

## Access Multiplexer Technical Compliance Submission Version 1.00

NAME OF MANUFACTURER:

MODEL:

TYPE:

Item	Description		Required	Offered
1	9U Subrack		YES Maximum 9U	
	Supply 40 to 60 V DC with either (-) or (+) tied to earth		YES	
	Immunity against RF radiation		YES	
	Temperature -10 to +50 Degrees Celsius		YES	
	Relative Humidity 0% to 95%		YES	
	Complying to ITU-T recommendations		As per TFRT00001	
	Transmission capacity	Mbit/s	STM-1	
	Digital cross connect function		Fully non blocking	
	Access capacity on 64 kbit/s	channels	Minimum 200	
	Access capacity on 2 Mbit/s	channels	Minimum 16	
	SDH cross connect capacity, high order		Minimum 1 x VC4	
1.1	TRANSPORT LEVEL			
	SDH based on SFP technology		YES	
	Optical 2 Mbit/s interface: range 0 to 80 km		YES	
	STM-1: 0 to 25 km		YES	
	STM-1: 25 to 40 km		YES	
	STM-1: 40 to 80 km		YES	
	SDH frame structure G.707		YES	
	Protection schemes			
	- SNCP		YES	
	- MSP		YES	
	Fault management conforms to ITU-T G.784		YES	

	Automatic laser shut-down supported		YES	
	Alarms displayed on NMS and LCT			
	- AIS		YES	
	- FERF		YES	
	- BER >10 <sup>-3</sup>		YES	
	- BER >10 <sup>-6</sup>		YES	
1.2	INTERFACES			
1.2.1	V.24 interfaces per module	number	Minimum 4	
	Function available for individual configuration:			
	- 1+1 path protection		YES	
	- point to multipoint		YES	
	- performance monitoring		YES	
	- sub rate multiplexing		YES	
	- Full or half duplex operation		YES	
	- internal and external clock source		YES	
	- selectable as DTE or DCE		YES	
	Test loops:			
	- local and remote.		YES	
	- Digital or analogue side of interface		YES	
	- Complying to ITU-T V.110		YES	
	Data rates			
	- Synchronous 600 bit/s to 19,2 kbit/s		YES	
	- Asynchronous 600 bit/s to 38,4 kbit/s		YES	
	Alarms and indication			
	- Loss of signal in		YES	
	- Loss of signal out		YES	
	- loss of sync of data channel		YES	
	- converter loop switched		YES	
	Line statuses available on NMS and LCT			
	- Signal ground		YES	
	- Transmit data		YES	
	- Receive data		YES	
	- DEE operational		YES	
	- Ready for operation		YES	
	- Activation and checking for link		YES	
	- Ready to send		YES	
	- receive signal level		YES	
1.2.2	V.11			
	- interfaces per module		Minimum 4	
	Function available for individual configuration:			
	- 1+1 path protection		YES	
	- point to multipoint		YES	
	- performance monitoring		YES	
	- sub rate multiplexing		YES	

	Test loops;		
	- local and remote.		YES
	- digital or analogue side of interface		YES
	- Complying to ITU-T V.110		YES
	Data rates		
	- 48, 56 and 64 kbit/s		YES
	- n x 64 kbit/s		YES
	Alarms and indications		
	- Loss of signal in		YES
	- Loss of signal out		YES
	- Loss of sync of data channel		YES
	- Converter loop switched		YES
	Line statuses available on NMS and LCT		
	- Transmit		YES
	- Receive		YES
	- Control		YES
	- Signaling		YES
	- Timing signal		YES
			YES
1.2.3	HDB3 2Mbit/s interface		
	- interface per module		Minimum 4
	- 120 ohm balanced		YES
	- Remote looping of F1 out to F1 in		YES
	- Looped E1 indicated on NMS and LCT		YES
	- High impedance test point for F1 in and out		YES
	Complying to ITU-T recommendations		G.703, transparent G.704, selectable
1.2.4	LAN Interface		
	- interface per module		Minimum 2
	10Base-T		YES
	Data rate		
	- 64 kbit/s to 1984 kbit/s		YES
	- 10 Mbit/s		YES
	Conform to IEEE 802.3 Frame structure		YES
	Indication on card or on NMS		
	- power on		YES
	- Collisions		YES
	- LAN transmit		YES
	- LAN receive		YES
	- Error (buffer overflow)		YES
	- WAN transmit		YES
	- WAN receive		YES
1.2.5	6-wire voice frequency interface		

	- interfaces per module		Minimum 8	
	- occupies 1 x 64 kbit/s timeslot per interface		YES	
	- voice channel bandwidth 300 Hz to 3,4 kHz		YES	
	- 2 signalling channels M=>E, M'=>E' per voice channel		YES	
	- signaling bit rate up to 500 bits/s		YES	
	- operate with or without CAS, configurable		YES	
1.2.6	Analogue Subscriber and Exchange interface			
	- Interfaces per module		Minimum 8	
	- occupies 1 x 64 kbit/s timeslot per interface		YES	
	Nominal impedance			
	- 600 ohms balanced		YES	
	- 900 ohms complex		YES	
	Speech current			
	- minimum 20 mA		YES	
	- maximum 90 mA		YES	
	Ring current			
	- 60 to 80 volts over the two wires		YES	
	- frequency range 15 to 25 Hz		YES	
	Ring detection of a signal			
	- interpret between 20 and 120 volts		YES	
	- frequency range 15 to 25 Hz		YES	
	Loop detection > 1500 ohms as a loop		YES	
	Input attenuation dynamic range of 16dB in 0.5dB steps		YES	
	Output level adjustable between 0 and 8 dB in 0,5 dB steps		YES	
	Line surge protection 2,5 kV 10/800 microseconds		YES Minimum	
	Immune to transverse potentials of 300 volts RMS		YES	
	Immune to Longitudinal potentials of 150 volts RMS		YES	
1.2.7	SCADA Interface			
	- Dry contacts		Minimum 8	
	- minimum current 0.1 mA		YES	
	- maximum current 1 A		YES	
	- impedance 0.1 ohm		YES	
	- Sensors		Minimum 16	

	- Polarity - any		YES	
	- Residual voltage without detection < 4 V		YES	
	- Sensor voltage with detection >7 V, <8.5 V		YES	
	- Current limiting >1 mA, <2.5 mA		YES	
			Required	Offered
2	4U Subrack		YES Maximum	
	Complying to ITU-T recommendations		As per TFRT0001	
	Transmission capacity			
	- STM 1		YES	
	- 1 x E1		YES	
2.1	TRANSPORT LEVEL			
	SDH based on SFP technology		YES	
	Optical 2 Mbit/s interface 0 to 15 km range		YES	
	STM-1 0 to 15 km range		YES	
	SDH frame structure G.707		YES	
	Fault management			
	- Remote Loopbacks		YES	
	Alarms to be displayed on NMS and LCT			
	- AIS		YES	
	- FERF		YES	
	- BER >10-3		YES	
2.2	INTERFACES			
2.2.1	V.24		Minimum 2	
2.2.2	LAN 10BaseT		1 port	
2.2.3	6 wire		Minimum 2	
2.3	Configuration option per subrack			
2.3.1	V.24 and 6 wire		YES	
2.3.2	V.24 and LAN		YES	
3	NETWORK MANAGEMENT			
	- Centralized server platform		YES	
	- Network data kept at the central server		YES	
	- 5 work station connected simultaneous		YES	
	- Dongle protected		YES	
	- LCT must be operated via a Dongle		YES	
	Web browse			
	- Access to network password protected		YES	
	- view status of alarms on any element		YES	
	- 5 simultaneous access to the server		YES	
	General			
	- Prompt user if an alarm occurs		YES	



- Alarms in different colours		YES	
- Alarms give audible indications		YES	
- Real time printout of alarms		YES	
Network layout			
- graphical display		YES	
- Zoom into the detail of element upto interface		YES	
Configuration			
- any interface to any timeslot		YES	
- drop/insert		YES	
- conference		YES	
- point to multipoint		YES	
- dynamic changing of individual level		YES	
- specify clock source		YES	
- Priority list for synchronization		YES	
Performance management			
- run reports via the software		YES	
- ITU-T G821, G826, G828, G829, M2100		YES	
- Report available in Microsoft office 2003		YES	
- Monthly report self generating		YES	
Conduct loopbacks to all terminals		YES	

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