



तेजपुरविश्वविद्यालय/ TEZPUR UNIVERSITY

(केंद्रीयविश्वविद्यालय/A Central University)

कुलसचिवकार्यालय/OFFICE OF THE REGISTRAR

तेजपुर-784028 :: असम/ TEZPUR-784028 :: ASSAM

CORRIGENDUM NOTICE

(ET-NIQ-807..... DT-08-07-2020)

The Technical Specifications (TechSheet) mentioned/uploaded alongwith NIQ No. ET-NIQ-304; DT-26.05.2020 (Tender ID: 2020_TEZU_561255_1) Retendered vide ET-NIQ-533-DT-15-06-2020 (Tender ID: 2020_TEZU_564975_1) Extension vide no. ET-NIQ- 728; DT-02-07-2020 has been replaced with a Revised Technical Specification (TechSheet).

The other contents of the NIQ remain unaltered.

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Assistant Registrar (GA)

Tezpur University

Memo No: TU/11-24/Pur/Qtn(ET)/2020-21/ 807

Dated:- 08-07-2020

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Assistant Registrar (GA)

Technical Specifications cum Compliance Report (Ver. 2)
 (To be submitted on Company's/Firm's Letterhead Signed and Sealed)

S/N	Technical Specifications	Compliance (Y/N)	Remarks if any;
1.0	ACTIVE COMPONENTS		
1.1	Wireless Controller		
1	Controller should be Hardware controller or software controller. If software controller then Enterprise grade Desktop/Server Computer with adequate configuration must be provided as detailed below as optional item*.		
2	Controller shall have 1000 no. Access points Perpetual licenses from day 1		
3	Controller should have capability to Control, Configure, Manage and Monitor both Indoor and Outdoor Access Points		
4	Controller shall come with lifetime no Recurring or renewal cost		
5	Shall Support multiple captive portal authentications mechanism including simple password, radius, voucher, custom based, etc.		
6	Controller shall manage Multiple Sites with the Centralized Controller in a Single Location		
7	Controller shall have Intuitive Real Time Monitoring and data usage		
8	Controller shall support remote upgrade and access control features		
9	Shall support L3 management using standard SNMP/SSH/TELNET protocols		
10	Access Control and Rogue AP Detection protect the network from threats		
11	Rate Limit and Load Balance ensure the network stability and efficiency		
12	Configure and automatically synchronize unified wireless settings to all EAPs in the network		
13	Support for visual Wi-Fi network deployment and optimization.		
14	View the real-time traffic status of each EAP, including the number of clients and volume of data usage		
15	Software controller shall have 3 years Remote support.		
1.2	* Optional Desktop/Server Computer for Software Wireless Controller		
1	Form Factor Desktop Micro Tower / Tower / SFF / Rack		
2	Its Processor should be Intel / AMD with Min. 6 Core, 6 Threads with 9 MB Cache and Memory Type DDR4-2666 or better recommended by the OEM of the Wireless Controller.		
3	It should support 8 GB DDR4-2666 RAM with Memory Expandability up to 32 GB		
4	1TB 7200 RPM SATA Hard Disk Drive 6Gb/s HDDs		
5	1 no. 10/100/1000M GbE LAN RJ.45 Port		
6	USB Business Slim Wired Keyboard USB Wired Keyboard of same make of Desktop		
7	It should have Security management Integrated accessories cable lock, Lock slot, Trusted Platform Module (TPM) 2.0		
8	It should have Power 180 W internal power supply, up to 90% efficiency, active PFC		
9	It should have PCIe Expansion slots 1 full-height PCI, 1 PCIe x1, 1 PCIe x16		
10	For Safety it should have Energy efficiency compliance CCC; CE; CECP; CEL; ENERGY STAR certified; EPEAT 2019 registered where applicable; FCC; RoHS; SEPA; UL		
11	It should be provided with a 19.5-inch HD monitor with Anti-glare, LED backlights with HDMI and VGA Ports		

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12	It should have 1 headphone/microphone combo; 3 USB 3.1 Gen 1 Rear: 1 HDMI; 1 line in; 1 line out; 1 power connector; 1 RJ-45; 1 VGA; 3 USB 2.0 Internal: 1 parallel; 1 PS/2		
13	It should have onsite Warranty for 3 Years		
1.3	Indoor Access Point		
1	AP shall have hardened enclosures for indoor deployment and shall have a robust design for durability		
2	It shall have dual radios for concurrent dual band (5 GHz / 2.4 GHz) operation		
3	It shall have Simultaneous 450 Mbps on 2.4GHz and 1300 Mbps on 5GHz totals 1750Mbps Wi-Fi speeds		
4	Minimum 2 number of 1 Gbps Ethernet port RJ-45.		
5	AP shall support Multiuser MIMO		
6	AP shall support Outfitted with the latest 802.11ac Wave 2 technology		
7	The AP shall comply with IEEE 802.11ac at a minimum and be backwards compatible to IEEE 802.11a/b/g/n standards.		
8	AP shall operate at least in full 3X3:3 MIMO or more mode without any loss of features or capabilities		
9	AP shall Support PoE 802.3af and passive PoE for convenient and affordable installation		
10	AP must support 20 MHz, 40 MHz and 80 MHz channels.		
11	Each AP must support minimum 80 concurrent clients in total (including both 2.4GHz and 5GHz radios).		
12	The AP shall provide a minimum of 20 dBm EIRP for both 2.4 GHz and 23 dBm for 5 GHz frequencies. Field deployment shall be with EIRP as per regulatory guidelines.		
13	AP shall support QoS and WMM latest technology		
14	AP shall support Multiple operating modes including managed AP and standalone AP mode		
15	AP shall support Band Steering, Beamforming, Airtime Fairness and Load Balance features		
16	AP shall support rogue access point detection		
17	AP shall have dual-Band Omni-directional Antenna, either internal or external. Field deployment shall be with EIRP as per the WPC guideline.		
18	AP should be compatible for Simple mounting on any wall or ceiling surface		
19	AP should support management VLAN for ease of remote configuration and management (this is required feature but not mandatory)		
20	AP should support Captive portal and Rate limit feature		
21	AP shall support Reboot Schedule, Wireless Schedule and Wireless Statistics based on SSID/AP/Client		
22	Intelligent RF control plane for self-healing, and self-optimization		
23	AP Shall support Wireless MAC Address Filtering, Wireless Isolation Between Clients and SSID to VLAN Mapping		
24	AP shall support 802.1X authentication and external radius server		
25	AP shall be able to assign end User the IP address as received from backend core DHCP Server.		
26	AP shall support Hardware controller or software controller		
27	Warranty should be for 3 Years		

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1.4	24 Port PoE+ Switch			
	1	Rack mountable with 24 Nos. 10/100/1000 Base-T ports with 4 no. 1 Gig SFP Ports		
	2	Minimum 56 Gbps Switching Fabric.		
	3	Minimum packet forwarding rate of 41 million packets per second at 64-byte packet length.		
	4	Support PoE Budget of 384W		
	5	Support 802.3af & 802.3at PoE Standard		
	6	Minimum 16K MAC addresses.		
	7	1000 IGMP groups.		
	8	The switch shall be able to work on both IPv4 and IPv6 (dual stack) from day one.		
	9	All ports in the switch shall operate at wire-speed / line-rate.		
	10	Capable of working with AC Power Supply with a voltage varying from 170-240Volts at 50 +/-2 Hz.		
	11	Support 19" rack mounting.		
	12	Support IEEE 802.1Q VLAN encapsulation. Maximum 4K VLAN Groups.		
	13	Support for Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors.		
	14	Support for creating / Modifying/ Deleting VLAN manually/ automatically if required		
	15	Support 802.1d, 802.1p, 802.1Q, 802.1s, 802.1w, 802.1x, 802.1ab, 802.3ad.		
	16	Support Spanning-Tree root guard or any other industry standard protocol to prevent other edge switches becoming the root bridge.		
	17	Support IGMP snooping v1, v2 and v3.		
	18	Support Link Aggregation Protocol (LACP).		
	19	Support 802.3ah Ethernet Link OAM for Detection of Unidirectional links and to disable them to avoid problems such as spanning tree loops and support Unidirectional Link Detection (UDLD) or equivalent.		
	20	It shall be able to discover the neighbouring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.		
	21	Support for Switch port auto recovery to automatically re- enable a link that is disabled because of a network error.		
	22	Support Multicast VLAN registration.		
	23	Support LLDP / LLDP-MED including client location information. It shall exchange link and device information in multi-vendor networks.		
	24	It shall support configuration rollback to replace current configuration with any saved configuration file.		
	25	Support link state tracking which provides layer 2 redundancy in the network when used in conjunction with server teaming.		
	26	Support configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (Jumbo frames) for bridging on Gigabit Ethernet ports.		
	27	Support auto sensing speed on 10/100/1000 ports, auto negotiating half/full-duplex on all ports and Auto-MDIX.		
	28	Shall have per-port broadcast, multicast, and unicast storm control.		

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29	It shall have standard 802.1p CoS and DSCP classification using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.		
30	Eight egress queues per port to enable differentiated management of up to eight traffic types.		
31	There shall be weighted round robin (WRR) or any other industry standard protocol to provide congestion avoidance.		
32	Strict priority queuing mechanisms.		
33	Granular Rate Limiting functions to guarantee bandwidth in increments shall be as low as 64 Kbps.		
34	Rate limiting support based on source and destination IP address, source and destination MAC address, Layer 4 TCP and UDP information, or any combination of these fields, using QoS ACLs (IP ACLs (IPv4 and IPv6) or MAC ACLs), class maps, and policy maps shall be available. ACL should be based on user defined packet content (Max. 6bytes length user defined).		
35	There shall be support for Asynchronous data flows upstream and downstream from the end station or on the uplink using ingress policing and egress shaping.		
36	There shall be support for Automatic Quality of Service for easy configuration of QoS features for critical applications.		
37	The LAN switch shall support IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
38	The LAN switch shall support for Admission Control features to improve the network's ability to automatically identify, prevent, and respond to security threats and also to enable the switches to collaborate with third-party solutions for security-policy compliance and enforcement before a host is permitted to access the network.		
39	Support port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports. It shall also support VLAN based filters.		
40	Support unicast MAC filtering to prevent the forwarding of any type of packet with a matching MAC address. It shall support Unicast and Multicast MAC addresses and associated VLANs.		
41	It shall support unknown unicast and multicast port blocking to allow tight control by filtering packets that the switch has not already learned how to forward.		
42	Support IGMP filtering which shall provide multicast authentication by filtering out no subscribers and limits the number of concurrent multicast streams available per port.		
43	Support for SSHv2, SNMPv3 to provide network security by encrypting administrator's traffic during remote management		
44	Support 2 session of Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs. It shall support bidirectional data on mirror port which allows IDS to take action when an intruder is detected.		
45	Support RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
46	Support MAC address notification to allow administrators to be notified of users added to or removed from the network / It shall support SNMP Trap for new MAC notification.		

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47	Support DHCP snooping to allow administrators to ensure consistent mapping of IP to MAC addresses. This can be used to prevent attacks that attempt to poison the DHCP binding database, and to rate limit the amount of DHCP traffic that enters a switch port.		
48	Support DHCP Interface Tracker (Option 82) to augment a host IP address request with the switch port ID or similar mechanism.		
49	Support port security to secure the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature should remove the MAC address from the switch to allow another device to connect to the same port.		
50	Support multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
51	Support BPDU Guard feature; to shut down Spanning Tree Protocol Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.		
52	Support Spanning-Tree Root Guard (STRG) to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
53	Support for up to 512 access control entries (ACEs).		
54	CLI / Web Based Management (GUI) support to provide a common user interface and command set with all routers and switches of the same vendor.		
55	Remote Monitoring (RMON v1 and v2) software agent to support for enhanced traffic management, monitoring, and analysis.		
56	Support for RMON groups through the use of a mirrored port, which permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.		
57	It shall have Time-Domain Reflectometer (TDR) or equivalent technology to diagnose and resolve cabling problems on copper ports.		
58	It shall have layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination or it shall support OAM 802.3ah.		
59	Support Trivial File Transfer Protocol (TFTP) and File Transfer Protocol (FTP) to reduce the cost of administering software upgrades by downloading from a centralized location.		
60	Support Simple Network Time Protocol/Network Timing Protocol (SNTP/NTP) to provide an accurate and consistent timestamp to all intranet switches.		
61	Support SNMPv1, SNMPv2, and SNMPv3 and Telnet interface to deliver comprehensive in-band management, and a CLI-based management console to provide detailed out-of-band management.		
62	Support IPV6 management. ACL and QoS and IPV6 Neighbour Discovery.		
63	Warranty Should be for 3 Years		
1.5	8 Port PoE+ Switch		
1	Device should support IEEE 802.1w, IEEE 802.1q, IEEE 802.1p, IEEE 802.1x, IEEE 802.3ad, IEEE 802.3x, IEEE 802.1d, IEEE 802.1s, IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab Standards and Protocols		
2	Device must have at least 8 gigabit RJ45 Ports with 2 no. 1 Gig SFP Ports		
3	Device should support auto negotiation/auto MDI/MDIX		
4	Device must support POE 802.3af/at with Minimum PoE Budget of 120W		

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5	Device should have Switching Capacity of 16 Gbps		
6	Device should have Packet Forwarding Rate 14.9Mpps or more		
7	Device should have MAC address table of 8K or more		
8	Device should support jumbo frame of 9KB		
9	Device should Support QOS features like Port-based, 802.1p and DSCP priority		
10	Device should Support QOS features like 8 priority queues		
11	Device should Support QOS features Queue scheduling: SP, WRR, SP+WRR		
12	Device should Support QOS features Port/Flow- based Rate Limiting		
13	Device should Support Voice VLAN		
14	Device should Support Layer 2 features like IGMP Snooping V1/V2/V3		
15	Device should Support 802.3ad LACP and Up to 8 aggregation groups containing 8 ports per group		
16	Device should Support Spanning Tree features like STP/RSTP/MSTP		
17	Device should Support BPDU Filtering/Guard and TC/Root Protech		
18	Device should Support Loop back detection and 802.3x Flow Control		
19	Device should Supports 4K VLAN IDs		
20	Device should Supports up to minimum 256 VLANs or higher		
21	Device should support ACL features like L2 to L4 package filtering based on source and destination		
22	Device should support ACL features like MAC address, IP address, TCP/UDP ports, 802.1p, DSCP, protocol and VLAN ID Time Range Based		
23	Device should support security features like SSH v1/v2 and SSL v2/v3/TLSv1		
24	Device should support features like Broadcast/Multicast/Unknown unicast Storm Control		
25	Device should support security features like 802.1x and Radius Authentication, IP-Mac-Port-VID Binding, ARP Inspection, DHCP Snooping and DoS Defend		
26	Device should support AAA		
27	Device should support Web-based GUI / CLI management		
28	Device should support SNMP v1/v2c/v3, compatible with public MIBs		
29	Device should support RMON (1, 2, 3, 9 groups)		
30	Device should support CPU Monitoring and Port Mirroring		
31	Device should support Time Setting like SNTP		
32	Device should support TFTP & Web		
33	Device should support System Diagnose feature like VCT		
34	Device should support SYSLOG & Public MIBS		
35	Device should certified by FCC, CE, and RoHS		
36	Warranty Should be for 3 Years		
1.6	600 VA Offline UPS		
1	Type: Line-Interactive		
2	Capacity: 600 VA		
3	Input Voltage Range: 140 – 300 V AC		
4	Input Frequency: 50Hz +/- 10%		
5	Output Voltage: 190 -253V on Mains ; 230V +/- 10 % on Battery mode		
6	Output Frequency: 50Hz +/- 10% Hz (under battery mode)		

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7	Transfer Time: Min 4 MS		
8	Output Points: 3 Nos. Indian Sockets, Battery Backup. Min. 15 Minutes with 1 PC + Monitor Load		
9	Noise: < 40db at 1m		
10	Protection: Low Battery, Overcharge, Overvoltage		
11	AVR: Built in Automatic Voltage Regulator (AVR)		
12	Indicators: Mains ON, battery On and Fault		
13	Battery Details: Batteries shall be inbuilt Sealed Maintenance Free (SMF) type. 12V/7AH - 1 No		
14	Ambient Conditions: Temperature: 0 to 40 degree Celsius and Humidity: up to 90%		
15	OSHAS: BS OHSAS 18001:2007		
16	Certification: ISO 9001: 2008, ISO 14001		
17	Warranty: Onsite Warranty 3-years on UPS & 2 yrs. on Batteries		
1.7	1000 VA Offline UPS		
1	Type: Line-Interactive		
2	Capacity: 1000 VA		
3	Input Voltage Range: 140 – 290 V AC		
4	Input Frequency: 50Hz +/- 10%		
5	Output Voltage: 190 -253V on Mains; 230V +/- 10 % on Battery mode		
6	Output Frequency: 50Hz +/- 10% Hz (under battery mode)		
7	Transfer Time: Min 4 MS		
8	Output Points: 3 Nos. Indian Sockets, Battery Backup. Min 30 Minutes with 1 PC + Monitor Load		
9	Protection: Low Battery, Overcharge, Overvoltage		
10	AVR: Built in Automatic Voltage Regulator (AVR)		
11	Indicators: Mains ON, battery On and Fault		
12	Battery Details: Batteries shall be inbuilt Sealed Maintenance Free (SMF) type. 12V VAH168		
13	Ambient Conditions: Temperature: 0 to 40 degree Celsius		
14	Certification: ISO & BIS		
15	Warranty: Onsite Warranty 3-years on UPS & 2 yrs. on Batteries		
1.8	Optical SFP Transceiver Single Mode LX, LC Type		
1	Transceiver should be Enhanced Small Form-Pluggable (SFP) form factor and compatible with all the switches and from same the OEM of Switch		
2	Transceiver should be Hot pluggable and support 1G speed on Single Mode 9/125 um fiber		
3	Should be RoHS Compliant, letter should be provided with compliance.		
4	Should be Multi-Source Agreement (MSA) specification compliant.		
5	Transceiver should be compliant with IEEE802.3z standards.		
6	Transceiver distance capacity should be 10 KM.		
7	Transceiver interface should be Duplex LC connector.		
8	Optical Transceiver should be from same Switch OEM and warranty should be for 3 years		

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Technical Specifications cum Compliance Report (Ver. 2)
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2.0	PASSIVE COMPONENTS			
2.1	Cat 6 UTP LSZH Cable			
	1	4 Pair Cable with integral cross -member pair separator for uniform characteristic impedance.		
	2	Category 6 Unshielded Twisted 4 Pair 100 Ω cable shall be compliant with ANSI/TIA/EIA-568-D-2018 Additional ISO/IEC 11801-1 and ISO/IEC 61156-5		
	3	Suitable for 10 GBase-T applications in acc. with IEEE 802.3an up to 500 MHz and 55 m.		
	4	Transmission Performance Specification for 4 Pair 100Ω an guaranteed up to 1G		
	5	Category 6 Cabling		
	6	Category 6 UTP cables shall extend between the work area location and its associated telecommunications closet and consist of 4 pair, UTP CM cable jacket.		
	7	Conductor: Solid Copper		
	8	Conductor Diameter: 0.555±0.01mm (23AWG)		
	9	Insulator HD Polyethylene solid		
	10	Jacket: LSZH RoHS IEC 60332-3-22 complied, Colour- Grey/Blue		
	11	Outer Diameter: 6.0 ± 0.2mm		
	12	Max Temperature: -20°C to +70°C		
	13	Should be ETL certified and 4 Channel ETL Verified as per TIA 568-D-2018		
	14	Mechanical Test		
	15	Should have Pulling force of 11.5Kg.		
	16	Bend Radius: Installation: <4 X Cable Diameter at -20°C ±1°C, Operation: <4 X Cable Diameter at -20°C ±1°C		
	17	Conductor Resistance: <9.38Ω /100m		
	18	Resistance Unbalance 5% Max		
	19	Mutual Capacitance: < 5.6nF/100m		
	20	Capacitance Unbalance: 330pF/100m.		
	21	Propagation Velocity: 69%		
	22	ELT certified for 4 Channel should be submitted along with bid submission		
2.2	12 F OFC SM Cable			
	1	Outdoor F/O Cable, Loose Tube, SM, 12 Fibers, Central Steel Wire + Corrugated Steel, PE		
	2	The fiber should be optimized for operation at 1310 nm and at 1550 nm.		
	3	Should fulfil the requirements of ISO.IEC 11801 - 2nd Edition, type OS2, ITU-T REC G 652D spec IEC 60794-1-2 F5		
	4	Fibre Count: 12		
	5	Loose tube count :2		
	6	Fiber count per tube :6		
	7	Filler Material: PP		
	8	Max. Attenuation: At 1310 nm <= 0.36 dB/km, At 1550 nm <=0.22 dB/km		
	9	Fibre/Tube Identification: Multi Tube		
	10	Fibre protection (Tubes): Polybutylene Terephthalate (PBT)		
	11	Armouring: CST		

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12	Thickness: 1.6 mm		
13	Outer Sheath: UV Stabilised Polyethylene (PE)		
14	Central Strength Member: Steel wire coated with PE		
15	Water Blocking: Thixotropic Gel (Tube);		
16	Petroleum Jelly (Interstices)		
17	Cable Diameter (D): 9.0 ± 0.5 mm		
18	Mass (Nominal): 91 kg/km		
19	Min. Bending Radius (during Installation): 20 D; D-Outer Diameter		
20	Max. Tensile Strength-Short Term: 1500N		
21	Max. Crush Resistance-Short Term: 2200N/100 mm		
22	Operating Temperature range: -40°C to +70°C		
23	All the cable and accessories are from the same OEM		
2.3	LC Type 9/125µm OS2 Fiber Optic Simplex Pigtail. 1 Mtr.		
1	Type: 1 Mtr. In Length and Single Mode 9/125micron fibre performance		
2	Jacket Material: LSZH complying to IEC 61034-1 & 2, IEC-60332-1, IEC-60754-1 & 2		
3	Operating Temperature: -40°C to +75°C		
4	Connector Insertion Loss: 0.30dB (Max)		
5	Attenuation: 1310/1550: 0.36/0.22 dB/KM		
2.4	Patch Cord, LC, Duplex, SM, G657A2, PC, LSZH		
1	Cable: 2 Mtr. LC-LC 9/125µm OS2 Single mode Duplex Patch Cord		
2	Connectors: The optical fiber patch leads shall comprise of Single mode 9/125µm fiber with 2XLC type fiber connectors terminated at each end of fiber patch cord.		
3	Insertion loss should be better than 0.35 dB		
4	Jacket Material: LSZH complying to IEC 61034-1 & 2, IEC-60332-1, IEC-60754-1 & 2		
5	Attenuation: 1310/1550: 0.36/0.22 dB/KM		
6	Connector Loss: 0.30dB(max)		
7	Operating Temperature: -40°C to +75°C		
2.5	Fiber Optic LIU Rack Mount LIU (12 F Ports)		
1	Fiber optic patch panel: Fiber optic patch panel FMS Termination Drawer should have sufficient slots to accommodate 3 of 12/16 Port LC Adaptor Plates.		
2	Should have Slide type drawer structure		
3	Height: 1 U, 1.75 inches (12 Ports)		
4	Material: Cold Rolled Steel in surface coated by electrostatic epoxy powder		
5	Slots: FMS should have sufficient slots to accommodate adaptor plates		
6	Empty Slots of FMS should be covered with blank plates.		
7	Splice Tray: Splice Tray of ABS, comply with UL 94V2 material should be supplied with LIU.		
8	The adaptor plate should be pre-loaded with LC-LC Type Single mode Duplex Adaptors.		
9	Port Density :12 LC-LC Single mode Ports		
10	All LC adapters should be duplex type with shutter for protection. Adaptors should be snap mount for easy insertion and removal.		
11	Insertion Loss: <0.2 to <0.1 dB		

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Technical Specifications cum Compliance Report (Ver. 2)
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12	Compliance: RoHS Compliant		
2.6	6 U Wall Mount Rack		
1	<p>General Requirements</p> <p>1) Racks should be 6 U Standard and manufactured out of steel sheet punched, formed, welded and powder coated</p> <p>2) Rack should have 100% assured compatibility with all equipment's conforming to DIN 41494 (General Industrial Standard for equipment's) or Equivalent EIA /ISO / EN Standard</p> <p>3) Rack should have 2 No Adjustable, 19" verticals with Punched 9mm Square Hole and Universal 12,7mm-15.875mm-15.875mm alternating hole pattern offering greater mounting flexibility and maximizes usable mounting space</p>		
2	<p>Physical Specifications</p> <p>1) The Rack should have below dimension. Height x Width X Depth = 347 mm x 550 mm x 500 mm</p> <p>2) Standard for Rack configuration should be welded frame integrated with side panel and vented top cover.</p>		
3	<p>Equipment Access & Installation</p> <p>1) The front door should open to allow easy access.</p> <p>2) Rack should have 1 Packet of mounting hardware, Pack of 20.</p>		
4	<p>Material Requirements</p> <p>1) All weight bearing components should be made from steel with a thickness not less than 1mm</p> <p>2) All sheet metal parts should be Pre-Treated and powder coated meeting ASTM Standard.</p>		
5	<p>Grounding Requirements</p> <p>1) All enclosure components i.e. frame and door should be bonded together and to rack ground point.</p> <p>2) OEM to provide rack ground point, Provision to further ground to Telecom Ground bus bar System.</p> <p>3) Grounding and bonding as per UL Standards.</p> <p>4) Manufacture should provide Horizontal OR vertical Ground bus bar for equipment Grounding as per Customer / Tender Requirement.</p>		
6	<p>Certifications, Environmental and Safety Requirements</p> <p>1) Racks should be manufactured by ISO9001:2015, ISO14001:2004 & OHSAS18001:2007 Certified company and should have proper EHS Policy.</p> <p>2) Products must be UL or equivalent Certified</p> <p>3) Manufacturer must certify that the products are RoHS Compliance</p> <p>4) Manufacturer must certify that the products are Comply DIN41494 and Equivalent EIA/ISO/EN /CEA Standard.</p> <p>5) The rack should comply minimum of IP 20 rating for protection against touch, ingress of foreign bodies and ingress of water.</p> <p>6) The enclosure should both protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 / IEC 62262.</p>		
7	<p>Ventilation and Thermal Management</p> <p>1) The unit should have sufficient ventilation to provide adequate airflow required by the major Network manufacturers.</p> <p>2) Provision to Fix Exhaust Fans / Fan Module on the top.</p>		
8	<p>Rack Power Distribution Units & Environmental monitoring</p> <p>Rack should have 1 no. Power Distribution Units with 6 No 5/15A Indian Round Pin with PDU Rating 3 KVA</p>		

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Technical Specifications cum Compliance Report (Ver. 2)
 (To be submitted on Company's/Firm's Letterhead Signed and Sealed)

9	Cable Management 1) Rack should have 1 no. Horizontal Cable Organizer with plastic loops. 2) Rack should have provision for cable Entry and Exit from both top and bottom.		
10	Accessories Rack should have 1 no. Cantilever Shelf for mounting NON-Rack mountable Equipment's		
11	Security Rack should have Front Toughened Glass Door with lock and key		
12	Delivery & Installation 1) The unit should be shipped fully assembled as one orderable Unit. 2) The manufacturer should offer an inside-delivery shipping option which includes reasonable delivery to the inside of the building and removal and disposal of shipping material and packaging.		
13	Warranty and Support 1) The Products manufactured should provide warranty for 1 year from date of invoice, the warranty does not cover wrong Usage, Damage, or miss-handling the products. 2) Electrical items such as Sockets, switches, fans etc. should have warranty for 1 year from date of installation. 3) For malfunction of any units/item in the rack, the support should be provided within the next business day.		
2.7	HDPE Pipe for underground laying for Fiber and UTP Cable		
1	Water resistant with ISI Mark		
2.8	PVC Cap-on-Casing for UTP Laying		
2	Ivory white, weather resistant PVC with ISI Mark		

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