شرکت مخاتراتی افغان تلیکام

# Scope of work

## مشخصات تخنیکی

تهیه و تدارک وسایل شبکه فایبر نوری(او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین، او تی دی ار)

تاریخ: 1404

**محتویات:**


1 معرفی شرکت افغان تیلی کام : ..... 1
2 پس منظر پروژه و شبکه فایبرنوری:..... 1
3 هدف پروژه: ..... 1
4 مشخصات/ نیازمندی: ..... 2
5 مشخصات تخنیکی:..... 5
5.1 Optical Distribution Frame (ODF): ..... 5
5.2 fiber joint enclosure: ..... 6
5.3 Patch Cords: ..... 7
5.4 Patch Cords (E2000): ..... 8
5.5 Fiber Cable Splicing Machine (Fujikura 90S+ Fusion Splicer): ..... 9
5.6 Power Meter (EPM-50 Power Meter): ..... 11
5.7 Light Source (ELS-50 Light Source): ..... 11
5.8 Optical Time-Domain Reflectometer (OTDR): ..... 12
6 مسولیت های فرمایش دهنده و فرمایش گیرنده:..... 13
6.1 اجناس: ..... 13
6.2 جدول تحویل دهی جنس:..... 14
7 میعاد قرارداد طور ذیل میباشد:..... 16
7.1 میعاد تعویض جنس: ..... 16
7.2 میعاد ورنتی جنس ومدت کار آیی جنس ..... 16
7.3 تفتیش بصری برای: ..... 16
7.4 شرایط پرداخت:..... 16
7.5 شرایط تخنیکی: ..... 16

## 1 معرفی شرکت افغان تیلی کام :

افغان تیلی کام بتاریخ 13 سپتمبر سال 2005 میلادی به حیث یک شرکت مکمل مخابراتی عرض وجود نمود، شرکت افغان تیلی کام بعد از تأسیس خدمات موبائیل GSM/3G سلام، خدمات فایبرنوری، خدمات تلیفون های دیجیتال لیندار، خدمات انترنی DSL ، خدمات انترنت وایمکس، خدمات انترنت Dial Up را در سطح کشور عرضه میدارد.

## 2 پس منظر پروژه و شبکه فایبرنوری:

شرکت مخابراتی افغان تیلی کام با ارائه خدمات مخابراتی توانسته است سرتاسر کشور را تحت پوشش خدمات مخابراتی قرار دهد که طبق نیازمندی مارکیت و تکنالوژی گام پیشرفت و ترقی جهت تأمین خدمات مورد نیاز مارکیت (Optical Fiber Cable (OFC)) را در پهلوی شبکه های قبلی خویش، شبکه رینگ حلقوی فایبر نوری به ظرفیت 36 Core فایبردر ۲۵ ولایت کشور جهت ارتباط دستگاه های مخابراتی این شرکت به دستگاه های مرکزی به شبکه کیبل فایبر نوری (OFC) بابت تأمین خدمات مخابراتی بهتر و با کیفیت، احداث و فعال نمود است. ضمن اینکه شبکه خویش را تحت نام Access Network ولایات شمال شرق و مرکزی کشور را مانند بامیان، کندز، بدخشان، تخار، کنر و کاپیسا را به شبکه رینگ حلقوی به ظرفیت 36 Core فایبر ولایات جنوبی مشمول ولایات لوگر، پکتیا، پکتیکا و خوست را نیز به ظرفیت 36 Core فایبر به رینگ حقلوی، وصل نموده است.

## 3 هدف پروژه:

یکی از اهداف شرکت مخابراتی افغان تیلی کام گسترش و توسعه شبکه فایبر نوری در تمام ولایات کشورمی باشد که از جمله ۳۴ ولایات فعلاً ۲۶ ان به شبکه فایبر نوری وصل و ۸ ولایت دیگرتحت پلان توسعوی قرار داشته و در اینده نزدیک از خدمات و امکانات شبکه فایبرنوری مستفید خواهد گردید اکنون هدف خاص تدارک وسایل متذکره نیازمندی مبرم با در نظر داشت موارد ذیل به منظور حفظ مراقبت شبکه موجوده فایبر نوری ، ترجیح داده و انرا تحت اولویت قرارمیدهد.؛

- حفظ مراقبت شبکه موجوده توسط وسایل ذکر شده؛
- ردیابي شبکه فایبر نوري تحت زمین؛
- ترمیم نمودن شبکه فایبر نوری توسط وسایل؛
- تأمین و پایدار نمودن شبکه موجوده توسط وسایل و مساعد نمودن خدمات مخابراتی بطور ترانزیت با کشورهای همسایه و بین الولایتي؛

## 4 مشخصات/ نیازمندی:

بل احجام اجناس (او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین، او تی دی ار و ماشین ردیابی کیبل زیر زمین)

| شماره | بل احجام اجناس (او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین،و ماشین چک فایبر کیبل) | واحد | مقدار | قیمت فی واحد به حروف | قیمت فی واحد به عدد | قیمت مجموعی به افغانی |
|---|---|---|---|---|---|---|
| 1 | 12 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 600 | | | |
| 2 | 48 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 100 | | | |
| 3 | 96 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 80 | | | |
| 4 | 48 core fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 5 | 96 fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 6 | 144 fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 7 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 8 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-1m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 9 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-2m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 10 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-3m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 11 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 12 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-10m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 13 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 14 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-1m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 15 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-2m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 16 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-3m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 17 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 18 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-10m based on SoW memorandum# 5.3 Technical | pair | 500 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Requirements | |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | 19 |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 20 |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 21 |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 22 |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | 23 |
| | | | 500 | pair | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 24 |
| | | | 500 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | 25 |
| | | | 500 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 26 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 27 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 28 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0-5m based on SoW memorandum# 5.3 Technical Requirements | 29 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0-10m based on SoW memorandum# 5.3 Technical Requirements | 30 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | 31 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 32 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 33 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 34 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | 35 |
| | | | 2,000 | pair | LC/UPS-LC/UPC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 36 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0-0.5m based on SoW memorandum# 5.3 Technical Requirements | 37 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical | 38 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Requirements | |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 39 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 40 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | 41 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 42 |
| | | | 400 | pair | Singlemode 1 E2000/APC-SC/PC G.652D 20M Yellow \| AE2000-SC-S2-L40//E2000/APC-SC/UPC SM SX 2.0mm 20M//E2000/APC-SC/UPC G652D 1F Φ3 PVC 20M based on SoW memorandum# 5.4 Technical Requirements | 43 |
| | | | 400 | pair | Singlemode 1 E2000/APC-SC/PC G.652D 10M Yellow \| AE2000-SC-S2-L40//E2000/APC-SC/UPC SM SX 2.0mm 10M//E2000/APC-SC/UPC G652D 1F Φ3 PVC10M based on SoW memorandum# 5.4 Technical Requirements | 44 |
| | | | 10 | pcs | Splicing Machine 90s+ and tools kits with all accessories based on SoW memorandum# 5.5 Technical Requirements | 45 |
| | | | 5 | pcs | Power Meter based on SoW memorandum# 5.6 Technical Requirements | 46 |
| | | | 20 | pcs | Light Source based on SoW memorandum# 5.7 Technical Requirements | 47 |
| | | | 5 | pcs | Optical Time-Domain Reflectometer (OTDR) based on SoW memorandum# 5.8 Technical Requirements | 48 |
| | | | قیمت مجموعی | | | |

Afghan Telecom Corporation

## 5.1 Optical Distribution Frame (ODF):

### General Description:

**Note**: the pigtails, adapter of ODF & all types of patch cords shall be branded products supplied by globally recognized optical fiber manufacturers, including Corning (USA), Prysmian Group (Italy), YOFC (China), Fujikura Ltd. (Japan), Sumitomo Electric (Japan), Hengtong Optic-Electric (China), and Sterlite Technologies (STL) (India), from any other non–globally recognized manufacturers will not be accepted and shall be rejected, The selected manufacturer must be officially confirmed through written communication from the manufacturer's official corporate email address;

- Rack mount sliding ODF, 24 fibers per cassette, Including Splice Sleeves;
- Adapter Duplex SC/SC for 48 and 96 core ODF and simplex SC/SC for 12 core ODF;
- Pigtails shall have enough length to satisfy bend radius required (ITU-T G657.A1) and fit on the ODFs supplied
- The ODF shall be equipped with cassettes, each supporting 24 fibers per cassette. The external dimensions of each cassette shall be (198 × 122 × 16) mm, with a tolerance of ±5%, in accordance with the referenced picture.
- Sleeves shall be of the type compatible with the supplied optical core cables;
- Flexible: based on below picture as mentioned rack mount ODF is relatively flexible during applications;
- Half (50%) of ODF Pigtails SC/APC & Adapter SC/APC;
- Half (50%) of ODF Pigtails SC/UPC & Adapter SC/UPC;
- with all required accessories.

### Standards Comply:

The product must be produced and tested following the standards outlined below.

- UL94: Test for flammability of plastic materials for parts in devices and appliances
- IEC61300-2: Fiber optic interconnecting devices and passive components - Basic test and measurement procedures
- IEC60068-2: Basic environmental testing procedures for electric and electronic products

### Characteristics:

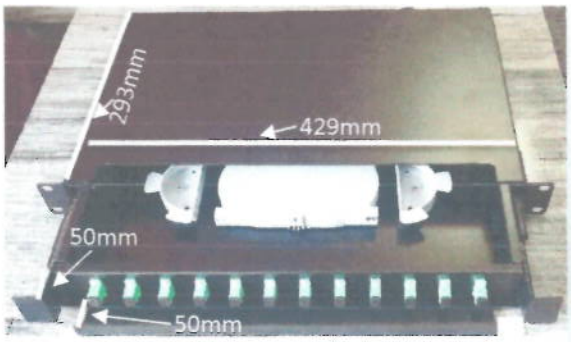
- IP20, scratch resistant powder paint.
- Adjustable terminal box recess up to 50mm.
- Terminal box panel with stopper at full travel, The Maximum travel of guide rail is 200mm

### Mechanical specifications:

| Item | Specifications | Note |
|---|---|---|
| Material of housing | Coated cold-rolled steel | |
| Material of internal components | Flame retardant of ABS | |
| Material of metal accessory | High-quality stainless steel | |
| Color | Black and cassette be white | |
| Adaptor & pigtails durability | ≥1000 cycle | |
| Insulation resistance | $\geq 2 \times 10^4$ M Ω / 500V (DC) | |
| Withstand Voltage | ≥3000V (DC) /1min | |

### Optical specifications:

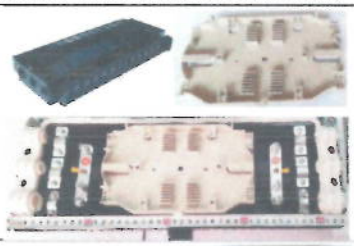
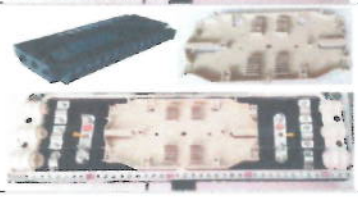
| Item | Test Method | Specification | Note |
|---|---|---|---|
| Insertion loss(dB) | IEC61300-3-4-Method B | Maximum≤0.25dB | Grade B |
| Return loss(dB) | IEC61300-3-6-Method 1 | APC≥60dB, UPC≥50dB | |
| Random connection | IEC61300-3-4 | Maximum≤0.3dB | |



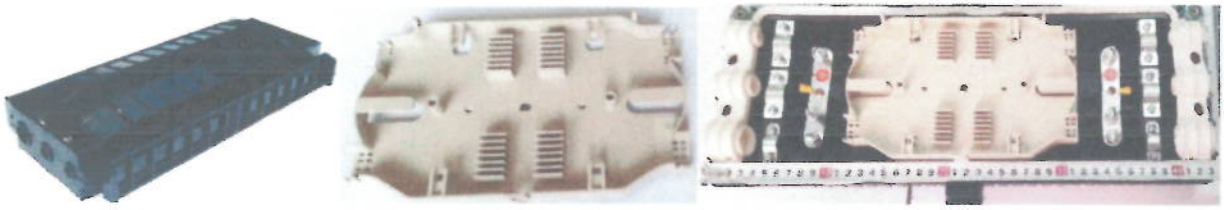
## 5.2 fiber joint enclosure:
## Characteristics:

- 3 in/3 Out, Installation kit, Sealing kit, Splice Sleeves;
- The joint closure shall be equipped with cassettes, each supporting 24 fibers per cassette. The external dimensions of each cassette shall be (198 × 122 × 16) mm, with a tolerance of ±5%, in accordance with the referenced picture.
- The splice closure shall be suitable for the installation in manhole/Handhold;
- The splice closure shall consist of anti-corrosive materials, resistant to acids, oil and pollutants, etc;
- The splice closure shall have mechanical strength to withstand tensile, compressive bending and torsion stresses expected in normal condition;
- The splice closure shall be applied for both- splicing types between optical fibre cables and optical fibre cable and termination optical fibre cable;
- The splice closure shall consist of anti-corrosive materials, resistant to acids, oil and pollutants, etc;
- with all required accessories.

## Specifications:

| Item | Specifications | Note |
|---|---|---|
| Material of housing | High-strength PP+GF | |
| Material of internal components | High-strength ABS | |
| Material of metal accessory | The joint closure and all related components shall be manufactured from high-quality stainless steel.<br>The cable central strength member (FRP) fixing point, including all nuts and bolts, shall be made of corrosion-resistant materials to ensure long-term durability and protection against rust and environmental conditions | |
| External dimension(mm) for 48 core fibers | (441*203*108) ± 5% |  |
| Weight: | 2 kg± 10% | |
| External dimension(mm) for 96 core fibers | (445*220*110) ± 5% |  |
| Weight: | 2.15 kg± 10% | |

| | | |
|---|---|---|
| External dimension(mm) for 144 core fibers | (645*220*175) ± 5% | |
| Weight: | 5.75 kg10% | |
| Color | Black and cassette be white | |
| Number of ports | 6 | |
| Sealing type | Mechanical | |
| Fiber cable diameter of 2 small ports (mm) | Φ8~Φ16 | |
| Fiber cable diameter of 2 middle ports (mm) | Φ8~Φ20 | |
| Fiber cable diameter of 2 big ports (mm) | Φ8~Φ23 | |
| IP grade | IP68 | |
| Capacity (Max) per cassette for 48,96 & 144 core joint | 1- (6cassette /joint) 6 x24( =144, 2- (4cassette /joint) 4x24=96, 3-(3cassette /joint one will be extra, it mean for 48 will be have 3 pc) 3x24=48 | |



## 5.3 Patch Cords:

- Patch shall have enough to satisfy bend radius required (ITU-T G657.A1) and fit on the Rack & ODFs supplied;
- Brands core patch cords;
- APC type;
- UPC type.
- Loose tube structure LSZH materials for outer sheath

**Mechanical Performance:**

| Fiber Count | Bending Radius(mm) | | Temperature(°C) | | | Package |
|---|---|---|---|---|---|---|
| | Static | Dynamic | Operation | Installation | Storage | |
| 1 | 10D | 20D | -20~+60 | -5~+50 | -20~+60 | PE bag |

**Connector Performance:**

| Connector Type | IL(dB) | RL(dB) | Durability | Temperature Cycling ΔIL(dB) |
|---|---|---|---|---|
| LC and SC | 0.30(Max) | ≥36 | 500 times | ≤0.20 |

**Fiber Performance:**

**ITU-T G657.A1**

| Category | Items | Unit | Description | |
|---|---|---|---|---|
| | | | Before cabled | After cabled |
| Optical Characteristics | Attenuation at 1310 nm | dB/km | ≤ 0.34 | ≤0.40 |
| | Attenuation at 1383 nm | dB/km | ≤ 0.34 | ≤0.40 |
| | Attenuation at 1550 nm | dB/km | ≤ 0.20 | ≤0.30 |
| | Attenuation at 1625 nm | dB/km | ≤ 0.23 | ≤0.30 |



Afghan Telecom Corporation
افغان
Afghan Telecom
شرکت سهامی افغان

| | | | |
|---|---|---|---|
| | Zero dispersion wavelength | nm | 1312 ± 12 |
| | Zero dispersion slope | ps/(nm$^2$·km) | ≤ 0.092 |
| | Cable cut-off wavelength λcc | nm | ≤ 1260 |
| | Mode field diameter (MFD) at 1310 nm | μm | 8.7~9.5 |
| | Mode field diameter (MFD) at 1550 nm | μm | 9.9~10.9 |
| | Group Index of Refraction（Typical）at 1310 nm | / | 1.466 |
| | Group Index of Refraction（Typical）at 1550 nm | / | 1.467 |
| | Macro-bend loss(1 turn, 16mm radius) at 1550nm | dB | ≤ 0.05 |
| | Macro-bend loss(100 turn, 25mm radius) at 1310&1550nm | dB | ≤ 0.05 |
| | Macro-bend loss(100turns, 30mm radius) at 1620nm | dB | ≤ 0.05 |
| Geometrical Characteristics | Cladding diameter | μm | 125 ± 0.7 |
| | Cladding non-circularity | % | ≤ 1.0 |
| | Coating diameter | μm | 245 ± 7 |
| | Coating/cladding concentricity error | μm | ≤ 12.0 |
| | Coating non-circularity | % | ≤ 6.0 |
| | Core/cladding concentricity error | μm | ≤ 0.6 |

### 5.4 Patch Cords (E2000):

- Single mode 1 /APC-SC/PC G.652D 20M Yellow | AE2000-SC-S2-L40//E2000/APC-SC/UPC SM SX 2.0mm 20M//E2000/APC-SC/UPC G652D 1F Φ3 PVC 20M;
- Fiber Type: ITU-T G.652D (Single mode, Low Water Peak Fiber);
- Wavelengths Supported;
  - 1310 nm
  - 1550 nm
  - Extended support: 1625 nm
- Attenuation:;
  - ≤ 0.36 dB/km @ 1310 nm
  - ≤ 0.22 dB/km @ 1550 nm
  - ≤ 0.24 dB/km @ 1625 nm
- Bandwidth / Applications: Optimized for long-haul, metro, and access networks (DWDM, OTN, SDH, Ethernet, etc.);
- Insertion Loss: ≤ 0.3 dB (typical ≤ 0.2 dB);
- Cable Jacket Material: PVC / LSZH / OFNR / OFNP (as specified);
- Cable Diameter: 3.0 mm (standard);
- Color: Yellow (standard for Singlemode);
- Operating Temperature: -40 °C to +75 °C;
- Storage Temperature: -45 °C to +85 °C.

## 5.5 Fiber Cable Splicing Machine (Fujikura 90S+ Fusion Splicer):

| TECHNICAL SPECIFICATIONS: | | | |
|---|---|---|---|
| 1 | Fiber Alignment Method | | Active core alignment |
| 2 | Fiber Count Can Be Spliced | | Single fiber |
| 3 | Applicable Fiber | Fiber Type | Single-mode optical fiber |
| | | | Multimode optical fiber |
| | | Cladding Dia. | 80 to 150 µm |
| 4 | Applicable Coating | Sheath Clamp | Coating dia.: Max. 3,000 µm |
| | | | Cleave length: 5 to 16 mm |
| 5 | Fiber Splice Performance | Splice Loss | ITU-T G.652: Avg. 0.02 dB |
| | | | ITU-T G.651: Avg. 0.01 dB |
| | | | ITU-T G.653: Avg. 0.04 dB |
| | | | ITU-T G.654: Avg. 0.04 dB |
| | | | ITU-T G.655: Avg. 0.04 dB |
| | | | ITU-T G.657: Avg. 0.02 dB |
| | | Splice Loss | SM FAST mode: Avg. 8 to 10 sec. |
| | | | SM AUTO mode: Avg. 11 to 13 sec. |
| | | | AUTO mode: Avg. 14 to 16 sec. |
| 6 | Applicable Protection Sleeve | Sleeve Type | Heat-shrinkable sleeve |
| | | Sleeve Length | Max. 66 mm |
| | | Sleeve Dia. | Max. 6.0 mm before shrinking |
| 7 | Sleeve Heat Performance | Heat Time | 60 mm slim mode: Avg. 9 to 10 sec. |
| | | | 60 mm mode: Avg. 13 to 15 sec. |
| 8 | Fiber Tensile Test Force | | Approx. 2.0 N |
| 9 | Electrode Life | | Approx. 5,000 splices |
| 10 | Physical Description | Dimensions W | Approx.170 mm without projection |
| | | Dimensions D | Approx.173 mm without projection |
| | | Dimensions H | Approx.150 mm without projection |
| | | Weight | Approx. 2.8 kg including battery |
| 11 | Environmental Condition | Temperature | Operate: -10 to 50oC |
| | | | Storage: -40 to 80oC |
| | | Humidity | Operate: 0 to 95% RH non-condensing |
| | | | Storage: 0 to 95% RH non-condensing |
| | | Altitude | Max. 5,000 m |
| 12 | AC Adaptor | Input | AC100 to 240 V, 50/60 Hz, Max. 1.5 A |
| 13 | Battery Pack | Type | Rechargeable Lithium Ion |
| | | Output | Approx. DC14.4V / 6,380 mAh |
| | | Capacity | Approx. 300 splice and heat cycles |
| | | Temperature | Recharge: 0 to 30oC |
| | | | Storage: -20 to 30oC |
| | | Battery Life | Approx. 500 recharge cycles |
| | | Recharge Time | Approx. 5-8 hours from empty |
| 14 | Display | LCD Monitor | TFT 5 inches with touch screen |
| | | Magnification | 200 to 320x |
| 15 | Illumination | V-Grooves | LED lamp |
| 16 | | PC | USB2.0 Mini B type |
| | | External Led Lamp | USB2.0 A type, Approx. DC5V, 500 mA |

| | | | |
|---|---|---|---|
| | Interface | Ribbon Stripper | Mini DIN 6 pin, DC12V, Max. 1A |
| | | Wireless | Bluetooth 4.1 LE |
| 17 | Data Storage | Splice Mode | 100 splice modes |
| | | Heat Mode | 30 heat modes |
| | | Splice Result | 20,000 splices |
| | | Splice Image | 100 images |
| 18 | Screw Hole for Tripod | | 1/4-20 UNC |
| 19 | Other Features | Automatic Functions | Splice mode select by fiber type analysis |
| | | | Discharge power calibration |
| | | | Wind protector: open/close |
| | | | Sheath clamp: open |
| | | | Heater lid: open/close |
| | | | Heater clamp: open/close |
| | | Reference Guide | Video and PDF file stored in splicer |
| | | Sheath Clamp | Easy sleeve positioning clamp |
| | | Electrode | Replaceable without tool |

**Splicing Machine Package Contents:**

- Fusion Splicer Fujikura 90S+ — 1 pc;
- Battery— 1 pc;
- Spare Battery— 2 pc;
- AC Adaptor— 1 pc;
- USB Cable— 1 pc;
- Fusion Splicer Strap— 1 pc;
- Spare Electrodes— 2 set;
- Carrying Case— 1 pc;
- Alcohol Dispenser (AP-02) — 1 pc.
- Single Fiber Stripper— 2 pc;
- Optical Fiber Cleaver— 2 pc;
- Fiber Setting Plate (AD-10-M24) — 1 pc;
- Hexagonal Wrench (HEX-01) — 1 pc;
- With 6 months warranty.

## 5.6 Power Meter (EPM-50 Power Meter):

**Technical Specifications (EXFO):**

| | | | |
|---|---|---|---|
| Power measurement range—pass zone for continuous data stream | 1310 nm | 8 to –40 dBm | 8 to –40 dBm |
| | 1490 nm | 12 to –40 dBm | 12 to –40 dBm |
| | 1550 nm | 25 to –40 dBm | N/A |
| Burst measurement capability | | CO to ONT | CO to ONT |
| Burst measurement range | 1310 nm | 8 to –30 dBm | 8 to –30 dBm |
| ORL | 1550 nm | 55 dB | 55 dB |
| Pass-through insertion loss | | 1.5 dB | 1.5 dB |
| Spectral passband | 1310 nm | 1260 to 1360 nm | 1260 to 1360 nm |
| | 1490 nm | 1480 to 1500 nm | 1480 to 1500 nm |
| | 1550 nm | 1539 to 1565 nm | 1539 to 1565 nm |
| Power uncertainty | | 0.5 dB | 0.5 dB |
| Calibrated wavelengths | | 1310/1490/1550 nm | 1310/1490 nm |
| Power measurement range | 1310 nm | 25 to –40 dBm | |
| | 1490 nm | 25 to –40 dBm | |
| | 1550 nm | 25 to –40 dBm | |
| **General Specifications** | | | |
| Temperature | Operating | –10 °C to 50 °C (14 °F to 122 °F) | |
| | Storage | –40 °C to 70 °C (–40 °F to 158 °F) | |

**Package Contents**

- EPM-50 Optical Power Meter – 1 pc;
- USB cable – 1 pc;
- Wrist strap – 1 pc;
- Protective cover for optical ports – 1 pc;
- CD with software and user guide – 1 pc;
- Permanently software;
- With 6 months warranty.

## 5.7 Light Source (ELS-50 Light Source):

**Specifications (EXFO):**

- Central Wavelengths (nm): 1310nm (+/- 20nm), 1550nm (+/-20nm);
- Spectral Width (nm): < 5;
- Output Power (dBm): > -5;
- Power Stability (dB): +/-0.10;
- Battery Life (hours): 60;
- Tone Generation (Hz): 270, 1k, 2k;
- Rugged design;
- Excellent power stability for reliable loss measurements;
- Interchangeable connector adapters;
- Up to 60 hours of battery life;

- Tone generation for fiber identification;
- With 6 months warranty.

## 5.8 Optical Time-Domain Reflectometer (OTDR):

### FTBx-735C-SM2-OPM2-OI-IPRO ultra-long-haul OTDR :

| TECHNICAL SPECIFICATIONS | |
|---|---|
| Wavelengths (nm) [a] | 1310 ± 20/1490 ± 20/1550 ± 20/1625 ± 10 |
| SM live port built-in filter | 1625 nm: highpass >1595 nm<br>isolation >50 dB from 1270 nm to 1585 nm |
| Dynamic range at 20 µs (dB) [b] | 42/41/41/41 |
| Event dead zone (m) [c] | 0.5 |
| Attenuation dead zone (m) [d] | 2.5 |
| Distance range (km) | 0.1 to 400 |
| Pulse width (ns) | 3 to 20 000 |
| Linearity (dB/dB) [a] | ±0.03 |
| PON dead zone (m) [e] | 30 |
| Loss threshold (dB) | 0.01 |
| Loss resolution (dB) | 0.001 |
| Sampling resolution (m) | 0.04 to 10 |
| Sampling points | Up to 256 000 |
| Distance uncertainty (m) [f] | ±(0.75 + 0.0025 % x distance + sampling resolution) |
| Measurement time | User-defined (maximum: 60 minutes) |
| Typical real-time refresh (Hz) | 4 |
| Stable source output power (dBm) [g] | −2.5 |
| Reflectance (dB) [a] | ±2 |
| ( IOLM) Software License | Permeant |
| TECHNICAL SPECIFICATIONS (In-line power meter) a, h | |
| **Input power range (dBm)** | 1490 nm: −65 to 18<br>1550 or 1577 nm: −50 to 28 |
| PON power meter (nm) | Two channels: 1490/1550 |
| Broadband power meter (nm) | One channel: 1270 to 1625 |

| | |
|---|---|
| Power uncertainty (dB) [a] | ±0.2 |
| Calibrated wavelengths (nm) | 1310, 1490, 1550 and 1625 |
| PON power meter spectral band (nm) | 1450 to 1530 |
| Broadband power meter spectral band (nm) | 1270 to 1625 |
| PON power meter selectable wavelengths (nm) | 1490, 1550, 1490/1550 |
| Broadband power meter selectable wavelengths (nm) | 1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1430, 1450, 1470, 1490, 1510, 1530, 1550, 1570, 1577, 1590, 1610,1625 |
| Display resolution (dB) | 0.1 |
| PON power meter ORL (dB) [a] | −55 |
| Broadband power meter ORL (dB) [a] | −50 |

## 6 مسولیت های فرمایش دهنده و فرمایش گیرنده:

| 6.1 اجناس: | | مسولیت شرکت افغان تلیکام | مسولیت شرکت قرارداد کننده |
|---|---|---|---|
| 1 | چک نمودن وسایل مطابق قرارداد و تهیه نمودن گزارش؛ | √ | |
| 2 | تهیه نمودن وسایل با کیفیت بهتر مطابق قراداد؛ | | √ |
| 3 | انتقال وسایل در گدام شرکت افغان تلیکام ولایت کابل مهتاب قلعه؛ | | √ |
| 4 | پیش بردن پروسه مالیاتی و گمرکی. | | √ |
| 5 | معاینه اجناس | √ | |

## 6.2 جدول تحویل دهی جنس:

| شماره | احجام اجناس (او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین،و ماشین چک فایبر کیبل) | مقدار | واحد فزیکی | محل نهایی اکمال جنس | تاریخ تحویلی طبق شرایط تجارت بین المللی ((Incoterms به شکل DDP | |
|---|---|---|---|---|---|---|
| | | | | | تاریخ آغاز تحویلی اجناس | تاریخ آغاز تحویلی اجناس |
| شماره | بل احجام اجناس (او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین،و ماشین چک فایبر کیبل) | واحد | مقدار | گدام شرکت افغان تلیکام ولایت کابل مهتاب قلعه؛ | بعد از عقد قرارداد | بعد از عقد قرارداد به مدت 120 روز تقویمی |
| 1 | 12 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 600 | | | |
| 2 | 48 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 100 | | | |
| 3 | 96 core ODF with all accessories based on SoW memorandum# 5.1 Technical Requirements | pcs | 80 | | | |
| 4 | 48 core fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 5 | 96 fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 6 | 144 fiber joint enclosure with all accessories based on SoW memorandum# 5.2 Technical Requirements | pcs | 1,000 | | | |
| 7 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 8 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 9 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 10 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 11 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 12 | SC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 13 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 14 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 15 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 16 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 17 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 18 | SC/APC-SC/UPC-Duplex-SM-SM-Φ3.0-10m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 19 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 20 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 21 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 22 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 23 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |
| 24 | SC/APC-SC/APC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | pair | 500 | | | |



Afghan Telecom Corporation

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 500 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | 25 |
| | | | 500 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 26 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 27 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 28 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0-5m based on SoW memorandum# 5.3 Technical Requirements | 29 |
| | | | 2,000 | pair | LC/UPC-SC/APC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 30 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | 31 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 32 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 33 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 34 |
| | | | 2,000 | pair | LC/UPC-LC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | 35 |
| | | | 2,000 | pair | LC/UPS-LC/UPC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 36 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 0.5m based on SoW memorandum# 5.3 Technical Requirements | 37 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 1m based on SoW memorandum# 5.3 Technical Requirements | 38 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 2m based on SoW memorandum# 5.3 Technical Requirements | 39 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 3m based on SoW memorandum# 5.3 Technical Requirements | 40 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 5m based on SoW memorandum# 5.3 Technical Requirements | 41 |
| | | | 2,000 | pair | LC/UPC-SC/UPC-Duplex-SM-SM-Φ3.0- 10m based on SoW memorandum# 5.3 Technical Requirements | 42 |
| | | | 400 | pair | Singlemode 1 E2000/APC-SC/PC G.652D 20M Yellow \| AE2000-SC-S2-L40//E2000/APC-SC/UPC SM SX 2.0mm 20M//E2000/APC-SC/UPC G652D 1F Φ3 PVC 20M based on SoW memorandum# 5.4 Technical Requirements | 43 |
| | | | 400 | pair | Singlemode 1 E2000/APC-SC/PC G.652D 10M Yellow \| AE2000-SC-S2-L40//E2000/APC-SC/UPC SM SX 2.0mm 10M//E2000/APC-SC/UPC G652D 1F Φ3 PVC10M based on SoW memorandum# 5.4 Technical Requirements | 44 |
| | | | 10 | pcs | Splicing Machine 90s+ and tools kits with all accessories based on SoW memorandum# 5.5 Technical Requirements | 45 |
| | | | 5 | pcs | Power Meter based on SoW memorandum# 5.6 Technical Requirements | 46 |
| | | | 20 | pcs | Light Source based on SoW memorandum# 5.7 Technical Requirements | 47 |
| | | | 5 | pcs | Optical Time-Domain Reflectometer (OTDR) based on SoW memorandum# 5.8 Technical Requirements | 48 |

Afghan Telecom Corporation

7 **میعاد قرارداد طور ذیل میباشد:**

- میعاد قرارداد به مدت 120 روز تقویمی بعد از عقد قرارداد میباشد.

7.1 **میعاد تعویض جنس:**

- میعاد رد جنس 10 روز وتعویض ان به مدت 20 روز میباشد.

7.2 **میعاد ورنتی جنس ومدت کار آیی جنس**

- میعاد ورنتی برای (جنس) به مدت شش ماه بعد از معاینه جنس آغاز میگردد؛
- مدت کار آئی جنس مورد نیاز که از جانب فرمایش گیرنده اکمال میگردد اسناد حمایوی مبنی بر کار آئی جنس را برای مدت حد اقل 5 (پنج) سال داشته باشد.

7.3 **تفتیش بصری برای:**

تمام اجناس طور یک بار در گدام شرکت افغان تلیکام ولایت کابل، از طریق تیم تخنیکي وهیّت معاینه امتحان وبعداً تسلیم میگردد.

7.4 **شرایط پرداخت:**

- مبلغ 20% پیش‌پرداخت از مجموع قیمت قرارداد در مقابل تضمین پیش پرداخت معادل مبلغ پیش پرداخت صورت میگیرد؛
- مبلغ 80% قیمت مجموع قرارداد بعد از تحویلی جنس مورد نیاز، معاینه و تصدیق شعبه نیازمند و طی مراحل اداری پرداخت میگردد.

7.5 **شرایط تخنیکی:**

- شرکت تأمین کننده باید تجهیزات را از شرکت های مشهور و معتبر تولید کننده ( brand manufacturers) تهیه نماید.
- شرکت تأمین کننده باید تصدیق نامه رسمی از شرکت های تولید کننده در مورد تمامی مشخصات تخنیکی تجهیزات (او دی اف، جاینت فایبر نوری، پچکارد، ماشین وصل نمودن فایبر، پاورمتر، لایت سورس، لایت پین، او تی دی ار ) داشته باشد و تمامی مشخصات به صورت رسمی توسط شرکت تولید کننده تأیید شود.