerance STM-1 Electrical	ITU-T G.825. Annex-K

2.21.2	Input Return Loss for STM-1 Electrical	ITU-T G.703. Annex-K
2.21.3	Nominal Bit Rate with Tolerance STM-1 Electrical Int	ITU-T G.703. Annex-K
2.21.4	Output Jitter for STM-1 Electrical Int	ITU-T G.825. Annex-K
2.21.5	Pulse Mask for STM-1 Electrical Int	ITU-T G.703. Annex-K

2.22 Interface 21 : STM-1 Optical

S.No.	Parameter Name	Standard Name
2.22.1	Input Jitter Tolerance for STM-1 Opt	ITU-T G.825. Annex-K
2.22.2	Mean Launched Power for STM-1 Opt Int	ITU-T G.957. Annex-K
2.22.3	Nominal Bit Rate with Tolerance STM-1 Opt Int	ITU-T G.957. Annex-K
2.22.4	Operating Wavelength Range for STM-1 Opt Int	ITU-T G.957. Annex-K
2.22.5	Output Jitter for STM-1 Opt Int	ITU-T G.783 G.825 Annex-K
2.22.6	Receiver Overload for STM-1 Opt Int	ITU-T G.957. Annex-K
2.22.7	Receiver Sensitivity for STM-1 Opt Int	ITU-T G.957. Annex-K

2.23 Interface 22 : STM-16 Optical

S.No.	Parameter Name	Standard Name
2.23.1	Input Jitter Tolerance for STM-16 Opt	G.825. Annex-K
2.23.2	Mean Launched Power for STM-16 Opt Int	ITU-T G.957. Annex-K
2.23.3	Nominal Bit Rate with Tolerance STM-16 Opt Int	ITU-T G.957. Annex-K
2.23.4	Operating Wavelength Range for STM-16 Opt Int	ITU-T G.957. Annex-K
2.23.5	Output Jitter for STM-16 Opt Int	ITU-T G.783. Annex-K
2.23.6	Receiver Overload for STM-16 Opt Int	ITU-T G.957. Annex-K
2.23.7	Receiver Sensitivity for STM-16 Opt Int	ITU-T G.957. Annex-K

2.24 Interface 23 : STM-4 Optical

S.No.	Parameter Name	Standard Name
2.24.1	Input Jitter Tolerance for STM-4 Opt	ITU-T G.825. Annex-K

2.24.2	Mean Launched Power for STM-4 Opt Int	ITU-T G.957. Annex-K
2.24.3	Nominal Bit Rate with Tolerance STM-4 Opt Int	ITU-T G.957 Annex-K
2.24.4	Operating Wavelength Range for STM-4 Opt Int	ITU-T G.957. Annex-K
2.24.5	Output Jitter for STM-4 Opt Int	ITU-T G.783. Annex-K
2.24.6	Receiver Overload for STM-4 Opt Int	ITU-T G.957. Annex-K
2.24.7	Receiver Sensitivity for STM-4 Opt Int	ITU-T G.957. Annex-K

2.25 Interface 24 : STM-64 Optical

S.No.	Parameter Name	Standard Name
2.25.1	Input Jitter Tolerance for STM-64 Opt	ITU-T G.825. Annex-K
2.25.2	Mean Launched Power for STM-64 Opt Int	ITU-T G.691. Annex-K
2.25.3	Nominal Bit Rate with Tolerance STM-64 Opt Int	ITU-T G.707 Annex-K
2.25.4	Operating Wavelength Range for STM-64 Opt Int	ITU-T G.691. Annex-K
2.25.5	Output Jitter for STM-64 Opt Int	ITU-T G.783. Annex-K
2.25.6	Receiver Overload for STM-64 Opt Int	ITU-T G.691. Annex-K
2.25.7	Receiver Sensitivity for STM-64 Opt Int	ITU-T G.691. Annex-K

2.26 Interface 25 : VDSL

S.No.	Parameter Name	Standard Name
2.26.1	Bit Rate for VDSLx Int	G.993.1 and G993.2. Annex-J1
2.26.2	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
2.26.3	Line Port impedance for VDSLx Int	Annex-J1
2.26.4	Loop resistance for VDSLx	ETSI EN 300 001. Annex-J1
2.26.5	Profiles for VDSLx	G.993.2(cl 7.2). Annex-J1
2.26.6	PSD for VDSLx Int	G.993.1(cl 6.2). G.993.2(cl 7.2) Ann-A B C. Annex-J1
2.26.7	Return Loss for VDSLx	G.993.1 Cl. 6.5. Annex-J1
2.26.8	Transmitted Power At ATU-C for VDSLx Int	Annex-J1

2.27 Interface 26 : WiFi

S.No.	Parameter Name	Standard Name
2.27.1	2.4 GHz WiFi Radio Conformance	ETSI EN 300 328 or FCC CFR47 pt 15.247 or FCC CFR47 pt 15.249. Annex-G3
2.27.2	5 GHz WiFi Radio Conformance	ETSI EN 301 893 or FCC CFR47 pt 15.407 or FCC CFR47 pt 15.249. Annex-G3
2.27.3	EIRP for Wifi Interface	Latest NFAP and GSRs issued by DoT WPC. Annex-G2
2.27.4	Frequency for WiFi equipments	DoT WPC GSR No. 45(E) 1048(E). Annex-G1

3. Variant 3 : IPV4 Router

3.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
3.1.1	Conducted And Radiated Emission - Class A	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
3.1.2	Conducted And Radiated Emission - Class B	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
3.1.3	Dynamic Routing	Annex-P11
3.1.4	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
3.1.5	Immunity to DC Voltage Dips and Short Interruptions	EN/IEC:61000-4-29. Annex-B
3.1.6	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2. Annex-B
3.1.7	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B
3.1.8	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
3.1.9	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
3.1.10	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B

3.1.11	IPV4 Parameters Set-D	RFC 791. Annex-P11
3.1.12	IT Equipment Safety	IS 13252-1 or IEC:60950-1 or IEC 62368-1. Annex-A1
3.1.13	Manageability SNMP V2 or V3	RFC 3410 3416 Annex-P11
3.1.14	OSPFv2	RFC 2328 Annex-P11
3.1.15	Static Routing	Annex-P11
3.1.16	TCP Parameters	RFC 793. Annex-P11

3.2 Interface 1 : 1 G Optical Ethernet

S.No.	Parameter Name	Standard Name
3.2.1	Average Launch power for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
3.2.2	Receiver Sensitivity 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
3.2.3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H

3.3 Interface 2 : 10 100 1000 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
3.3.1	Link Speed and Autonegotiation Test GE	IEEE 802.3. Annex-H

3.4 Interface 3 : 10 100 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
3.4.1	Link Speed and Autonegotiation Test FE	IEEE 802.3 Annex-H

3.5 Interface 4 : 10 G Optical Ethernet

S.No.	Parameter Name	Standard Name
3.5.1	Average Launch power for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
3.5.2	Receiver Sensitivity 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
3.5.3	Wavelength for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H

3.6 Interface 5 : 100 G Optical Ethernet

S.No.	Parameter Name	Standard Name
3.6.1	Average Launch power for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
3.6.2	Receiver Sensitivity 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H

3.6.3	Wavelength for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
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3.7 Interface 6 : 2 Mbps - E1

S.No.	Parameter Name	Standard Name
3.7.1	Input Jitter Tolerance for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
3.7.2	Input Return Loss for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.3.1. Annex-I
3.7.3	Nominal Bit Rate with Tolerance for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.3. Annex-I
3.7.4	Output Jitter for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
3.7.5	Pulse Mask for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.1. Annex-I

3.8 Interface 7 : 34 Mbps - E3

S.No.	Parameter Name	Standard Name
3.8.1	Input Jitter Tolerance for 34 Mbps Int	ITU-T G.823. Annex-I
3.8.2	Input Return Loss for 34 Mbps Int	ITU-T G.703. Annex-I
3.8.3	Nominal Bit Rate with Tolerance for 34 Mbps Int	ITU-T G.703 Annex-I
3.8.4	Output Jitter for 34 Mbps Int	ITU-T G.823. Annex-I
3.8.5	Pulse Mask for 34 Mbps Int	ITU-T G.703. Annex-I

3.9 Interface 8 : 40 G Optical Ethernet

S.No.	Parameter Name	Standard Name
3.9.1	Average Launch power for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
3.9.2	Receiver Sensitivity 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
3.9.3	Wavelength for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H

3.10 Interface 9 : 45 Mbps

S.No.	Parameter Name	Standard Name
3.10.1	DC power	ITU-T G.703. Annex-I
3.10.2	Input Jitter Tolerance for 45 Mbps Int	ITU-T G.824. Annex-I
3.10.3	Nominal Bit Rate with Tolerance for 45 Mbps Int	ITU-T G.703 Annex-I
3.10.4	Output Jitter for 45 Mbps Int	ITU-T G.824 Annex-I

3.10.5	Pulse Mask for 45 Mbps Int	ITU-T G.703. Annex-I
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3.11 Interface 10 : 64 kbps

S.No.	Parameter Name	Standard Name
3.11.1	Input Jitter Tolerance for 64 kbps Int	ITU-T G.823. Annex-I
3.11.2	Input Return Loss for 64 kbps Int	ITU-T G.703. Annex-I
3.11.3	Nominal Bit Rate with Tolerance for 64 kbps Int	ITU-T G.703 Annex-I
3.11.4	Output Jitter for 64 kbps Int	ITU-T G.823. Annex-I
3.11.5	Pulse Mask for 64 kbps Int	ITU-T G.703. Annex-I

3.12 Interface 11 : ADSL

S.No.	Parameter Name	Standard Name
3.12.1	Bit Rate for ADSL Int	ANSI.T1.413-2. Annex-J1
3.12.2	Impulse Noise Protection for ADSL Int	Annex-J1
3.12.3	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
3.12.4	Insulation Test for ADSL Int	Annex-J1
3.12.5	Line Port impedance for ADSLx Int	Annex-J1
3.12.6	Loop resistance for ADSLx	ETSI EN 300 001. Annex-J1
3.12.7	PSD for ADSL Int	G.992.3 G992.5. Annex-J1
3.12.8	Transmitted Power At ATU-C for ADSLx Int	Annex-J1

3.13 Interface 12 : Fast Ethernet Optical

S.No.	Parameter Name	Standard Name
3.13.1	Average Launch power for FE Opt	IEEE 802.3u. Annex-H
3.13.2	Receiver Sensitivity for FE Opt	IEEE 802.3u. Annex-H
3.13.3	Wavelength for FE Opt	IEEE 802.3u. Annex-H

3.14 Interface 13 : ISDN BRI

S.No.	Parameter Name	Standard Name
3.14.1	Layer-III BRI Specification - Call Clearing	Q.931. Annex-D1
3.14.2	Layer-III BRI Specification - Call Setup	Q.931. Annex-D1

3.15 Interface 14 : ISDN PRI

S.No.	Parameter Name	Standard Name
3.15.1	Bit Rate Tolerance for PRI	G.703 Cl. 11.1 ETSI TBR-4 Cl. 9.2.3. Annex-I
3.15.2	Input Jitter Tolerance for PRI	G.823 I.431 ETSI TBR-4. Annex-I
3.15.3	Input Return Loss for PRI	G.703 Cl. 11.3 ETSI TBR-4 Cl. 9.3.1. Annex-I
3.15.4	Layer-III PRI Specification - Call Clearing	Q.931. Annex-D1
3.15.5	Layer-III PRI Specification - Call Setup	Q.931. Annex-D1
3.15.6	Output Jitter for PRI	G.823 I.431 ETSI TBR-4. Annex-I
3.15.7	Pulse Mask for PRI	G.703 Cl. 11.2 ETSI TBR-4 Cl. 9.2.1. Annex-I

3.16 Interface 15 : NX64 kbps

S.No.	Parameter Name	Standard Name
3.16.1	Input Jitter Tolerance for NX64 kbps Int	ITU-T G.823. Annex-I
3.16.2	Input Return Loss for NX64 kbps Int	ITU-T G.703. Annex-I
3.16.3	Nominal Bit Rate with Tolerance for NX64 kbps Int	ITU-T G.703. Annex-I
3.16.4	Output Jitter for NX64 kbps Int	ITU-T G.823. Annex-I
3.16.5	Pulse Mask for NX64 kbps Int	ITU-T G.703. Annex-I

3.17 Interface 16 : SHDSL

S.No.	Parameter Name	Standard Name
3.17.1	Impedance Unbalance About Earth for SHDSL Int	G.991.2. Annex-J1
3.17.2	Insulation Resistance for SHDSL int	G.991.2. Annex-J1
3.17.3	LCL for SHDSL Interface	G.991.2. Annex-J1
3.17.4	PSD for SHDSL Int	G.991.2. Annex-J1
3.17.5	Return Loss for SHDSL	G.991.2. Annex-J1
3.17.6	Throughput for SHDSL Interface	G.991.2. Annex-J1
3.17.7	Transmitted Power for SHDSL Int	G.991.2. Annex-J1

3.18 Interface 17 : STM-1 Electrical

S.No.	Parameter Name	Standard Name
3.18.1	Input Jitter Tolerance STM-1 Electrical	ITU-T G.825. Annex-K
3.18.2	Input Return Loss for STM-1 Electrical	ITU-T G.703. Annex-K
3.18.3	Nominal Bit Rate with Tolerance STM-1 Electrical Int	ITU-T G.703. Annex-K
3.18.4	Output Jitter for STM-1 Electrical Int	ITU-T G.825. Annex-K
3.18.5	Pulse Mask for STM-1 Electrical Int	ITU-T G.703. Annex-K

3.19 Interface 18 : STM-1 Optical

S.No.	Parameter Name	Standard Name
3.19.1	Input Jitter Tolerance for STM-1 Opt	ITU-T G.825. Annex-K
3.19.2	Mean Launched Power for STM-1 Opt Int	ITU-T G.957. Annex-K
3.19.3	Nominal Bit Rate with Tolerance STM-1 Opt Int	ITU-T G.957. Annex-K
3.19.4	Operating Wavelength Range for STM-1 Opt Int	ITU-T G.957. Annex-K
3.19.5	Output Jitter for STM-1 Opt Int	ITU-T G.783 G.825 Annex-K
3.19.6	Receiver Overload for STM-1 Opt Int	ITU-T G.957. Annex-K
3.19.7	Receiver Sensitivity for STM-1 Opt Int	ITU-T G.957. Annex-K

3.20 Interface 19 : STM-16 Optical

S.No.	Parameter Name	Standard Name
3.20.1	Input Jitter Tolerance for STM-16 Opt	G.825. Annex-K
3.20.2	Mean Launched Power for STM-16 Opt Int	ITU-T G.957. Annex-K
3.20.3	Nominal Bit Rate with Tolerance STM-16 Opt Int	ITU-T G.957. Annex-K
3.20.4	Operating Wavelength Range for STM-16 Opt Int	ITU-T G.957. Annex-K
3.20.5	Output Jitter for STM-16 Opt Int	ITU-T G.783. Annex-K
3.20.6	Receiver Overload for STM-16 Opt Int	ITU-T G.957. Annex-K
3.20.7	Receiver Sensitivity for STM-16 Opt Int	ITU-T G.957. Annex-K

3.21 Interface 20 : STM-4 Optical

S.No.	Parameter Name	Standard Name
3.21.1	Input Jitter Tolerance for STM-4 Opt	ITU-T G.825. Annex-K
3.21.2	Mean Launched Power for STM-4 Opt Int	ITU-T G.957. Annex-K
3.21.3	Nominal Bit Rate with Tolerance STM-4 Opt Int	ITU-T G.957 Annex-K
3.21.4	Operating Wavelength Range for STM-4 Opt Int	ITU-T G.957. Annex-K
3.21.5	Output Jitter for STM-4 Opt Int	ITU-T G.783. Annex-K
3.21.6	Receiver Overload for STM-4 Opt Int	ITU-T G.957. Annex-K
3.21.7	Receiver Sensitivity for STM-4 Opt Int	ITU-T G.957. Annex-K

3.22 Interface 21 : STM-64 Optical

S.No.	Parameter Name	Standard Name
3.22.1	Input Jitter Tolerance for STM-64 Opt	ITU-T G.825. Annex-K
3.22.2	Mean Launched Power for STM-64 Opt Int	ITU-T G.691. Annex-K
3.22.3	Nominal Bit Rate with Tolerance STM-64 Opt Int	ITU-T G.707 Annex-K
3.22.4	Operating Wavelength Range for STM-64 Opt Int	ITU-T G.691. Annex-K
3.22.5	Output Jitter for STM-64 Opt Int	ITU-T G.783. Annex-K
3.22.6	Receiver Overload for STM-64 Opt Int	ITU-T G.691. Annex-K
3.22.7	Receiver Sensitivity for STM-64 Opt Int	ITU-T G.691. Annex-K

3.23 Interface 22 : VDSL

S.No.	Parameter Name	Standard Name
3.23.1	Bit Rate for VDSLx Int	G.993.1 and G993.2. Annex-J1
3.23.2	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
3.23.3	Line Port impedance for VDSLx Int	Annex-J1
3.23.4	Loop resistance for VDSLx	ETSI EN 300 001. Annex-J1
3.23.5	Profiles for VDSLx	G.993.2(cl 7.2). Annex-J1
3.23.6	PSD for VDSLx Int	G.993.1(cl 6.2). G.993.2(cl 7.2) Ann-A B C.

		Annex-J1
3.23.7	Return Loss for VDSLx	G.993.1 Cl. 6.5. Annex-J1
3.23.8	Transmitted Power At ATU-C for VDSLx Int	Annex-J1

4. Variant 4 : IPV6 Router

4.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
4.1.1	Conducted And Radiated Emission - Class A	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
4.1.2	Conducted And Radiated Emission - Class B	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
4.1.3	Dynamic Routing	Annex-P11
4.1.4	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
4.1.5	Immunity to DC Voltage Dips and Short Interruptions	EN/IEC:61000-4-29. Annex-B
4.1.6	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2. Annex-B
4.1.7	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B
4.1.8	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
4.1.9	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
4.1.10	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B
4.1.11	IPV4 Parameters Set-D	RFC 791. Annex-P11
4.1.12	IPV6 Complete Suite	RFC 2460 or 8200 4861 4862 1981 4443 Annex-P11
4.1.13	IT Equipment Safety	IS 13252-1 or IEC:60950-1 or IEC 62368-1. Annex-A1
4.1.14	Manageability SNMP V2 or V3	RFC 3410 3416 Annex-P11
4.1.15	OSPFv3 for IPV6	RFC 2740 Annex-P11

4.1.16	Static Routing	Annex-P11
4.1.17	TCP Parameters	RFC 793. Annex-P11

4.2 Interface 1 : 1 G Optical Ethernet

S.No.	Parameter Name	Standard Name
4.2.1	Average Launch power for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
4.2.2	Receiver Sensitivity 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
4.2.3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H

4.3 Interface 2 : 10 100 1000 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
4.3.1	Link Speed and Autonegotiation Test GE	IEEE 802.3. Annex-H

4.4 Interface 3 : 10 100 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
4.4.1	Link Speed and Autonegotiation Test FE	IEEE 802.3 Annex-H

4.5 Interface 4 : 10 G Optical Ethernet

S.No.	Parameter Name	Standard Name
4.5.1	Average Launch power for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
4.5.2	Receiver Sensitivity 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
4.5.3	Wavelength for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H

4.6 Interface 5 : 100 G Optical Ethernet

S.No.	Parameter Name	Standard Name
4.6.1	Average Launch power for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
4.6.2	Receiver Sensitivity 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
4.6.3	Wavelength for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H

4.7 Interface 6 : 2 Mbps - E1

S.No.	Parameter Name	Standard Name
4.7.1	Input Jitter Tolerance for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I

4.7.2	Input Return Loss for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.3.1. Annex-I
4.7.3	Nominal Bit Rate with Tolerance for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.3. Annex-I
4.7.4	Output Jitter for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
4.7.5	Pulse Mask for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.1. Annex-I

4.8 Interface 7 : 34 Mbps - E3

S.No.	Parameter Name	Standard Name
4.8.1	Input Jitter Tolerance for 34 Mbps Int	ITU-T G.823. Annex-I
4.8.2	Input Return Loss for 34 Mbps Int	ITU-T G.703. Annex-I
4.8.3	Nominal Bit Rate with Tolerance for 34 Mbps Int	ITU-T G.703 Annex-I
4.8.4	Output Jitter for 34 Mbps Int	ITU-T G.823. Annex-I
4.8.5	Pulse Mask for 34 Mbps Int	ITU-T G.703. Annex-I

4.9 Interface 8 : 40 G Optical Ethernet

S.No.	Parameter Name	Standard Name
4.9.1	Average Launch power for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
4.9.2	Receiver Sensitivity 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
4.9.3	Wavelength for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H

4.10 Interface 9 : 45 Mbps

S.No.	Parameter Name	Standard Name
4.10.1	DC power	ITU-T G.703. Annex-I
4.10.2	Input Jitter Tolerance for 45 Mbps Int	ITU-T G.824. Annex-I
4.10.3	Nominal Bit Rate with Tolerance for 45 Mbps Int	ITU-T G.703 Annex-I
4.10.4	Output Jitter for 45 Mbps Int	ITU-T G.824 Annex-I
4.10.5	Pulse Mask for 45 Mbps Int	ITU-T G.703. Annex-I

4.11 Interface 10 : 64 kbps

S.No.	Parameter Name	Standard Name
4.11.1	Input Jitter Tolerance for 64 kbps Int	ITU-T G.823. Annex-I

4.11.2	Input Return Loss for 64 kbps Int	ITU-T G.703. Annex-I
4.11.3	Nominal Bit Rate with Tolerance for 64 kbps Int	ITU-T G.703 Annex-I
4.11.4	Output Jitter for 64 kbps Int	ITU-T G.823. Annex-I
4.11.5	Pulse Mask for 64 kbps Int	ITU-T G.703. Annex-I

4.12 Interface 11 : ADSL

S.No.	Parameter Name	Standard Name
4.12.1	Bit Rate for ADSL Int	ANSI.T1.413-2. Annex-J1
4.12.2	Impulse Noise Protection for ADSL Int	Annex-J1
4.12.3	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
4.12.4	Insulation Test for ADSL Int	Annex-J1
4.12.5	Line Port impedance for ADSLx Int	Annex-J1
4.12.6	Loop resistance for ADSLx	ETSI EN 300 001. Annex-J1
4.12.7	PSD for ADSL Int	G.992.3 G992.5. Annex-J1
4.12.8	Transmitted Power At ATU-C for ADSLx Int	Annex-J1

4.13 Interface 12 : Fast Ethernet Optical

S.No.	Parameter Name	Standard Name
4.13.1	Average Launch power for FE Opt	IEEE 802.3u. Annex-H
4.13.2	Receiver Sensitivity for FE Opt	IEEE 802.3u. Annex-H
4.13.3	Wavelength for FE Opt	IEEE 802.3u. Annex-H

4.14 Interface 13 : ISDN BRI

S.No.	Parameter Name	Standard Name
4.14.1	Layer-III BRI Specification - Call Clearing	Q.931. Annex-D1
4.14.2	Layer-III BRI Specification - Call Setup	Q.931. Annex-D1

4.15 Interface 14 : ISDN PRI

S.No.	Parameter Name	Standard Name
4.15.1	Bit Rate Tolerance for PRI	G.703 Cl. 11.1 ETSI TBR-4 Cl. 9.2.3. Annex-I

4.15.2	Input Jitter Tolerance for PRI	G.823 I.431 ETSI TBR-4. Annex-I
4.15.3	Input Return Loss for PRI	G.703 Cl. 11.3 ETSI TBR-4 Cl. 9.3.1. Annex-I
4.15.4	Layer-III PRI Specification - Call Clearing	Q.931. Annex-D1
4.15.5	Layer-III PRI Specification - Call Setup	Q.931. Annex-D1
4.15.6	Output Jitter for PRI	G.823 I.431 ETSI TBR-4. Annex-I
4.15.7	Pulse Mask for PRI	G.703 Cl. 11.2 ETSI TBR-4 Cl. 9.2.1. Annex-I

4.16 Interface 15 : NX64 kbps

S.No.	Parameter Name	Standard Name
4.16.1	Input Jitter Tolerance for NX64 kbps Int	ITU-T G.823. Annex-I
4.16.2	Input Return Loss for NX64 kbps Int	ITU-T G.703. Annex-I
4.16.3	Nominal Bit Rate with Tolerance for NX64 kbps Int	ITU-T G.703. Annex-I
4.16.4	Output Jitter for NX64 kbps Int	ITU-T G.823. Annex-I
4.16.5	Pulse Mask for NX64 kbps Int	ITU-T G.703. Annex-I

4.17 Interface 16 : SHDSL

S.No.	Parameter Name	Standard Name
4.17.1	Impedance Unbalance About Earth for SHDSL Int	G.991.2. Annex-J1
4.17.2	Insulation Resistance for SHDSL int	G.991.2. Annex-J1
4.17.3	LCL for SHDSL Interface	G.991.2. Annex-J1
4.17.4	PSD for SHDSL Int	G.991.2. Annex-J1
4.17.5	Return Loss for SHDSL	G.991.2. Annex-J1
4.17.6	Throughput for SHDSL Interface	G.991.2. Annex-J1
4.17.7	Transmitted Power for SHDSL Int	G.991.2. Annex-J1

4.18 Interface 17 : STM-1 Electrical

S.No.	Parameter Name	Standard Name
4.18.1	Input Jitter Tolerance STM-1 Electrical	ITU-T G.825. Annex-K
4.18.2	Input Return Loss for STM-1 Electrical	ITU-T G.703. Annex-K

4.18.3	Nominal Bit Rate with Tolerance STM-1 Electrical Int	ITU-T G.703. Annex-K
4.18.4	Output Jitter for STM-1 Electrical Int	ITU-T G.825. Annex-K
4.18.5	Pulse Mask for STM-1 Electrical Int	ITU-T G.703. Annex-K

4.19 Interface 18 : STM-1 Optical

S.No.	Parameter Name	Standard Name
4.19.1	Input Jitter Tolerance for STM-1 Opt	ITU-T G.825. Annex-K
4.19.2	Mean Launched Power for STM-1 Opt Int	ITU-T G.957. Annex-K
4.19.3	Nominal Bit Rate with Tolerance STM-1 Opt Int	ITU-T G.957. Annex-K
4.19.4	Operating Wavelength Range for STM-1 Opt Int	ITU-T G.957. Annex-K
4.19.5	Output Jitter for STM-1 Opt Int	ITU-T G.783 G.825 Annex-K
4.19.6	Receiver Overload for STM-1 Opt Int	ITU-T G.957. Annex-K
4.19.7	Receiver Sensitivity for STM-1 Opt Int	ITU-T G.957. Annex-K

4.20 Interface 19 : STM-16 Optical

S.No.	Parameter Name	Standard Name
4.20.1	Input Jitter Tolerance for STM-16 Opt	G.825. Annex-K
4.20.2	Mean Launched Power for STM-16 Opt Int	ITU-T G.957. Annex-K
4.20.3	Nominal Bit Rate with Tolerance STM-16 Opt Int	ITU-T G.957. Annex-K
4.20.4	Operating Wavelength Range for STM-16 Opt Int	ITU-T G.957. Annex-K
4.20.5	Output Jitter for STM-16 Opt Int	ITU-T G.783. Annex-K
4.20.6	Receiver Overload for STM-16 Opt Int	ITU-T G.957. Annex-K
4.20.7	Receiver Sensitivity for STM-16 Opt Int	ITU-T G.957. Annex-K

4.21 Interface 20 : STM-4 Optical

S.No.	Parameter Name	Standard Name
4.21.1	Input Jitter Tolerance for STM-4 Opt	ITU-T G.825. Annex-K
4.21.2	Mean Launched Power for STM-4 Opt Int	ITU-T G.957. Annex-K

4.21.3	Nominal Bit Rate with Tolerance STM-4 Opt Int	ITU-T G.957 Annex-K
4.21.4	Operating Wavelength Range for STM-4 Opt Int	ITU-T G.957. Annex-K
4.21.5	Output Jitter for STM-4 Opt Int	ITU-T G.783. Annex-K
4.21.6	Receiver Overload for STM-4 Opt Int	ITU-T G.957. Annex-K
4.21.7	Receiver Sensitivity for STM-4 Opt Int	ITU-T G.957. Annex-K

4.22 Interface 21 : STM-64 Optical

S.No.	Parameter Name	Standard Name
4.22.1	Input Jitter Tolerance for STM-64 Opt	ITU-T G.825. Annex-K
4.22.2	Mean Launched Power for STM-64 Opt Int	ITU-T G.691. Annex-K
4.22.3	Nominal Bit Rate with Tolerance STM-64 Opt Int	ITU-T G.707 Annex-K
4.22.4	Operating Wavelength Range for STM-64 Opt Int	ITU-T G.691. Annex-K
4.22.5	Output Jitter for STM-64 Opt Int	ITU-T G.783. Annex-K
4.22.6	Receiver Overload for STM-64 Opt Int	ITU-T G.691. Annex-K
4.22.7	Receiver Sensitivity for STM-64 Opt Int	ITU-T G.691. Annex-K

4.23 Interface 22 : VDSL

S.No.	Parameter Name	Standard Name
4.23.1	Bit Rate for VDSLx Int	G.993.1 and G993.2. Annex-J1
4.23.2	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
4.23.3	Line Port impedance for VDSLx Int	Annex-J1
4.23.4	Loop resistance for VDSLx	ETSI EN 300 001. Annex-J1
4.23.5	Profiles for VDSLx	G.993.2(cl 7.2). Annex-J1
4.23.6	PSD for VDSLx Int	G.993.1(cl 6.2). G.993.2(cl 7.2) Ann-A B C. Annex-J1
4.23.7	Return Loss for VDSLx	G.993.1 Cl. 6.5. Annex-J1
4.23.8	Transmitted Power At ATU-C for VDSLx Int	Annex-J1

5. Variant 5 : MPLS Router

5.1 Parameters Linked with Product Variant

S.No.	Parameter Name	Standard Name
5.1.1	BGP for IPV6	RFC 2545. Annex-P11
5.1.2	BGP4 as per RFC 4271 and MBGP	RFC 4271 4760. Annex-P11
5.1.3	Conducted And Radiated Emission - Class A	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
5.1.4	Conducted And Radiated Emission - Class B	TEC EMI EMC Standard CISPR 22/32 EN55022/32. Annex-B
5.1.5	Dynamic Routing	Annex-P11
5.1.6	Immunity to AC Voltage Dips and Short Interruptions	TEC EMI EMC Standard EN/IEC:61000-4-11. Annex-B
5.1.7	Immunity to DC Voltage Dips and Short Interruptions	EN/IEC:61000-4-29. Annex-B
5.1.8	Immunity to Electrostatic Discharge	TEC EMI EMC Standard EN/IEC:61000-4-2. Annex-B
5.1.9	Immunity to Fast Transients (Burst)	TEC EMI EMC Standard EN/IEC:61000-4-4. Annex-B
5.1.10	Immunity to Radiated RF	TEC EMI EMC Standard EN/IEC:61000-4-3. Annex-B
5.1.11	Immunity to RF Field Induced Conducted Disturbance	TEC EMI EMC Standard EN/IEC:61000-4-6. Annex-B
5.1.12	Immunity to Surges	TEC EMI EMC Standard EN/IEC:61000-4-5. Annex-B
5.1.13	IPV4 Parameters Set-D	RFC 791. Annex-P11
5.1.14	IPV6 Complete Suite	RFC 2460 or 8200 4861 4862 1981 4443 Annex-P11
5.1.15	IT Equipment Safety	IS 13252-1 or IEC:60950-1 or IEC 62368-1. Annex-A1
5.1.16	LDP as per RFC5036	RFC 5036 Annex-P11
5.1.17	Manageability SNMP V2 or V3	RFC 3410 3416 Annex-P11
5.1.18	OSPFv2	RFC 2328 Annex-P11
5.1.19	OSPFv3 for IPV6	RFC 2740 Annex-P11
5.1.20	Static Routing	Annex-P11

5.1.21	TCP Parameters	RFC 793. Annex-P11
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5.2 Interface 1 : 1 G Optical Ethernet

S.No.	Parameter Name	Standard Name
5.2.1	Average Launch power for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
5.2.2	Receiver Sensitivity 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H
5.2.3	Wavelength for 1 GE Opt	IEEE 802.3z Cl. 38. Annex-H

5.3 Interface 2 : 10 100 1000 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
5.3.1	Link Speed and Autonegotiation Test GE	IEEE 802.3. Annex-H

5.4 Interface 3 : 10 100 BASE-T Ethernet

S.No.	Parameter Name	Standard Name
5.4.1	Link Speed and Autonegotiation Test FE	IEEE 802.3 Annex-H

5.5 Interface 4 : 10 G Optical Ethernet

S.No.	Parameter Name	Standard Name
5.5.1	Average Launch power for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
5.5.2	Receiver Sensitivity 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H
5.5.3	Wavelength for 10 GE Opt	IEEE 802.3ae Cl. 52. Annex-H

5.6 Interface 5 : 100 G Optical Ethernet

S.No.	Parameter Name	Standard Name
5.6.1	Average Launch power for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
5.6.2	Receiver Sensitivity 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H
5.6.3	Wavelength for 100 GE Opt	IEEE 802.3ba Cl. 86 88. Annex-H

5.7 Interface 6 : 2 Mbps - E1

S.No.	Parameter Name	Standard Name
5.7.1	Input Jitter Tolerance for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
5.7.2	Input Return Loss for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.3.1. Annex-I

5.7.3	Nominal Bit Rate with Tolerance for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.3. Annex-I
5.7.4	Output Jitter for 2 Mbps Int	ITU-T G.823 / ETSI TBR-4. Annex-I
5.7.5	Pulse Mask for 2 Mbps Int	ITU-T G.703 / ETSI TBR-4 Cl. 9.2.1. Annex-I

5.8 Interface 7 : 34 Mbps - E3

S.No.	Parameter Name	Standard Name
5.8.1	Input Jitter Tolerance for 34 Mbps Int	ITU-T G.823. Annex-I
5.8.2	Input Return Loss for 34 Mbps Int	ITU-T G.703. Annex-I
5.8.3	Nominal Bit Rate with Tolerance for 34 Mbps Int	ITU-T G.703 Annex-I
5.8.4	Output Jitter for 34 Mbps Int	ITU-T G.823. Annex-I
5.8.5	Pulse Mask for 34 Mbps Int	ITU-T G.703. Annex-I

5.9 Interface 8 : 40 G Optical Ethernet

S.No.	Parameter Name	Standard Name
5.9.1	Average Launch power for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
5.9.2	Receiver Sensitivity 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H
5.9.3	Wavelength for 40 GE Opt	IEEE 802.3ba Cl. 86 87. Annex-H

5.10 Interface 9 : 45 Mbps

S.No.	Parameter Name	Standard Name
5.10.1	DC power	ITU-T G.703. Annex-I
5.10.2	Input Jitter Tolerance for 45 Mbps Int	ITU-T G.824. Annex-I
5.10.3	Nominal Bit Rate with Tolerance for 45 Mbps Int	ITU-T G.703 Annex-I
5.10.4	Output Jitter for 45 Mbps Int	ITU-T G.824 Annex-I
5.10.5	Pulse Mask for 45 Mbps Int	ITU-T G.703. Annex-I

5.11 Interface 10 : 64 kbps

S.No.	Parameter Name	Standard Name
5.11.1	Input Jitter Tolerance for 64 kbps Int	ITU-T G.823. Annex-I
5.11.2	Input Return Loss for 64 kbps Int	ITU-T G.703. Annex-I

5.11.3	Nominal Bit Rate with Tolerance for 64 kbps Int	ITU-T G.703 Annex-I
5.11.4	Output Jitter for 64 kbps Int	ITU-T G.823. Annex-I
5.11.5	Pulse Mask for 64 kbps Int	ITU-T G.703. Annex-I

5.12 Interface 11 : ADSL

S.No.	Parameter Name	Standard Name
5.12.1	Bit Rate for ADSL Int	ANSI.T1.413-2. Annex-J1
5.12.2	Impulse Noise Protection for ADSL Int	Annex-J1
5.12.3	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
5.12.4	Insulation Test for ADSL Int	Annex-J1
5.12.5	Line Port impedance for ADSLx Int	Annex-J1
5.12.6	Loop resistance for ADSLx	ETSI EN 300 001. Annex-J1
5.12.7	PSD for ADSL Int	G.992.3 G992.5. Annex-J1
5.12.8	Transmitted Power At ATU-C for ADSLx Int	Annex-J1

5.13 Interface 12 : Fast Ethernet Optical

S.No.	Parameter Name	Standard Name
5.13.1	Average Launch power for FE Opt	IEEE 802.3u. Annex-H
5.13.2	Receiver Sensitivity for FE Opt	IEEE 802.3u. Annex-H
5.13.3	Wavelength for FE Opt	IEEE 802.3u. Annex-H

5.14 Interface 13 : ISDN BRI

S.No.	Parameter Name	Standard Name
5.14.1	Layer-III BRI Specification - Call Clearing	Q.931. Annex-D1
5.14.2	Layer-III BRI Specification - Call Setup	Q.931. Annex-D1

5.15 Interface 14 : ISDN PRI

S.No.	Parameter Name	Standard Name
5.15.1	Bit Rate Tolerance for PRI	G.703 Cl. 11.1 ETSI TBR-4 Cl. 9.2.3. Annex-I
5.15.2	Input Jitter Tolerance for PRI	G.823 I.431 ETSI TBR-4. Annex-I

5.15.3	Input Return Loss for PRI	G.703 Cl. 11.3 ETSI TBR-4 Cl. 9.3.1. Annex-I
5.15.4	Layer-III PRI Specification - Call Clearing	Q.931. Annex-D1
5.15.5	Layer-III PRI Specification - Call Setup	Q.931. Annex-D1
5.15.6	Output Jitter for PRI	G.823 I.431 ETSI TBR-4. Annex-I
5.15.7	Pulse Mask for PRI	G.703 Cl. 11.2 ETSI TBR-4 Cl. 9.2.1. Annex-I

5.16 Interface 15 : NX64 kbps

S.No.	Parameter Name	Standard Name
5.16.1	Input Jitter Tolerance for NX64 kbps Int	ITU-T G.823. Annex-I
5.16.2	Input Return Loss for NX64 kbps Int	ITU-T G.703. Annex-I
5.16.3	Nominal Bit Rate with Tolerance for NX64 kbps Int	ITU-T G.703. Annex-I
5.16.4	Output Jitter for NX64 kbps Int	ITU-T G.823. Annex-I
5.16.5	Pulse Mask for NX64 kbps Int	ITU-T G.703. Annex-I

5.17 Interface 16 : SHDSL

S.No.	Parameter Name	Standard Name
5.17.1	Impedance Unbalance About Earth for SHDSL Int	G.991.2. Annex-J1
5.17.2	Insulation Resistance for SHDSL int	G.991.2. Annex-J1
5.17.3	LCL for SHDSL Interface	G.991.2. Annex-J1
5.17.4	PSD for SHDSL Int	G.991.2. Annex-J1
5.17.5	Return Loss for SHDSL	G.991.2. Annex-J1
5.17.6	Throughput for SHDSL Interface	G.991.2. Annex-J1
5.17.7	Transmitted Power for SHDSL Int	G.991.2. Annex-J1

5.18 Interface 17 : STM-1 Electrical

S.No.	Parameter Name	Standard Name
5.18.1	Input Jitter Tolerance STM-1 Electrical	ITU-T G.825. Annex-K
5.18.2	Input Return Loss for STM-1 Electrical	ITU-T G.703. Annex-K
5.18.3	Nominal Bit Rate with Tolerance STM-1	ITU-T G.703. Annex-K

	Electrical Int	
5.18.4	Output Jitter for STM-1 Electrical Int	ITU-T G.825. Annex-K
5.18.5	Pulse Mask for STM-1 Electrical Int	ITU-T G.703. Annex-K

5.19 Interface 18 : STM-1 Optical

S.No.	Parameter Name	Standard Name
5.19.1	Input Jitter Tolerance for STM-1 Opt	ITU-T G.825. Annex-K
5.19.2	Mean Launched Power for STM-1 Opt Int	ITU-T G.957. Annex-K
5.19.3	Nominal Bit Rate with Tolerance STM-1 Opt Int	ITU-T G.957. Annex-K
5.19.4	Operating Wavelength Range for STM-1 Opt Int	ITU-T G.957. Annex-K
5.19.5	Output Jitter for STM-1 Opt Int	ITU-T G.783 G.825 Annex-K
5.19.6	Receiver Overload for STM-1 Opt Int	ITU-T G.957. Annex-K
5.19.7	Receiver Sensitivity for STM-1 Opt Int	ITU-T G.957. Annex-K

5.20 Interface 19 : STM-16 Optical

S.No.	Parameter Name	Standard Name
5.20.1	Input Jitter Tolerance for STM-16 Opt	G.825. Annex-K
5.20.2	Mean Launched Power for STM-16 Opt Int	ITU-T G.957. Annex-K
5.20.3	Nominal Bit Rate with Tolerance STM-16 Opt Int	ITU-T G.957. Annex-K
5.20.4	Operating Wavelength Range for STM-16 Opt Int	ITU-T G.957. Annex-K
5.20.5	Output Jitter for STM-16 Opt Int	ITU-T G.783. Annex-K
5.20.6	Receiver Overload for STM-16 Opt Int	ITU-T G.957. Annex-K
5.20.7	Receiver Sensitivity for STM-16 Opt Int	ITU-T G.957. Annex-K

5.21 Interface 20 : STM-4 Optical

S.No.	Parameter Name	Standard Name
5.21.1	Input Jitter Tolerance for STM-4 Opt	ITU-T G.825. Annex-K
5.21.2	Mean Launched Power for STM-4 Opt Int	ITU-T G.957. Annex-K
5.21.3	Nominal Bit Rate with Tolerance STM-4 Opt	ITU-T G.957 Annex-K

	Int	
5.21.4	Operating Wavelength Range for STM-4 Opt Int	ITU-T G.957. Annex-K
5.21.5	Output Jitter for STM-4 Opt Int	ITU-T G.783. Annex-K
5.21.6	Receiver Overload for STM-4 Opt Int	ITU-T G.957. Annex-K
5.21.7	Receiver Sensitivity for STM-4 Opt Int	ITU-T G.957. Annex-K

5.22 Interface 21 : STM-64 Optical

S.No.	Parameter Name	Standard Name
5.22.1	Input Jitter Tolerance for STM-64 Opt	ITU-T G.825. Annex-K
5.22.2	Mean Launched Power for STM-64 Opt Int	ITU-T G.691. Annex-K
5.22.3	Nominal Bit Rate with Tolerance STM-64 Opt Int	ITU-T G.707 Annex-K
5.22.4	Operating Wavelength Range for STM-64 Opt Int	ITU-T G.691. Annex-K
5.22.5	Output Jitter for STM-64 Opt Int	ITU-T G.783. Annex-K
5.22.6	Receiver Overload for STM-64 Opt Int	ITU-T G.691. Annex-K
5.22.7	Receiver Sensitivity for STM-64 Opt Int	ITU-T G.691. Annex-K

5.23 Interface 22 : VDSL

S.No.	Parameter Name	Standard Name
5.23.1	Bit Rate for VDSLx Int	G.993.1 and G993.2. Annex-J1
5.23.2	Insulation Test for 2 wire Int	ETSI EN 300 001. Annex-D
5.23.3	Line Port impedance for VDSLx Int	Annex-J1
5.23.4	Loop resistance for VDSLx	ETSI EN 300 001. Annex-J1
5.23.5	Profiles for VDSLx	G.993.2(cl 7.2). Annex-J1
5.23.6	PSD for VDSLx Int	G.993.1(cl 6.2). G.993.2(cl 7.2) Ann-A B C. Annex-J1
5.23.7	Return Loss for VDSLx	G.993.1 Cl. 6.5. Annex-J1
5.23.8	Transmitted Power At ATU-C for VDSLx Int	Annex-J1