# Addendum - 1

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|---|---|---|
| Tender No | : | KMRC/S&T/IT/NETWORK/12-13(R) |
| Date of Addendum | : | 14th SEPTEMBER 2012 |
| Tender Submission Date and time | : | 20th SEPTEMBER 2012 BY 1500 HRS |
| Date and time of tender opening | : | 20th SEPTEMBER AT 1530 HRS. |

| Clause No | Existing Clause | Modified Clause |
|---|---|---|
| **Annexure III** | Pole details | 5 nos of 15 feet poles with (10ft above ground) needs to be erected. |
| **Annexure VI** | | |
| 1.6 | There should be an LED indication on each card, which can help determine the state of the card. | This clause is removed |
| 1.8 | 1st party TAPI compatible to support TAPI based Dialer applications like | This clause is removed |
| 1.16 | upto 384 analog/ digital users and 500 IP users | upto 225 analog/ digital users and 50 IP users |
| Termination of CAT6 voice cables | | CAT6 voice cables should be terminated at voice panel end |
| L2 and L3 switches (distribution) | | L3 switch 24 port 1 no<br>L2 switch 48 port 3 nos<br>L2 switch 24 port 3 nos |
| UPS | - | 2 UPS needs to be considered. |
| | Isolation Output load be isolated through a transformer with same rating | This clause is removed |
| **' Annexure IV** | | |
| Layer 2 Distribution switch: Manageability | Shall support single IP address management for a virtual stack of up to 16 switches | The switch should have physical stacking capability of at least 6 switches per stack & stacking bandwidth at least 20Gbps. |
| Passive part | - | Sheet attached |
| **Annexure V** | - | Sheet attached |

| 1.1 UTP Cable | | | |
|---|---|---|---|
| **Item No/ Schedule** | **Technical Specification Compliance** | **(Yes/No.)** | **Documentary evidence** |
| Type | Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 | Yes | |
| Conductors | 23 AWG solid bare copper or better | Yes | |
| Insulation | Polyethylene | Yes | |
| Jacket | Sheath Fire retardant PVC Compound (FRPVC) Flame Rating : 60 deg. C As per UL 1685 CM/CMR | Yes | |
| Pair Separator | Cross-mem 6sazdeber fluted member | Yes | |
| Approvals | UL tested for TIA/EIA-568C.2 | Yes | |
| | 3P | Yes | |
| | ETL verified to Cat 6 | Yes | |
| | Zero Bit Error verified by ETL. | Yes | |
| Operating temperature | -20 Deg. C to +60 Deg. C | Yes | |
| Frequency tested up to | Minimum 600 MHz | Yes | |
| Packing | Box of 305 meters | Yes | |
| Delay Skew | 35ns MAX. | Yes | |
| Impedance | 100 Ohms + / - 6 ohms, 1 to 600 MHz. | Yes | |
| Performance characteristics to be provided along with bid | Pair-to-pair and PS NEXT, ELFEXT and PSELFEXT, Return Loss, ACR and PS ACR | Yes | |
| Attenuation | 33.8dB/100m at 250MHz | Yes | |
| | 29.4dB/100m at 400MHz | Yes | |
| | 39dB/100m at 600MHz | Yes | |

**1.2 Information Outlet**

| **Item No/ Schedule** | **Technical Specification Compliance** | **(Yes/No.)** | **Documentary evidence** |
|---|---|---|---|
| Jack | Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 | Yes | |
| Modular Jack | 750 mating cycles | Yes | |
| Wire terminal | 200 termination cycles | Yes | |
| Accessories | Strain relief and bend-limiting boot for cable | Yes | |
| | Integrated hinged dust cover using collapsible angular shuttered technology. | Yes | |
| Approval | UL | Yes | |
| Housing | Polyphenylene oxide, 94V-0 rated | Yes | |
| Wiring blocks | Polycarbonate, 94V-0 rated | Yes | |
| Jack contacts | Phosphorous bronze, plated with 1.27micrometer thick gold | Yes | |
| Approvals | UL , ETL and 3P | Yes | |
| Performance Characteristics to be provided with bid | Attenuation, NEXT, PS NEXT, FEXT and Return Loss | Yes | |
| Faceplates | ROHS compliant | Yes | |
| Type | 1-port, White surface box | Yes | |
| Material | Spring Contact: 50m" goldover 100m" nickel | Yes | |
| | ABS / UL 94 V-0 | Yes | |
| | High Impact Plastic Body ABS FR Grade 86 x 86 mm | Yes | |
| | Flush mountable or surface mountable with a back mount frame | Yes | |

**1.3 UTP Patch Panels**

| **Item No/ Schedule** | **Technical Specification Compliance** | **(Yes/No.)** | **Documentary Evidence** |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Type | 24-port, Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 | Yes | |
| Ports | 24 | Yes | |
| Port arrangement | Keystone type. Ports must be individually replaceable. | Yes | |
| Category | Category 6 | Yes | |
| Circuit Identification Scheme | Icons on each of 24-ports | Yes | |
| Port Identification | 9mm or 12mm Labels on each of 24-ports (to be included in supply) | Yes | |
| Height | 1 U (1.75 inches) | Yes | |
| Durability | | | |
| Modular Jack | 750 mating cycles | Yes | |
| Wire terminal (110 block) | 200 termination cycles | Yes | |
| Accessories | Strain relief and bend limiting boot for cable | Yes | |
| Materials | ROHS compliant | Yes | |
| Housing | Polyphenylene oxide, 94V-0 rated | Yes | |
| Wiring blocks | Polycarbonate, 94V-0 rated, Spring Contact: Phosphor bronze 50□" gold | Yes | |
| Jack contacts | Phosphorous bronze | Yes | |
| Panel | Black, powder coated steel | Yes | |
| Approvals | UL , ETL and 3P | Yes | |
| Termination Pattern | TIA / EIA 568 A and B; | Yes | |
| Performance Characteristics to be provided along with bid | Attenuation, NEXT, PS NEXT, FEXT and Return Loss | Yes | |

**1.4 Workstation / Equipment Patch Cords**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| Type | Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2 | Yes | |
| Conductor | 24-26 AWG stranded copper. | Yes | |
| Length | 1 meter, and 3 meter | Yes | |
| Plug Protection | Matching colored snag-less, boot to maintain bend radius | Yes | |
| Warranty | 25-year component warranty | Yes | |
| Category | Category 6 | Yes | |
| Plug | | | |
| Housing | Clear polycarbonate | Yes | |
| Terminals | Phosphor Bronze with gold plating , 50 micron" gold over nickel | Yes | |
| Load bar | PBT polyester | Yes | |
| Jacket | PVC | Yes | |
| Insulation | Flame Retardant Polyethylene | Yes | |
| End point connector | Factory standard connector | Yes | |
| Approvals | UL, ETL and 3P certificates. | Yes | |
| Material | ROHS compliant | Yes | |

**2.1 Multimode Mode Fiber optic Cable**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| Fiber Type | Clear Curve , OM3 | Yes | |
| Cable Type | 6/12-core, Multimode, 10G Ethernet OM3, Armored, loose-tube, CST armour, Gel Filled | Yes | |
| Fiber type | 50 / 125, Laser Grade, 250 micron primary coated buffers | Yes | |

| | | | |
|---|---|---|---|
| No. of cores | 6/12-core | Yes | |
| Cable Construction | BELLCORE GR 20 / IEC 794-1 | Yes | |
| Attenuation | | Yes | |
| @850nm | 3.0 dB / KM | Yes | |
| @1300nm | 1.0 dB / KM | Yes | |
| Bandwidth | | Yes | |
| @850nm | 1500 MHz-KM | Yes | |
| @1300nm | 500 MHz-KM | Yes | |
| Network Support | | Yes | |
| 10 / 100 Ethernet | 2000m | Yes | |
| 155 Mbps ATM | 2000m | Yes | |
| 1000 Base SX | 900m | Yes | |
| 1000 Base Lx | 550m without Mode Conditioning launch patch cord. | Yes | |
| Secondary Buffer Material | Gel filled Loose Tube. | Yes | |
| Tensile rating | 2670N | Yes | |
| Maximum Crush resistance | 44N/mm | Yes | |
| Operating Temperature | -40 Degree C to +70 Degree C | Yes | |
| Armor | Corrugated Steel tape Armor | Yes | |
| Colour | Black | Yes | |
| Inner jacket | High density polyethylene | Yes | |
| Outer jacket | High density polyethylene, anti - termite, anti - rodent suitable for direct burial application. | Yes | |
| Secondary Buffer Material | Gel filled Loose Tube. | Yes | |
| Min Bend | 20 X Outer Diameter | Yes | |
| Weight | 250 Kg/Km (Approx) | Yes | |
| Test (Must pass) | IEC794-1-E1 , IEC794-1-E2 , IEC794-1-E3 , IEC794-1-E4 , EIA-455-104 , IEC794-1-E7, IEC794-1-E10 , IEC794-1-F1 , IEC794-1-F3 and IEC794-1-F5 | Yes | |
| Marking | Identification marking at regular intervals of 1 meter | Yes | |
| Fiber Core | Raw fiber of corning. CORNING marking should be visible on the OFC | Yes | |
| Approval | UL Listed | Yes | |
| Length of cable drum | Standard factory length and can be supplied is max 4 Kms | Yes | |

**2.2 Light Interface Unit (LIU)**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| Light Interface Unit | 19-inch, Rack mounted Fiber optic patch panel with loaded SC Coupler | Yes | |
| Height | 1 U, 1.75 inches | Yes | |
| No. of fibers | 12 | Yes | |
| Dimensions | 44 * 410 * 280 mm (H*W*D) | Yes | |
| Material | Complete Aluminium Alloy housing, fully powder | Yes | |
| | Splice tray and cable spools to be included | Yes | |
| | Fully cushioned splice holder containing grooves for fixing splice protective sleeves | Yes | |

| | | | |
|---|---|---|---|
| No. of OSP Cables for termination | Minimum 2 | Yes | |
| Grounding | 2 Nos. of earthing lugs, pre-loaded | Yes | |
| Cable Management rings | Front and rear cable management rings, preloaded | Yes | |
| No. of 6-port adapter plates | 2 max | Yes | |
| Sliding | Panel cover is of slide out for easy maintenance | Yes | |

**2.3 Multi Mode Fiber optic Patch Cord LC-SC Type**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| Fiber Optic Patch Cords | MM patch cord LC-SC TYPE | Yes | |
| Type | 1.6mm or 3mm simplex or Duplex Zipcord. | Yes | |
| Outside Diameter | (Simplex): 1.6mm x 3.0mm | Yes | |
| | (Duplex): 1.6mm x 3.3mm | Yes | |
| Minimum Cable Retention Strength | 1.6mm: 11.24 lbs (50 N) | Yes | |
| Insertion Loss | Less than 0.5 dB for MM | Yes | |

**2.5 Multi Mode Fiber optic Pigtail SC Type**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| Fiber Optic Patch Cords | MM Pigtail SC TYPE | Yes | |
| Type | 1.6mm or 3mm simplex | Yes | |
| Outside Diameter | (Simplex): 1.6mm x 3.0mm | Yes | |
| Minimum Cable Retention Strength | 1.6mm: 11.24 lbs (50 N) | Yes | |
| Insertion Loss | Less than 0.5 dB for MM | Yes | |

**2.6 MM Fiber Optic Adapter**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| **6-port, SC-Style, MM** | | Yes | |
| Attenuation | Max of 0.75 dB per mated pair | Yes | |
| Insertion Loss | < 0.3 dB max | Yes | |
| Durability (1000 Matings) | < 0.2 dB max | Yes | |
| Operation Temp. | -40°C to 80°C | Yes | |
| Material Ferrule | Zirconia (for MM) | Yes | |
| ROHS | RoHS Compliant | Yes | |
| UL | UL Listed | Yes | |
| IEC | IEC-874 | Yes | |
| Compliant | EIA/TIA 568-C.0 | Yes | |
| ISO/IEC Certificate | ISO/IEC 11081 | Yes | |
| RoHS | RoHS verified. | Yes | |

| | | | |
|---|---|---|---|
| Product Features & Compliances | Zirconia or Phosphor Bronze Sleeve | Yes | |
| Compliant | As per ISO/IEC 11081 | Yes | |
| UL | UL Listed | Yes | |
| RoHS | RoHS Compliant | Yes | |
| Product Compliance | IEC-874 | Yes | |

**2.7 MM Fiber Optic Adapter plates**

| Item No/ Schedule | Technical Specification Compliance | (Yes/No.) | Documentary evidence |
|---|---|---|---|
| **6-port, SC-Style, MM** | | | |
| Attenuation | Max of 0.75 Db per mated pair | Yes | |

# Annexure V

**Technical Specification of Wireless Access Points**

| **Specifications** | Compliance (yes/no) | Documentary evidence |
|---|---|---|
| Access point (AP) with two integrated IEEE 802.11a and 802.11n (5 GHz) and 802.11b/g and 802.11n (2.4 GHz) modules that can be used independently of one another. | | |
| Eight non-overlapping channels for 802.11a and 802.11n indoors (5.15GHz to 5.35 GHz). | | |
| 11 non-overlapping channels for 802.11a and 802.11n indoors/outdoors (5.470 GHz to 5.725 GHz). | | |
| 13 overlapping channels for 802.11b/g and 802.11n. | | |
| Net throughputs per AP of up to 6 Mbps (802.11b), 20 Mbps (802.11g), 22 Mbps (802.11a). and 300Mbps (802.11n) | | |
| RegTP approval in accordance with 802.11a for 200 mW. | | |
| Optional external omni-directional antennas; ability to connect additional external antenna types with potentially different RF characteristics; R-SMA connector. | | |
| Option of data transfer and network monitoring (rogue detection) through an access point, using all approved channels. | | |
| System-wide automatic real-time radio frequency management for the entire WLAN, with automatic service adaptation, radar recognition per channel, dynamic channel switching during interference for instance, as well as automatic channel release once the disruptions have been eliminated. | | |
| Optional manual configuration of transmission power per frequency band in steps of 100%, 50%, 25%, 12.5%, and 6.25% (3 dBm steps). | | |
| Supports video and Voice-over-IP with fast roaming. | | |
| Support for at least five QoS profiles according to the 802.11e standard. Legacy applications and clients that do not yet meet this standard can be similarly prioritized. | | |
| Encrypted management communication between access points and central WLAN controllers through a UDP (User Datagram Protocol)-based tunneling protocol CAPWAP (CTP), which encapsulates the data packets of the wireless clients. | | |
| Automatic configuration and management of APs through central WLAN controller (zero touch) using both the layer 2 and layer 3 infrastructure. | | |

| | | |
|---|---|---|
| No storage of individual data and security settings on APs. | | |
| Support for at least 16 different SSIDs on each access point. | | |
| 10/100 BaseT Ethernet connection auto-sensing. | | |
| Wi-Fi certification. | | |
| Encryption according to Wired Equivalent Privacy (WEP), WPA (Wi-Fi Protected Access), and WPA2 (IEEE 802.11i, AES). | | |
| IEEE 802.1x security architecture for the WLAN clients, radius support with pre-authentication and Pair-wise Master Key (PMK) caching with handoff times (roaming) < 50 ms, option of using X.509 certificates. | | |
| Support for voice via WLAN, prioritization through SVP and WMM (Wi-Fi Multimedia), 802.11e. Possibility of prioritization based on different SSID's. Layer 3 roaming without additional modules. | | |
| Supports branch office mode with VLAN tagging (up to 4k VLAN IDs); in this mode, the APs act as local layer 2 switches and only need a connection to the controller for authentication. | | |
| Supports all IEEE 802.11h functions without swapping hardware. | | |
| Upgradeable for future standards, in so far as this is supported by the integrated chipset. | | |
| All system-related components and installation parts supplied. | | |
| Dual-radio access point IEEE 802.11 a/b/g for indoor areas, for external antennas. | | |
| Access points must be able to bridge an SSID locally and to lead another SSID to the central controller. | | |