

Telephone Shilpa Sangstha Limited
Tongi, Gazipur
(A State Own Public Limited Company)

BIDDING DOCUMENT

FOR

**"Supply of OLT and ONU in Modular Form and Assist TSS for
Installation, Testing and Commissioning of ONU and STM-1 Mux at
Various Sites on Turn-Key Basis".**

Book - 2 (Two)

TECHNICAL SPECIFICATION

TENDER NO. TSS/FP/OLT&ONU/2010/01
DATED : XX/XX/XXXX



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Book-2

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Chapter 1

SPECIAL INFORMATION AND INSTRUCTION TO BIDDERS

- 1.1 *The bid shall be single stage two envelop system. The first envelop shall have two parts; the first part shall contain all the "Mandatory Documents" and the second part shall contain all the "Technical Documents". The second envelop shall contain "Financial Documents" as per scope of work.***
- 1.2 Scope of works include **"Supply of STM-1 Mux and ONU in Modular Form and Assist TSS for Installation, Testing and Commissioning of STM-1 Mux & ONU at Various Sites on Turn-Key Basis"**.
- 1.3 The Bidders "Mandatory Documents" part shall contain the following documents in each set and a total of four (4) sets (one original, 3 photocopies, one Soft Copy in PDF format or MS word) shall be submitted:
- 1.3.1. Tender Document Purchase Receipt (*original in one set and copies in other sets*)
- 1.3.2. Forwarding of the Bid (*as per "Annex A" attached in Book 1, duly filled up and properly signed.*)
- 1.3.3. Bid Security / Bank Guarantee/Bid Bond (*as per "Annex B" attached in Book 1, duly filled up and properly signed.*)
- 1.3.4. The **Bond for Spares** (*as per "Annex D.1." attached in Book 1, duly filled up and properly signed.*)
- 1.3.5. The **Bond for Expansion** (*as per "Annex D.2." attached Book 1, duly filled up and properly signed.*)
- 1.3.6. The **list of attached certificates** (*as per "Annex F" attached in Book 1, duly filled up and properly signed.*)
- 1.3.7. A "Declaration on Observance of Ethics" (*as per "Annex G" attached in Book 1, duly filled up and properly signed.*)
- 1.3.8. A "Declaration of Joint Liability" (*as per "Annex H" attached in Book 1, duly filled up and properly signed*) [*applicable only if the bid is submitted by a Joint Venture Company/Consortium*]
- 1.3.9. The Annex 1.1. to 1.4., attached in Book Two, duly filled up .

- 1.3.10. Bid Summary (*as per format shown in “Form F” attached in Book Two, duly filled up*).
- 1.3.11. Principal’s Letter of Authority (*if the bid is submitted by an entity other than principal*).
- 1.3.12. The letter of authority of the manufacturer of STM-1 Mux & Optical Network Unit-ONU)to participate in this bid (*if the bidder is not manufacturer of the equipment under the bid and for applicable equipment only*).
- 1.3.13. Guarantee certificates from the manufacturer (On Manufacturer’s letterhead) regarding continuous supply of spare parts of STM-1 MUX, ONU for 5 (five) years from the date of issuance of FAC.

1.4 The second part titled “Detail Technical Documents” shall contain

1.4.1 Documentary Evidences to Establish Equipment’s Performance

- 1.4.1.1 Certificates in support of successful running of commercial Multi Service Access network containing the offered brand OLT & ONU in at least 3 (Three) countries. In each country, the deployed network must have at least 30,000 subscriber lines (Telephone, ADSL, GE) after 2001. The certificates must be from the national telecom/network operator.
- 1.4.1.2 If any bidder fails to submit certificate(s) required as per Clause-1.4.1.1, the bid shall be treated as “**Substantially Non-responsive**” and shall not be taken for further evaluation.

1.4.2 Documentary Evidence Establishing Bidder’s Experience

- 1.4.2.1 The bidder must provide a certificate from the relevant telecom authority which should state that he has successfully installed and commissioned at least one telecom project on turn-key basis outside its country of origin. Failure to provide such certificate shall be treated as “**Material deviation**”.
- 1.4.2.2 If the bidder has completed or is in the process of completion of any telecom project(s) in TSS/BTCL within last 5(five) years, the bidder must submit a statement mentioning the name of the project(s) with at least (but not limited to) the following information for the purpose of post qualification;
- i) Effective date of contract
 - ii) Project completion period as per contract
 - iii) Status of the project (whether completed or running)
 - a) If completed, when.
 - b) If running project, then approximate percentage of works completed and expected date of completion.

iv) Other related information if any

If any bidder fails to give such statement, the bid shall be treated as "**Substantially Non-responsive**" and shall not be taken for further evaluation.

1.4.3 4 (four) hard copies of the full offer, of which at least one copy shall be in original.

1.4.3.1 Brochure/ Catalog of the Manufacturer, showing model name, country of origin description and capacities etc., for STM-1 Mux, ONU, DDF, ODF, Rectifier , Battery. Downloaded documents from web site (address must be given) shall be acceptable provided that the documents contain the required information.

1.4.3.2 Explanation of Redundancy (whether 1 + 1 or N + 1) of various core elements such as control processors, back-plane, storage devices, power supply etc.

1.4.3.3 A "**Clause by Clause Compliance Schedule**" to all the clauses and sub-clauses of the Tender Document. The schedule shall prepare as per format shown in Book 1 (Annex C) of tender document.

1.4.3.4 The Tender document duly signed (in original) and stamped in every page by an authorized representative of the bidder.

1.4.3.5 If the bid is through a local agent, then, Local Agent's Trade License (updated for current year).

1.4.3.6 Site-wise break-down of the DC Power consumption (in Ampere) of all STM-1 Mux at the equipped capacity.

1.4.3.7 DC Power requirement (in Ampere) for all the ONU for capacity along with capacity of proposed rectifier & Battery.

1.4.3.8 Brochure/ Catalog of the Manufacturer, showing model name, country of origin description and capacities etc., for minor items namely Rectifier, Battery. Downloaded documents from web site (address must be given) shall be acceptable provided that the documents contain the required information.

1.5 If a bidder fails to give any document as per requirement stated in Clause 1.4.3.1 to 1.4.3.2 above, the submitted bid of the bidder shall be treated as "**Substantially Non-Responsive**".

1.6 Bidder who will not give any document as per requirement stated in Clause 1.4.3.3 to 1.4.3.5, the bid shall earn penalty point equivalent to a "**Material Deviation**" for each of such absent document.

- 1.7 Bidder who will not give any document as per requirement stated in Clause 1.4.3.6. to 1.4.3.8 above, the bid shall earn penalty point equivalent to a "**Major Deviation**" for each of such absent document.
- 1.8 The second envelop i.e. "Financial Documents" of the Bidder shall include the following filled up Forms attached with Book 2 :
 - 1.8.1 Summary of the Bid Price as per "Form A." of Book-2
 - 1.8.2 Summary Prices for all equipments/items/services as per format shown in "Form B"s of Book-2
 - 1.8.3 Detail BoQ for all equipments/items/services as per format shown in "Form C"s of Book-2 (up to the most detailed component/element level desired by the bidder).
 - 1.8.4 Detail BoQ for Maintenance Spares for buffer stock, as per format shown in "Form D.1" of Book-2
 - 1.8.5 Pricing Technique for Future Order, as per format shown in "Form E" of Book-2
- 1.9 If for any bidder, its bid does not contain all required documents listed in 1.8.1. to 1.8.5 above, the bid shall be treated as "**Substantially Non-Responsive**".
- 1.10 The documents listed in item 1.4 shall preferably be provided separately in separate Chapters of the technical document. But co-related items may be merged together or included in one single chapter. All the Chapters must be marked and numbered clearly and a list of contents must be provided on top of the technical document.
- 1.11 Regarding Documents/Certificates, the Bidder should note the following that:
 - 1.11.1 The Documents/Certificates shall be in English or originally in any other language accompanied by "authorized translation in English".
 - 1.11.2 Authorized translation in English" shall mean a translated copy in English certified in original by the authorized official of the diplomatic mission representing Bangladesh in that certificate's country of origin.
- 1.12 The bidder shall provide a list (as per Annex F attached in Book 1 and to be submitted with Mandatory Documents) of all the certificates. That list shall include detail name and address with telephone, email & fax numbers of the person signing each of those certificates (*including persons signing the authorized translation in English - where applicable*).

- 1.13 On the day of opening of the tender document, as prescribed by BTTB, the bid shall be opened by the Tender Opening Committee in presence of the Bidders and/or their authorized representatives (if anybody likes to be present). After opening the bid, the presence of the necessary documents shall be checked, the total number of certificates, as listed in Annex F attached in Book 1.
- 1.14 Based on such examination, observations and information announced at the opening a “Tender Opening Sheet (TOS)” shall be prepared. Upon completion of opening of the tenders, all members of the Tender Opening Committee and the Tenderers or their representatives who attended the tender opening shall sign the TOS. Upon request copies can also be made available to the Tenderers.
- 1.15 On completion of the opening formalities, the Procurement Office shall forward that statement, along with 2(two) copies of Bid to the "Tender Evaluation Committee" of TSS.
- 1.16 The TEC of TSS shall follow the guidelines for Evaluation Criteria of Book 2 to evaluate the bids.
- 1.17 Eligibility of the Bidder
- The bidder must be an International firm engaged in either or both of the following fields:
- i) Manufacturing of Telecom and/or Data Network equipment; or
 - ii) Worldwide marketing, representation and/ or distribution of Telecom Equipment/Data Network.
- 1.18 The bidder shall also submit necessary documents proving professional and technical qualifications and competence, financial resources, equipment and other physical facilities, including after-sales service where appropriate, managerial capability, experience in procuring object, reputation, and the personnel, to perform the contract. The documents will be used for “Post-qualification” purpose.
- 1.19 The bidder shall note that, during submission of the bid, if he does not comply and/or disagree to any or many specification, terms and/or conditions set forth in this document and/or proposes any alternate specification, terms and/or conditions; such non-compliance and/or disagreement and/or alternate specification, terms and/or conditions shall not be binding upon TSS until and unless such non-compliance and/or specification and/or terms and/or conditions have been accepted by TSS and has been incorporated in writing in the Purchase Contract and/or any other document which has been declared as part of the contract.

1.20 Bidders/Manufacturers already Black Listed in BTCL/TSS

Bid of any bidder who is already black listed in BTTB will be considered as “**not eligible**” and will not be considered for evaluation.

Chapter 2

SCOPE OF WORKS

2.1 to meet the growing demand of internet connectivity and telephone service, TSS intends to procure all the required products and services for the work as mentioned subsequently in this Bidding Document in the name of "**Supply of OLT and ONU in Modular Form and Assist TSS for Installation, Testing and Commissioning of STM-1 Mux & ONU at Various Sites on Turn-Key Basis**".

2.2 For this purpose, this Tender proposes to procure the following system and service:

- a) Optical Network Unit (ONU)
- b) STM-1 Mux ,with DDF
- c) MDF & ODF at different sites for termination of ONU
- d) Rectifier and Battery Equipment
- e) Patch Cord, Pigtail, Attenuator
- f) Test Equipment
- g) Training for installation, operation and maintenance to BTCL and TSS personnel
- h) Assist TSS in installation, maintenance and operation of STM-1 Mux & ONU at different sites as per requirement of BTCL

2.3 **Beyond these, bidder has to quote for following material and services:**

2.3.1 The Bidder shall supply one separate list for essential "Maintenance Spares" to be maintained as a central buffer stock by TSS for emergency purposes.

2.3.2 That list must include at least two units of each replaceable item for all equipment covered by this purchase. Number of units may be more depending upon the size of the node and MTBF of the critical equipments/components. But, for subscriber line cards (POTS, ADSL2+, GE card) the number will be at least 10% (Ten percent) of the total number of line cards quoted in the offer for the entire network.

2.3.3 The quotation for such list (in Form D.1) is mandatory and failure to quote shall be regarded as "non-compliance" and it shall be considered that the bidder proposes to supply any quantity of spares, as fixed up by TSS during contract negotiation, "free of charge" to TSS.

2.3.4 Spare parts and consumables used before end of Guarantee Period

All necessary spare parts and consumables, used during installation, testing & commissioning and operation of the systems, ***up to the end of Performance Guarantee Period***, shall be supplied by the Bidder at his own cost.

2.3.5 Spare Parts Guarantee

The Bidder shall provide a separate guarantee (*as per format in Annex D.1.of Book 1*) to the effect that, he shall guarantee the flow and availability of all spare parts and units without major design changes for at least 5(five) years from “the date of effect” of the Final Acceptance Certificate (FAC). If, within this period, there is any major design change or stoppage of production of supplied equipment, the bidder shall bear all the costs related to provision of alternate solutions.

If the bidder disagrees to the format of the guarantee, as shown in **Annex D.1.**, the bid shall be considered having “**Material deviation**”

2.3.6 Expansion Guarantee

The Bidder shall provide a separate guarantee (*as per format in Annex D.2.of Book 1*) to the effect that, he shall guarantee the flow and availability of all equipment, materials and services required for any subsequent expansion of its offered equipment for at least 5(five) years from “the date of effect” of the Final Acceptance Certificate (FAC). If, within this period, there is any major design change or stoppage of production, the bidder shall bear all the costs related to provision of alternate solutions.

If the bidder disagrees to the format of the guarantee, as shown in **Annex D.2.**, the bid shall be considered having “**Material deviation**”

2.6 Maintenance Support

2.6.1 Maintenance Support up to Performance Guarantee Period

i) The Bidder, at his own cost, shall engage at least 1 (one) Operation and Maintenance (O&M) Engineer. The Engineer shall be stationed in Dhaka to provide full maintenance support for all equipment and sites covered by this purchase up to the end of the Performance Guarantee Period. This support service shall start from the date of cut-over of the first site covered by this purchase.

ii) The support Engineer will be fluent in English and will have enough knowledge of the relevant system to effectively solve all O&M problems; the person must also have at least 3(three) years of prior experience of providing such support in other countries. The bidder shall be responsible for all types of expenditure to be borne for the manpower, including all types of transportation.

iii) The maintenance support service shall cover at least (but not limited to) the following services and if the bidder disagree to this format of the services, the bid shall be considered having “**Material deviation**”.

a) regular visits to all relevant sites to check and monitor different aspects of the working systems

- b) to remain stand-by to respond in the shortest possible time during any call by BTCL/TSS
- c) helping BTCL/TSS personnel to solve different software and hardware problems related to proper O&M of the equipment
- d) identify and remove different bugs in the system's operational software
- e) helping BTCL/TSS personnel to properly maintain relevant databases related to O&M of the system
- f) preparation and submission of regular reports to BTCL/TSS about different aspects of O&M of the system
- g) giving regular on-the-job training to BTCL/TSS personnel about different aspects of O&M
- h) advising BTCL/TSS about different aspects of O&M, system dimensioning, expansion etc.
- i) transfer of technology to BTCL/TSS personnel

2.7 Performance Guarantee Period

2.7.1 The bidder's offer shall include an overall **"Performance Guarantee Period"** for the whole equipment covered by this purchase. This period shall deem to have started from the cut-over of the first equipment into commercial service and last for 2(two) calendar years from **"the date of effect"** of the last PAC of the contract.

2.7.2 During the period of this Guarantee, the bidder shall offer all material, equipment, services and Maintenance support as described in relevant clauses for Spare Parts and **"Maintenance Support up to Guarantee Period"**.

2.7.3 Bidders refusal to offering of the guarantee specified in this clause shall be treated as **"Change of Substance"**.

2.8 Testing

2.8.1 Provisional Acceptance Test (PAT)

i) Before acceptance of the installed system/ equipment, BTCL/TSS representatives shall carryout, on site, detailed tests of all equipment to ascertain their inter-working ability with relevant equipment of the other manufacturers, working reliability, concurrence to agreed technical and other specifications, inventory checking of installed equipment etc. Such tests shall be termed as **"Provisional Acceptance Test (PAT)"**. Prior to commencement of such tests, the contractor shall submit a proposed procedure for the PAT to be subsequently passed by BTCL/TSS. The PAT will be done by a joint team of BTCL/TSS Engineers and bidder's Engineers.

ii) On completion of installation and self-testing of any system/ equipment, the Bidder shall submit 3(three) copies of self-test results to BTCL/TSS and offer

that system/ equipment for Provisional Acceptance Test (PAT). BTCL/TSS shall start such tests within one month after receipt the request. The bidder may, upon agreement by the both party, offer PAT for any part or parts of the total system. Such request for partial PAT may also be asked for by BTCL/TSS.

iii) The bidder shall be totally responsible for arrangement of all equipment, fuel for generators, consumables, test gears and measuring equipment required for the PAT. All costs for materials and service shall be quoted and failure to quote shall be considered that the bidder proposes to provide this service totally " free of charge" to BTCL/TSS.

iv) The bidder's engineer shall be liable to make necessary arrangement complete any kinds of tests requested by BTCL/TSS PAT members during PAT procedure.

v) In addition, the bidder has to provide per-diem costs to PAT engineers as per following:

For whole System:

- a. Number of BTCL/TSS Engineers of : 10 (Ten)
PAT team
for all equipment sites covered by this
purchase
- b. Number of days allowed for per diem : i. 5 (Five) working days per
charge (ONU, STM-1) Mux site.
- c. Per diem charge to BTCL/TSS PAT : Taka 700/- per day per person
members
- d. Other facilities : Transportation

However, the bidder shall note that, if necessary, any or all PAT can continue for more than the above scheduled period; but, in such cases, the bidder shall not be liable to pay per-diem for those additional days.

2.8.2 Final Acceptance Test (FAT)

i) After completion of the PAT and cut-over of the system, the Engineers of the Bidder will take prompt necessary steps to remove all types of faults and replace all types of faulty equipment at the cost of the supplier. At the end of the "Performance Guarantee Period for the Contract", the overall performance of all equipment will be reviewed and this review shall be termed as " Final Acceptance Test (FAT)".

ii) The review shall include (but not limited to) the required working reliability and performance standards of the equipment to meet tender

specifications, the bidder's responsiveness to resolve all shortcomings mentioned in PAT reports and the bidder's removal of all pending & outstanding faults or shortages encountered during the Performance Guarantee Period for the Contract. When this FAT becomes due, the bidder shall make an official request to BTCL/TSS for starting of the FAT and BTCL/TSS shall start the FAT within one month after receipt the request from the bidder.

iii) The bidder shall be responsible for arrangement of all equipment, consumables, test gears and measuring equipment required (if any) for such review tests. All costs for materials and service (if any) shall be quoted and failure to quote shall be considered that the bidder proposes to provide this service totally " free of charge" to BTCL/TSS.

2.12.3 Customer Proof of Concept (CPOC)

i) Testing at manufacturer's premises, to be termed as "Customer Proof of Concept (CPOC)", shall be carried out (on random sampling basis) for all equipment to be supplied under this purchase. The procedure for such CPOC shall have to be approved by BTCL/TSS before such tests. BTCL/TSS personnel will test the equipment to check their conformity with tender, contract and BoQ specifications.

ii) Bidder shall include in his offer unit price (per person basis) for this CPOC. Failure to quote shall be considered that the bidder proposes to provide this service totally " free of charge" to BTCL/TSS. The details of test program shall be as follows. If the bidder does not agree to this basic minimum format, its disagreement shall be considered as a "**major deviation**".

- a) Number of BTCL/TSS : 2 (two)
Engineers
- b) Number of working days : 7 (seven)
- c) Per diem charge to BTCL/TSS : US\$ 75 (Seventy five) per day
Engineers *(including holidays in between)* per person
- d) Other facilities : Local Transportation
Standard Accommodation
Medical Services *(if required)*
Bothway Air Ticket

2.9 Training

The Bidder shall provide the training to BTCL/TSS Engineering personnel The curriculum shall be enough to facilitate transfer of technology for planning, designing, expanding and proper operation & maintenance of all the systems covered by this purchases to BTCL/TSS engineering personnel. Bidder shall include in his offer unit price (**per person basis**) for the Training . Failure to quote

shall be considered that the bidder proposes to provide this service totally "free of charge" to BTCL/TSS. If the bidder does not agree to this basic minimum format, its disagreement shall be considered as a **“major deviation”**.

2.13.1 Factory Training

Following generic areas should be included in the training program. Actual content of each item should, however, be customized to match with the architecture and solutions offered by the bidder.

This course module will cover at least the following broad topics:

Network Essentials and Technologies, Network Design, Hardware Description, Protocols and Interfaces, Signaling System, Network Management Systems and Tools etc.

The details of this course module is given below:

- a) Number of BTCL/TSS : 10 (Ten)
Graduate Engineers
- b) Number of minimum working : 20 (twenty)
days
- c) Per diem charge to BTCL/TSS : US\$ 100 (One Hundred) per day
Trainee *(including all holidays in between
and travel days)* per person
- d) Other facilities : Local Transportation
Standard Accommodation
Medical Services *(if required)*
Both way Air Ticket

2.13.2 Local Training

The Bidder shall provide practical Equipment based training in Bangladesh at BTCL/TSS premises. The details of the local training shall be as follows:

For all equipment:

- a) Number of BTCL/TSS Engineer : 25 (Twenty Five)
- b) Number of minimum working days : 20 (twenty)
- c) Per diem charge to BTCL/TSS Executives: BD Taka 700(Seven
hundred)
per day per person for
working days

2.14 Certificates to be Issued

2.14.1 Provisional Acceptance Certificate (PAC)

Upon successful completion of the PAT for any, many or all equipment covered by this purchase, the PAT committee will submit the report to Project Director / Director (M& O). Subsequently the Project Director / Director (M& O), with his comments, shall send the report to Director (Dev. Cord) to issue a “**Provisional Acceptance Certificate**” (PAC). The exact breakdown of the purchase into various PAC components and the number of PACs to be issued shall be agreed upon between BTCL/TSS and the bidder during contract negotiation.

2.14.2 Final Acceptance Certificate (FAC)

After completion of the FAT, the FAT committee will submit the report to Project Director / Director (M& O). Subsequently the Project Director / Director (M& O), with his comments, shall send the report to Director (Dev. Cord) to issue a “**Final Acceptance Certificate**” (FAC). if and only if, no outstanding issue has been detected, one “**Final Acceptance Certificate**” (FAC) covering the entire purchase contract shall be issued by the Director (Dev & Cord) of BTCL/TSS.

2.14.3 Engineers’ Arrival Certificate (EAC)

During implementation period of the turn-key contract, the bidder shall provide various services. On arrival of bidder’s engineers for providing a component of such service and on receipt of written request from the bidder, the Project Office of BTCL/TSS shall issue “**Engineers’ Arrival Certificate (EAC)**” for each of such service components. The exact breakdown of the purchase into various EAC components and the number of EACs to be issued shall be agreed upon between BTCL/TSS and the bidder during contract negotiation.

2.14.4 Successful Completion of Services’ Certificate (SCC)

During implementation period of the turn-key contract, the bidder shall provide various time-bound services like training, maintenance assistance service. On completion of such service components and on receipt of written request from the bidder, the relevant office of BTCL/TSS shall issue “**Successful Completion of Services’ Certificate (SCC)**” for each of such service components. The exact breakdown of the purchase into various SCC components and the number of SCCs to be issued shall be agreed upon between BTCL/TSS and the bidder during contract negotiation.

2.14.5 Arrival of Goods and Materials Certificate

During implementation period of the turn-key contract, the bidder shall ship various consignments of foreign goods and materials and shall also supply items from local market. On arrival of such consignments to BTCL/TSS sites or BTCL/TSS stores (*whichever is applicable*) and on receipt of written request from

the bidder, the relevant office of BTCL/TSS shall issue “Arrival of Goods and Materials Certificate” for each of such consignments. The number of such consignments shall be decided by the bidder in accordance with its approved implementation plan.

2.14.6 Arrival of BTCL/TSS Engineers Certificate

During implementation period of the turn-key contract, the bidder shall provide services for CPOC to be attended by BTCL/TSS Engineers. On arrival of BTCL/TSS Engineers in sites for those tests, the attending Engineers will sign an “Arrival of BTCL/TSS Engineers Certificate”. The number of such certificates shall be decided by the bidder in accordance with its approved implementation plan.

2.14.7 CPOC Certificate

On successful completion of CPOC by BTCL/TSS engineers, they will sign a "Customer's Proof of Concept Test Certificate". The bidder, on its own initiative and cost, shall also conduct such tests for other consignments and shall issue relevant "Customers Proof of Concept Test Certificate". The number of such certificates shall be decided by the bidder in accordance with its approved implementation plan.

2.14.8 Certificate for Clearance of Obligations

After the end of Performance Guarantee period, the Contractor shall give a written undertaking to the Procurement Office of BTCL/TSS to the effect that, in relation to the turn-key execution of the contract, it has no outstanding dues, liabilities and obligations towards any organization inside Bangladesh. After receipt of such undertaking and ascertaining the same by proper verification, the Director (Procurement) of BTCL/TSS shall issue a “**Certificate for Clearance of Obligations**” to the contractor. Such a certificate shall be issued only and only if no such dues, liabilities and obligations are detected.

2.15 Inter-connections

i) The Bidder shall be responsible for making inter-connection facility (including supply of all required material, optical fiber cables, connectors at both ends of inter-connecting cable and related service) between its own system and BTCL/TSS's existing System. The Bidder shall also be responsible for connecting all the concerned equipment with IP backbone. All costs for materials and service shall be quoted by the bidder in his offer. Failure to quote shall be treated as “non compliance” and it shall be considered that the bidder proposes to provide this to BTCL/TSS without any additional expenditure.

- ii) Probable requirements of the connectors, optical fiber cables, cable tray etc. should be checked during the survey, before the submission of the bid, by the bidder.

2.16 Inter-works with the Existing Systems

The Bidder shall be responsible to ensure that all the system covered by this purchase shall be able to inter-work with all the existing systems of BTCL/TSS. The bidder shall make necessary survey and shall also be entirely responsible to solve any mismatch, if encountered. The Bidder shall quote any extra cost, if necessary, and if the bidder fails to quote for this work, he shall have to complete this work at his own cost. No subsequent additional request for costs for required interfaces, if any, shall be entertained.

2.17 Installation Material

- i) The Bidder shall quote for all installation material for all of the equipment covered by this purchase. The Bidder, in his offer shall show, details of required installation material, for each equipment, per site, separately, to come to a total price for “Installation Material”. The material shall include all type local material like fuel, power etc necessary to be used during installation and testing functions.
- ii) These price breakdowns will be used for calculating revised total price if there is any subsequent change in number of sites/amount of equipment.
- iii) If the bidder fails to give detail breakdown, BTCL/TSS shall reserve the right to draw its own conclusions, as and where necessary.
- iv) Failure to give detail breakdown shall also be treated as **“Minor deviation”**.
- v) All costs for materials shall be quoted and failure to quote shall be considered that the bidder proposes to provide these material totally " free of charge" to BTCL/TSS.

2.18 Installation and Commissioning Services

- i) The Bidder shall be responsible to provide all services related to installation, testing, commissioning and cut-over services for all equipment covered by this purchase. The Bidder, in his offer, shall show details of required installation and commissioning services, for each equipment separately, per

site, to come to a total price for “Installation and Commissioning Services”.

- ii) These price breakdowns will be used for calculating revised total price if there is any subsequent change in number of sites and/or amount of equipment.
- iii) If the bidder fails to give detail breakdown, BTCL/TSS shall reserve the right to draw its own conclusions, as and where necessary.
- iv) Failure to give detail breakdown shall be treated as “**Minor deviation**”.
- v) All costs for service shall be quoted and failure to quote shall be considered that the bidder proposes to provide this service totally " free of charge" to BTCL/TSS.

2.19 Survey, Network Planning & Design Services

- i) As part of its turn-key responsibility, the successful bidder shall be responsible to provide all services related to installation survey, planning & design for all equipment/ system covered by this purchase.
- ii) A report shall be submitted to BTCL/TSS's relevant office after completion of that work.

All costs for materials and service shall be quoted and failure to quote shall be considered that the bidder proposes to provide this service totally " free of charge" to BTCL/TSS.

2.20 Documentation

- i) The Bidder shall supply at least (but not limited to) the following documents before PAT of each site.
 - a) Technical Documentation for all equipment of the Site- 1 set of hard copy and 1 set in CD; per site.
 - b) As-built installation drawings for all equipment : 1 set in CD and 1 set in hard copy; per site.
 - c) Station AC power wiring diagrams : 1 set in CD and 1 set in hard copy per site.
- ii) Detail technical document for NMC: 1 set in CD and 1 set in hard copy.

- iii) Bidder shall include in his offer prices for these Documentation. Failure to quote shall be treated as “non compliance” and it shall be considered that the bidder proposes to provide this “*free of charge*” to BTCL/TSS.

2.21 Quotation for additional equipment

If the bidder thinks that any additional equipment, not listed in this document, is needed for proper implementation and subsequent O&M of the proposed equipment, and also any equipment mentioned in this document but not in the BoQ form, he shall quote for such equipment. If any such equipment are not quoted, it shall be deemed that no additional equipment are necessary for proper implementation and subsequent O&M of the proposed system. If during implementation and subsequent O&M upto guarantee period, either the bidder or the purchaser finds that any additional equipment are obligatory for proper implementation and subsequent O&M of the network, the bidder shall be liable to supply such systems or equipment, whatever be the required quantity, “free of charge” to BTCL/TSS.

2.22 Unit Price for Future Orders

- i) The unit prices for all future orders for all equipment and services covered by this purchase shall be equal to or below the prices quoted in the original contracted offer.
- ii) The Bidder shall quote, with his offer, a detailed ‘**Future Order Formula**’ separately for equipment and services in Form E and submit in the Financial Documents.
- iii) The new prices as per quoted future order formula shall become effective only for orders placed after Guarantee Period and up to the life time of all equipments, optical fibers and services as per BOQ under this purchase.
- iv) All parameters of the quoted formulae must be described clearly.

Any disagreement/deviation/non-quotation will be treated as “**Change of substance**”.

2.23 Possibility of change in Scope of Work and BoQ

The Bidder shall consider that, the size, number, location & city of nodes and other equipment and subsequently the total BoQ may change, depending upon the actual requirement during BoQ preparation.

2.24 Omission of any Mandatory Items in the Contracted BoQ.

The bidder shall note that, even if any or many work(s), equipment or service(s) mentioned in this document as mandatory, is not mentioned in the contract BoQ for any reason, the bidder shall not be automatically relieved of his responsibility for those items. But if such omission(s) has (have) previously been agreed, in writing, by BTCL/TSS's BoQ team, the bidder shall not be made liable for such omitted items. Such approved omissions, if any, shall have to be put either into the contract document or into any other document which subsequently is declared as part of the contract.

2.25 Prevalence of different clauses, chapters and books

If, for any item, the contents of a Clause of any Book contradict with the contents of any other Clause of the same or other Book of the Tender Document, the prevalence of the Clause shall be as follows :

- a) In all cases, regulations of Public Procurement Regulation 2003 shall prevail over this Tender Document
- b) In case of different Books, Book Two shall supersede Book 1;
- c) In case of same Book, later page shall supersede previous page
- d) In case of same page, later line will supersede previous age
- e) In case of same Chapter, later Clause shall supersede previous Clause.
- f) In case of later corrections by BTCL/TSS, corrections will prevail with its due position.

2.26 Deviations from BTCL/TSS's requirements

The bidder shall note that, during submission of the bid, if he does not comply to any or many requirement and/ or specification and/ or terms or conditions set forth in this document or proposes any alternate specification and/ or terms and/ or conditions; such non-compliance and/ or alternate specification and/ or terms and/or conditions shall not be binding upon BTCL/TSS until and unless such non-compliance and/or terms and/or conditions have been incorporated in writing in the Purchase Contract.

Chapter – 3

The Network Description

3.1 The Network Description:

The network diagram is described in Figure 1.1 . The ONU shall be installed at the locations required by BTCL. The requirement is described in Annex1.1. The detail of Annex 1.1 is described in Annex1.2, Annex1.3 and Annex1.4. According to the packages and quantity mentioned in Annex bidder has to quote.

BTCL will provide following things for ONU:

- a) Necessary room space needed to install ONU
- b) Commercial Power
- c) Required dark fiber to connect ONU with exchange
- d) Earthing for ONU
- e) Required V5.2 interface to connect ONU with exchange

Two STM-1 Mux shall be installed. One shall be installed at ONU site, other will be at exchange site. These two STM-1 shall be connected with optical fiber provided by BTCL in 1+1 MSP configuration. The distance between ONU site and exchange shall be considered as 20 Kilometer.

The STM-1 mux which is installed at ONU site, shall have a output of 63 E1. These 63 E1 will be connected to the 63 E1 of ONU for voice service.

The STM-1 mux installed at exchange site, shall have a output of 63 E1. These E1 will be connected to the V5.2 interface of the exchange for voice service.

For internet/data service the GE (optical) interface of ONU will be connected with the dark fiber. These GE interface will be connected to the necessary router/switch for necessary internet/data connectivity.

ONU shall be connected to the subscriber through copper cable (0.4 mm) . Each subscriber shall have voice and internet service through same pair of copper cable.

Book Two
Chapter 4

ENVIRONMENTAL AND OTHER REQUIREMENTS

4.1 Climatic Condition

Bidder shall bear the full responsibility to ensure that all of the supplied equipment are capable of operating in Bangladesh environment without degradation. All of the supplied equipment must work satisfactorily under the following environmental conditions. Deviation from these values shall be considered as **“Major”**.

- a) Normal Operation
 - Temperature Range : 15°C to 35°C
 - Relative Humidity : maximum 90 %
- b) Short-time Operation (maximum of 06 hrs at a stretch)
 - Temperature Range : 5°C to 45°C
 - Relative Humidity : maximum 95 %

4.2 Physical Requirement

All components of all of the equipment shall be of highest possible quality design and fully tropicalized to be used for continuous operation. The metal surface shall either be galvanized or painted by spray or plated with surface treatment. There shall be no sharp edges or projections. All power equipment and cables shall be protected with fuses of proper ratings. All equipment racks, sub-racks and slots shall be clearly marked in English letters for proper recognition. All equipment racks, sub-racks and slots shall also be provided with proper earthing and shall be protected against any surge.

4.3 Operating Voltage

The equipment shall operate satisfactorily on the nominal voltage of -48V DC and within a voltage range of -43 to -55 Volts DC or better. Deviation from these values shall be considered as **“major”**. If the server of the NMS runs by DC power, that will be preferable to BTTB.

4.4 Environment and Power Supply Monitoring

The equipment must provide a complete range of environment and power supply monitoring functions. It must monitor such parameters such as temperature, smoke, humidity, primary power supply, batteries status in ONU site. The monitored information must be reported to the operation and maintenance centre in time.

4.5 Guarantee for Hardware

The Bidder shall guarantee that, the hardware of the system will run without any **major** technical hazard for at least up to 5 (five) years after the date of issuance of FAC. Deviation shall be considered as “**major**”.

Book Two
Chapter 5

REQUIREMENTS FOR ONU, STM-1 MUX AND OTHER ANCILLARY EQUIPMENT

- 5.1 Optical Network Unit (ONU)
- The ONU shall be installed at the locations required by BTCL. The network diagram is described in Annex 1.1 .
- 5.1.1 All the control card and power supplies of ONU should be 1+1 or N+1 configuration to avoid any single point of failure.
- 5.1.2 The ONU Equipment should be capable of delivering Voice, High Speed Internet, & Leased Line (point to point) Services.
- 5.1.3 The ONU Equipment should be capable of modular expansion. Configuration and expansion of it should allow great flexibility. The bidder should provide the method of expansibility in detail to describe what are the cards/module required to meet expandability. The ONU should be manageable from highly efficient NMS with GUI interfaces that is easy to operate.
- 5.1.4 The bidder should state the compliance with ONU technical standards, terminal management standards, and broadband line test standards.
- 5.1.5 The ONU has to be equipped with line testing card to allow test of all types of line cards.
- 5.1.6 The ONU shall support ATM and IP uplinks simultaneously to adapt to the current network status and future network evolution. For the connection between different shelves inside the ONU, if any extension shelf is faulty, there should be no infection to other extension shelf.
- 5.1.7 The ONU must support V5.2 and H.248 uplink concurrently on a single hardware platform, providing a smooth migration from TDM to IP-based NGN network. The TDM voice and Voice over IP services must be allocated flexibly to specific end users without limitations.
- 5.1.8 After ONU is upgraded to the AMG, in the same hardware platform, the ONU must support Self-Switching function. In case of failure on the H.248 link to the soft switch, ONU must be able to retain existing RTP connection, and enabling new call to be established within itself.
- 5.1.9 Whenever a call is established within the ONU own subscribers, the DSP resources with OLT shall not be occupied, saving those DSP resources for other outgoing calls connection and improving voice quality.

5.1.10 All the types of subscriber related activities (such as user creation, change in subscriber category, temporary disconnect etc) of ONU should be configurable from respective exchange site.

5.1.11 The proposed equipment must support DHCP option 60/82 and PPPoE intermediate agent.

5.1.12 ONU should support port-based leased line access.

5.1.13 It must support –

- (a) IGMP snooping with IGMP messages forwarding to the network
- (b) IGMP proxy
- (c) IGMP static join function for fast zapping must be supported.

5.1.14 Functional Requirements

5.1.14.1 Basic Interfaces

5.1.14.1.1 The ONU Equipment should support following interfaces-

- a. POTS and ADSL2+ line card to provide basic telephony service and internet on same pair of copper cable simultaneously.
- b. GE interface (1000Base-Lx) to connect router or switch of BTCL to distribute the required bandwidth among the subscriber. The GE interface will be connected through the dark fiber provided by BTCL.

5.1.14.1.2 ADSL2+ interface should be provided and conform to

Parameter		Specification
Upstream	Bandwidth	26–138 kHz
	Maximum Transmission Rate	2.5 Mbit/s
Downstream	Bandwidth	138 kHz–2.208 MHz
	Maximum Transmission Rate	24 Mbit/s
Maximum Transmission Distance		6 km
Line Code		Discrete multi-tone (DMT)
Standard Compliance		ITU-T G.992.1 Annex A/B ITU-T G.992.3 Annex A/B/L/M ITU-T G.992.5 Annex A/B/M ANSI T1.413 Issue 2

The minimum speed of ADSL2+ interface shall be 64 kbps.

5.1.14.1.2 GE interface should be provided and conform to

Parameter	Specification
Transmission rate	1000 Mbit/s
Interface type	LC or FC
Interface mode	Single mode
Transmission distance (km)	20
Central wavelength (nm)	1310
Mean transmit power (dBm)	-11 to -3
Extinction ratio (dB)	8.2
Receiver sensitivity (dBm)	< -19
Receiver overload power (dBm)	-3
Standards compliance	IEEE 802.3z

5.1.14.1.3 Ethernet interface ONU should support

- The interface protocol provided should conform to the relevant regulations of IEEE802.3z.
- FE and GE interface must support transparent transport and L2 switch function both in the same board.
- FE and GE board, the convergence direction must not be less than 24.
- FE must support both optical and electrical interface.
- FE and GE board must support QinQ and MPLS label
- FE and GE can support LPT (link path through) function.
- FE and GE should support Jumbo frame packet.
- Should support bandwidth control (Rate limit) with a granularity of at least 64Kbps.
- The Trans-receiver interface should support at least 20 km distance

5.1.14.1.4 The Analog subscriber line interface should support

- Electrical properties

Subscriber loop resistance,	max. 1200 Ohm
Subscriber loop resistance including a telephone set	max. 1800 Ohm
SL insulation resistance:	
Wire to wire	min. 20000 Ohm
Wire to ground	min. 20000 Ohm

SL wire to wire capacitance	
Wire to ground	not more than 0.5 mkF
Equipment attenuation	max. 1 dB
Support of program management by the enhancement level	-3dB – 3dB (Tx) -7dB – 7dB (Rx)
Near end attenuation on 1020 Hz frequency	not more than 69.5 dB
Dialing unit transmission rate	7-13 pulses/s
Operating voltage	- 42 V – - 72 V,
Nominal voltage	- 48/60 V
Subscriber boards protection	in compliance with ITU-T K.20

- b. Protection of subscriber terminals (ports) against over-current and over-voltage should be provided (MDF)
- c. Every port must have power supply management to decrease board over-heating.
- d. Protection of subscriber terminals against short circuit, circuit or leaking between A or B and earth, or short circuit between two ports should be provided on the board.
- e. Bidder must provide detailed description of subscriber board protection mechanism.

5.1.14.1.5 Management Interface

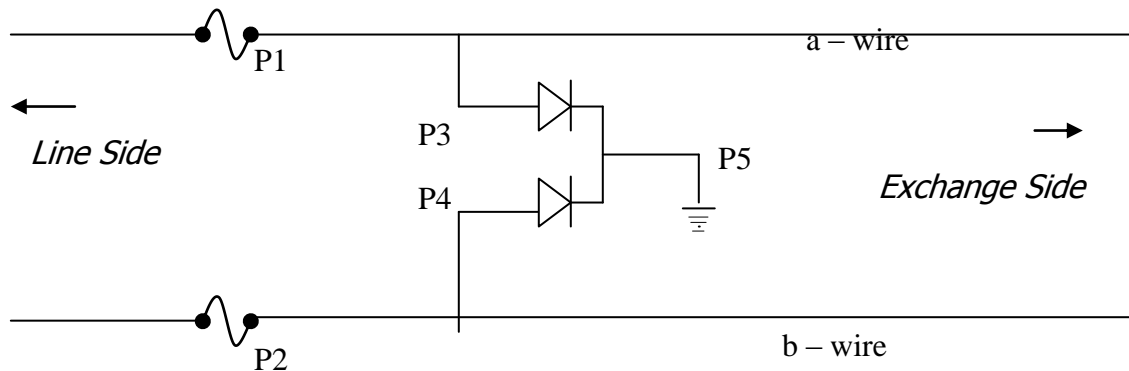
- a. The equipment should provide management interfaces that are used for local maintenance and management. The bidder should tell the types and the rate of these management interfaces.
- b. The equipment must provide management interfaces that are used for remote centralized maintenance and management. The bidder should tell the types of these management interfaces.

5.1.15 After power failure and service recovery the ONU should return to the previous running status before power failure.

5.2 Main Distribution Frame (MDF)

The ONU shall be equipped with MDF for subscriber connection. This MDF shall be separate rack. It shall be of modular structure, miniaturized to the extent possible and easily maintainable. The mechanical structure shall be back-to-back for Vertical and Horizontal side. The cable-pair insertion shall preferably be punch-type; the blocks shall allow insertion of jumper-wires of sizes 0.4 mm to 0.6 mm dia. Any deviation shall be treated as “**Minor**”.

- i) Each of the MDF shall have the following minimum criteria and any deviation shall be treated as “**Minor**”.
 - a) Minimum number of total available pairs = Equipped subscriber capacity.
 - b) Number of OSP pairs in each block = 100 (*or 10 x 10*).
 - c) Grounding: Less than 2 ohms.
- ii) Each MDF shall be fully equipped with 5-point protection device assemblies. The protection shall be of the following type. Absence of such protection in the MDF shall be treated as “**major deviation**”.



P1 = P2 = Over-current Protection (Ceramic or Glass or others) shall become open-circuit on Over-current.
 breaking voltage : 180V AC
 breaking current : 1.25 A
 breaking time : 2 ms

P3 = P4 = Over-voltage and Surge Protection (gas discharge or other type) shall become open-circuit on over-voltage or surge.

Nominal Voltage : 180 – 380V AC
 Nominal Discharge Current : 1.3 A
 Nominal Impulse Discharge Current : 100 A
 Nominal Resistance : > 100 Mohms
 Current Turn-off Time : < 200 μ s

P5 = The common point; shall be connected to the frame ground.

- a) The entire assembly shall preferably be enclosed in a single unit but the individual protectors may also be separate units;
 - b) If the protector assembly is taken out of the slot, the circuit between the line-side and exchange-side for both a-wire and b-wire must become open-circuit;
 - c) The assembly shall preferably be one for each cable-pair but multiple-pair assemblies will also be acceptable;
 - d) The assembly shall provide facility to detect & measure presence of any AC voltage or current;
 - e) The faulty protection-units inside the assembly shall preferably be changeable in the field;
 - f) Facility shall be provided so that if any of the assembly becomes faulty (*either the over-current or over-voltage device*), it will trigger an alarm-loop. The bidder will also provide visual and audio alarm units, with that loop, inside each MDF;
 - g) The supply shall include 125% units of the cable-pairs available of each MDF.
- iii) Each of the MDF for ONU shall include supply of at least 20% spare for blocks. Any deviation shall be treated as Major.

5.3 STM-1 MUX

- A. The STM-1 MUX shall have the following features (but not limited to) within one equipment and every location same type of equipment shall be used as per requirement:-
1. Minimum 2 X STM-1 Aggregate port shall be available and ports shall be L_{1.1}
 2. These 2 X STM-1 Aggregate ports shall be deployed as follows:-
Unprotected (in ADM operation)
1+1 MSP (point to point operation)
 3. Power supply (-48 VDC) shall be double unit. Normally it will work as 1+1 redundancy.
 4. E1 ports shall be 63 .
 5. For the STM-1 Aggregate,

Nominal Receive Level – Receiver Sensitivity ≥ 10 dBm
- B. The switching matrix and power supply card of all STM-1 Mux must be supported by protection. The acting and protecting functionality will be in different card .

5.3 DIGITAL DISTRIBUTION FRAME (DDF)

- A. The Bidder shall quote for DDF necessary for proper installation of system. Each of the DDF shall have the following criteria:
1. Nominal Impedance of termination = 75 ohms
 2. Connector type is 1.6/5.6 in DDF.

3. Coaxial U-link and signal monitoring facility.
4. Grounding resistance: Less than 2 ohms

B. One DDF shall be installed at ONU site to connect the E1 of STM-1 Mux and ONU. Another DDF shall be installed at exchange site for connecting the STM-1 Mux with the V5.2 interface of the exchange. All available E1 Interfaces of ONU and STM-1 Mux shall be terminated with coaxial cables up to the DDF. The average length of coaxial cable from STM-1 Mux and ONU Equipment to DDF will be 15 meter (Tx) and 15 meter (Rx) per E1.

5.4 OPTICAL DISTRIBUTION / TERMINATION BOX

1. The optical distribution / termination box shall be rack mounted type and will be installed at 19 inch rack in suitable position in the equipment room.
2. Optical connector (both side female) in the optical distribution / termination box shall be high grade FC/FC type.
3. There shall be easy access for splicing and provision for maintenance facility.
5. The capacity of the optical distribution / termination box shall be 48 single fibers and the offered optical distribution / termination box must have adequate space and fixing place of optical connector for the capacity and will be equipped with necessary Pigtail, optical connector and Patch cord for 48 fibers. The tray shall hold sufficient fiber length to able not only fusion splicing but also reopening and re-splicing of any fiber if needed in futures.
6. There shall be provision for inspection or cleaning the internal fiber connectors.
7. All the STM-1 interface and GE interface shall be terminated in the ODF.
8. From the ODF, the necessary connection to the BTCL's dark fiber shall be through patch cord.
9. One ODF shall be installed at ONU site, another shall be installed at exchange site.

5.5 Rectifier

a. The offer shall include necessary rectifier modules to provide DC power source to run the system and to charge the back-up batteries. The charging current for the back-up batteries at 10 hrs charging rate. The present equipped capacity of the rectifier will be at least double to capacity required for capacity of ONU and

STM-1 Mux. Rectifier modules shall be working on N+1 system. One rectifier module shall be reserved for standby purpose in case of any of the active rectifier modules fails.

- b. The rectifier system shall be modular in design.
- c. The rectifier AC input range is from 160~285VAC
- d. The rectifier shall be of the latest technology and must be of the switch mode type. Temperature compensation circuit to adjust float voltage against temperature and low voltage disconnect / reconnect must be provided in the system.
- e. When the rectifier/battery voltage drops below 43.0 VDC, then load shall be disconnected.

5.6 Battery

The offer shall include necessary installation, testing and commissioning of battery sets to provide back-up DC power source to run the system during AC mains failure. The required back-up time shall be 12(Twelve) Hours for ONU and STM-1 Mux and the number of sets shall be 2(two).

- i) The Batteries shall be -48 Volts, 2 Volt each unit. The Batteries shall be vented, lead-acid type. The abnormal fall in terminal voltage shall generate visual and audible alarm facilities and required alarm loops to the exchange OMM shall be connected.
- ii) The minimum guaranteed life-cycle of the batteries must be at least 8(eight) years, considering the power condition of Bangladesh..
- iii) Each of the battery sets must be provided with two independent (*one at the rectifier-end and the other at the battery-end*) circuit-breakers of adequate capacities which will allow complete disconnection of the battery set during all any required O&M function.
- iv) Moreover both of the battery sets shall be connected to the rectifier through a common circuit-breaker of adequate capacity which will allow complete disconnection of both of the battery sets during any required O&M function.
- v) In order to protect the exchange equipment as well as the battery in case of dropping of the DC voltage below a certain level, the rectifier connection to the battery sets must be provided with a device for disconnecting the battery sets as soon as such levels arrive.
- vi) All of the exposed parts of the terminals in each cell of the battery-sets will be provided with adequate oxidation-proof covers.
- vii) The charging-current at 10hrs charging rate for the battery sets, as supplied shall be carried-over to calculation for rectifier requirement.

5.7 MDB

The bidder shall quote for MDB for all the ONU sites under the purchase. The MDB should be of the highest quality available in the local market. The quality of MDB will be of highest local quality, which will be GEC/EnergyPac or Equivalent. The MDB will be equipped with circuit breakers of required capacity, lightning and surge protectors, necessary earthing facility, visible meters for different inputs/ outputs (eg, voltage, current) and alarms.

Requirements of circuit breakers (AC) in each MDB:

100 Amps	2 pc
80 Amps	4 pc
50 Amps	3 pc
20 Amps	4 pc

Bidder shall connect the commercial power of the site (provided by BTCL) to this MDB. From this MDB the rectifier shall be connected via Circuit breaker. The power cable should be sufficient enough to handle the equipment load, lighting and air conditioning load. The rating of the power cable should be at least 400 % of the present connected load. For calculation purpose, the Air conditioning load may be considered as 25 Amp.

5.8 Earthing

Bidder will be responsible to connect all the ONU, STM-1, DDF, MDB, Rectifier equipment with existing earthing point. At least two 50 mm cable shall be installed from earthing point to ONU room. Bidder shall install a 12 point galvanized copper earthing bar at ONU room.

5.9 Inverter

The offer shall include necessary DC to AC inverter modules to provide AC power source to the equipment which require AC supply. The rectifier / back-up batteries shall be used as the source power. The Bidder shall quote inverter of 3 KVA

- I. The Inverters shall be electronic switch-mode type with automatic redundancy control functions. The control panel shall provide visual and audible alarm facilities and required alarm loops to the exchange OMM.
- II. Each of the inverter shall be provided circuit-breakers (*both in AC & DC side*) of adequate capacity and shall allow full isolation from the source and the load.
- III. The Inverter Rack (*or Frame*) shall be provided circuit-breakers (*both in AC & DC side*) of adequate capacity and shall allow full isolation from the source and the load. If the all of the inverters are taken-out of service, provisions shall be there for automatic diversion of the load to incoming commercial AC supply.

5.10 COMBINED STABILIZED LIGHT SOURCE AND POWER METER

ACTERNA OLT-55 or Equivalent or better or new version of the specified model, to be proposed.

The following feature must be available in stabilized Laser source:

1. Wavelength : 1310 and 1550 nm
2. Optical Power : -7 to 0 dBm (nominal) power output.

The following feature must be available in stabilized Laser source:

1. Wavelengths : 1310 and 1550 nm
2. Measurement Range : -70 upto +20 dBm

The following accessories must be available with the quoted meter:

1. Single Mode Patch Cord FC-PC at both end – 5 Nos.
2. Battery and Battery Charger.
3. Protective Bag.
4. 10 (ten) dBm fixed attenuator – 2 nos.

The bidder shall quote the unit price of the test equipment.

5.11 Operator Terminals

The bidder shall supply two operator terminal with each ONU. One shall be installed at ONU site other shall be installed at exchange. Each of the Terminal shall be complete in all aspects to work as PC and shall be equipped with LCD Monitors (at least 17" wide), two Hard Drive (at least 160 GB), RAM (at least 2GB), DVD RW Drive and Floppy Drive (3.5"), at least three network interface cards (NIC) and Licensed Windows Operating system and Windows Office. The bidder also has to provide the Licensed Anti-Virus Software for all the terminals for at least a period of Five years. The Anti-Virus Software can be periodically updated from the internet. Suitable DVD writing also shall have to be provided.

These operator terminals shall be connected to the ONU and STM-1 Mux. Bidder shall supply and install necessary software for performance monitoring, configuration, Alarm supervision, backup management of ONU and STM-1 Mux.

Functional Requirements of Operator Terminal

A) The terminals shall have the capability to support the following management functions for all elements:

- a) Fault Management
- b) Configuration Management
- c) Performance Management

- d) Security Management
- e) Capacity and Planning Engineering Tool

B) The terminals should support the following:

- a) Graphical User Interface (GUI)
- b) Real-time alarm display and collection
- c) Card/circuit level diagnosis
- d) Interface line status monitoring, both subscriber lines and network interface.
- e) Performance monitoring and traffic measurement.
- f) Network/NE configuration management.
- g) Routing table management
- h) SNMP-based network management interface(s) to support third party network management system.
- i) adaptive to ITU-T Q3/CMIP.
- j) Latest version of the Windows .
- k) Implementation of software patches and releases on the NGN nodes remotely.

C) Basic Features and Capabilities

The terminals shall provide:

- a) Preferably a single Application Program Interface (API) for all network elements regardless of Brand and Model.
- b) Configuration planner for simplifying the task of future network planning and configuration.
- c) Automatic copy of configurations at device, cards, and ports level to the customer information database system within the NMS.
- d) Network Integrity check at the network, device, card, and port levels.
- e) End to end path management.
- f) Advance alarm management setting for priorities and types.
- g) Multiple network managers support with different access authorities.
- h) Network element status displayed by colors.

D) Fault/Alarm Management

The terminals shall support (but not limited to) the following fault and alarm management capabilities:

- a) Detected errors/unusual network behavior should be isolated and controlled.
- b) Results of errors/unusual network behavior should be displayed in graphical and tabular form.
- c) Alarm facilities should permit the easy identification and correction of faulty element.

- d) Alarms should have a status of active, deferred, or cleared and should be in active state when first received.
- e) The severity of the alarm, full alarm message and time of delivery should be available for display and are logged in the alarm database.
- f) The administrator should be able to set various thresholds for alarm reporting, including filtering by severity, number of occurrences within a given period and interval between occurrences.
- g) Management System should provide alarm signals confirmation, including user ID confirmation and time of confirmation
- h) All test result should be saved in data base

E) Configuration Management

The Configuration Management should initialize and close down manage objects, collect information on demand about the current condition of the network, obtain announcements of significant changes in the condition of the network, and change the configuration of the Network and the Network Elements.

F) Performance Management

The terminals should support, but should not be limited to the following performance management capabilities:

- a) Monitor network throughput and real-time Bit Error Rate must be supported.
- b) Set thresholds for various variables, such as error rates or link utilization.
- c) Continuous background diagnostics during system uptime are required for early detection of fault conditions and timely activation of alarms.
- d) Log and save all or defined events for present and future reference.
- e) All man-machine interfaces shall be in a Graphical User Interface.

G) Security Management

The terminals should support (but not limited to) the following security management capabilities:

- a) Secure access between network elements and the network manager.
- b) The system should incorporate security measures against unauthorized personnel to access the office data/programs and entering of commands.
- c) Several access levels according to the order of their influence on program performance should be identified with the corresponding password.

H) Subscriber Circuit Testing and Phone Testing Requirements

I. Subscriber Circuit Testing

1) Pulse dialing

Break-make ratio 1: (1±0.2)

Pulse speed: 12.5±1pps

Number interval: ≥400ms

2) Dual tone dialing

Frequency deviation: ±1.5%

Level: Low frequency group: -9±5dBm

High frequency group: -7±5dBm

Dual frequency signal level difference: 2±1dBm

Total distortion: 20dB lower than fundamental wave level

Signal limit duration: > 40ms/bit

Signal interval duration: > 40ms

II. Phone Testing

1) Ringing current

Voltage: 75V±15V

Frequency: 25Hz±3Hz

Break-make ratio: 4s: 1s

Time deviation: ±5%

2) Signal tone (450Hz)

Frequency: 450 Hz±25Hz

Level: -10±3dBm

Harmonic wave: <10%

Busy tone: break-make duration 350ms: 350ms, time deviation <±10%

Ring back tone: break-make duration 1s: 4s, time deviation <±10%

3) Pulse dialing test

Dialing speed: 8~20pps

Break-make ratio: test range: (1.0~3.0)

Test error: ±5%

4) Dual tone dialing performance test

Frequency and frequency deviation

Frequency (standard: low frequency group 697, 770, 852, 941Hz, high frequency group 1209, 1336, 1477, 1633Hz)

Frequency deviation: reliable receiving is $\pm 2\%$; surely no receiving is $\pm 3\%$; and not surely receiving is $\pm 2\% \sim \pm 3\%$

Level:

Signal frequency receiving range in dual frequency mode: -4~-23dBm

Signal frequency non-operation level in dual frequency mode: =-31dBm

Dual frequency level difference: =6dBm

Signal limit duration: 80ms/bit

Signal interval duration: 40ms

5) Opposite polarity

Time interval: 5s

Time deviation: $\pm 5\%$

6) Howler tone

Frequency: 950Hz \pm 50Hz

Frequency: 6dBm~140dBm

Harmonic wave: <10%

7) Loop resistance measurement

Test range: 0~3k

Test error: $\pm 5\%$

8) Test speed

Test duration of twelve indices for the subscriber line: <30 seconds

5.12 Laser Printer:

At least one Laser printer shall be supplied to each site. The Printer having following specifications connected in the LAN of the NMS.

a) Resolution: 600 X 1200 pixels Minimum

b) Pages per minute: Minimum 32

c) Memory: 32 MB

d) Paper Tray: Three trays, one of 100-Sheets and two of 500-sheets.

e) Network Interface Card: 10/100 base – TX

f) Paper size: A4/A3/Letter

g) Spare cartridge: Eight (8)

5.13 Modem and Splitter for Customer side:

For testing purpose, bidder shall quote Modem and splitter for customer premises. The splitter and Modem shall five in each ONU site.

5.14. Metering should be done as per BTCL/TSS requirements.

5.15 Any disagreement of the clauses and /or sub-classes of this chapter shall be treated as **Material Deviation**.

Book Two

Chapter 6

CRITERIA FOR EVALUATION OF BIDS : EVALUATION OF SUBSTANTIAL RESPONSIVENESS

- 6.1 Notwithstanding whatever is stated in other clauses of the tender documents, the criteria for evaluation of substantial responsiveness of the received bids of this tender shall be according to clauses described in this chapter of the tender document. If any bidder refuses to agree to any clauses of this chapter, his bid shall automatically be considered as "substantially non responsive".
- 6.2 However, relevant clause(s) stated elsewhere in this document shall also be applicable if such clause(s) do(es) not contradict any or many clause(s) of this chapter.
- 6.3 TSS shall evaluate only the bids of the Bidders whose bids were found "Eligible". The conditions for "eligibility" have been defined in the Chapter One of this Book 2 .
- 6.4 During evaluation, TSS shall consider bidders' compliances to various clauses and sub-clauses of this tender; but shall have the authority to conclude its own decision about such compliances.
- 6.5 If the bidder does not give any statement to its compliance to any of the tender clauses or sub-clauses, its' compliance to that clause/ sub-clause (as applicable) shall be treated as "not complied" to that particular clause/ sub-clause.
- 6.6 If the bidder puts any condition to his compliance to any of the tender clauses and/ or sub-clauses, its' compliance shall be treated as "not complied" to that particular clause and/ or sub-clause.
- 6.7 TSS shall also consider the contents of various attached documents. If any content of the attached documents contradicts the compliance statement of the bidder to any of the clauses and/ or sub-clauses, the bid shall be treated as "not complied" to that particular clause and/ or sub-clause. In all of such cases, TSS's decision shall be final.
- 6.8 If, in answer to any query by TSS, the bidder provides any or many clarifications to its bid, TSS shall consider those clarifications. However, if such clarifications contradict the relevant statements given in his original offer, the clarification(s) shall be disregarded.
- 6.9 The following deviations of any offer will be treated as "**minor deviation**" of the bid:
 1. Any deviation which has already been termed as "minor deviation" in this tender document.
 2. The non-compliant of any clause/sub clause of this tender document having no weight as minor deviation or major deviation or change of substance or

material deviation shall be considered as minor deviation.

3. Every item of "minor deviation" shall earn a score of 1(one) "penalty point".
- 6.10 The following deviations of any offer will be treated as **"major deviation"** of the bid:
1. Any deviation which has already been termed as "major deviation" in this tender document.
 2. If the bid BoQ has any shortage of quantity in any of the required hardware and/or software (for each of such short quoted quantity) unless otherwise specified in the tender.
 3. Any item of "major deviation" shall earn a score of 5(five) "penalty points".
- 6.11 The following deviations of any offer will be treated as **"material deviation"** of the bid :
1. Any deviation which has already been termed as "material deviation" in this tender document.
 2. If the Bidder has changed either the language or format of any of the different forms attached with this document.
 3. Any item of "material deviation" shall earn a score of 40(forty) "penalty points".
- 6.12 The following deviations of any offer will be treated as **"change of substance"** of the bid:
1. Any deviation which has already been termed as "change of substance" in this tender document.
 2. If the bidder refuses to provide answers to any requested clarification(s).
 3. If any Certificate or any other document attached as part of the bid is found to be false or unauthentic.
 4. If the bidder has put any condition in the prices set forth in the BoQ.
 5. If, for any Bidder, the bid does not contain all the prescribed forms, duly filled up.
 6. If the cost of any Item is quoted as "included" in any other item (s).
 7. If in the bid BoQ, individual components are not uniquely identified which creates ambiguity about the price and capacity of components (for example, STM-1 interface card of the MUX, ONU Equipment and E1 interface card of the ONU Equipment, ONU Equipment should be described clearly about their port availability in each type of card.)

8. The items and quantities are clearly specified in different forms. If any bidder fails to quote any items completely, it will be considered as "Change of Substance".
9. A bid containing any item of "change of substance" shall be treated as "substantially non responsive".
- 6.13 The penalty points earned by each bid will be added to get total penalty points. The bid of any bidder which has earned more than or equal to 80 (Eighty) penalty points in Total shall be treated as "substantially non responsive".
- 6.14 TSS's decision to treat any bid as "substantially non responsive" shall be final.
- 6.15 A bid, not treated by TSS as "substantially non responsive", shall automatically be considered as "responsive". The financial envelope of the responsive bids shall be opened and process for evaluating financially shall begin.
- 6.16
 - i) Any deviation which has already termed as Substantially Non Responsive in this tender document shall be treated as Substantially Non Responsive.
 - ii) The bid(s) treated as "substantially non responsive" shall not be considered for further evaluation.
- 6.17 Bidder, who will be technically responsive, shall qualify for the financial evaluation.

=== End of Chapter ===

Book Two

Chapter 7

CRITERIA FOR EVALUATION OF BIDS : EVALUATION OF FINANCIAL PARTS OF RESPONSIVE BIDS AND SELECTION OF SUCCESSFUL BIDDER

- 7.1 Notwithstanding whatever is stated in other clauses of the tender documents, the criteria for Selection of Successful Bidder & Evaluation of the Financial Part of the received bids of this tender shall be according to clauses described in this chapter of the tender document. If any bidder refuses to agree to any clauses of this chapter, his bid shall automatically be considered as **"substantially non responsive"**. If the proposed BoQ in the technical offer differs from the BoQ of Financial offer, then the bid shall be treated as **substantially non responsive**. A bid treated as substantially non responsive shall not be considered for further evaluation.
- 7.2 The total price quoted by the bidder in the bid i.e., "The Quoted Total Price" shall not be the criteria for selection of the "Successful Bidder".
- 7.3 All of the "Responsive" bids will be further evaluated to calculate the "Evaluated Total Price" of the bid.
- 7.4 The process of calculation of the "Evaluated Total Price" shall be in accordance with the clauses described in this chapter.
- 7.5 TSS shall evaluate the contents of all of the Prescribed Forms submitted with the bid.
- 7.6 During such evaluation, the unit prices and discount (if any) quoted by the bidder shall be considered as final. Change of prices during evaluation stages shall not be allowed.
- 7.7 There shall be full conformity between the summary or total prices and their related breakups of unit prices. If any discrepancy is found, the relevant unit price shall be considered as a reference price for evaluation purpose.
- 7.8 The bidder shall quote for all items which is necessary for turn-key completion of all scopes of works described in this tender. No subsequent addition of any new item(s) in the BoQ will be allowed with new price during BoQ finalization.
- 7.9 TSS shall correct purely arithmetic errors (both in quantity and calculated total price excluding unit price) that are identified during the evaluation of tenders. TSS shall give prompt notice of any such correction to the respective bidder. If bidder does not accept such correction as arithmetic error, it will be considered as change of substance.
- 7.10 The Bidder shall not quote different unit price for same equipment/card/spare/accessory in different forms. If Bidder quote different unit price for same equipment/card/spare/accessory in different forms, the lowest unit price of respective equipment/card/spare/accessory shall be considered for evaluation considering arithmetic

correction. It shall be understood that such lowest price shall remain same for the contract and for any subsequent expansion up to the final capacity of the system.

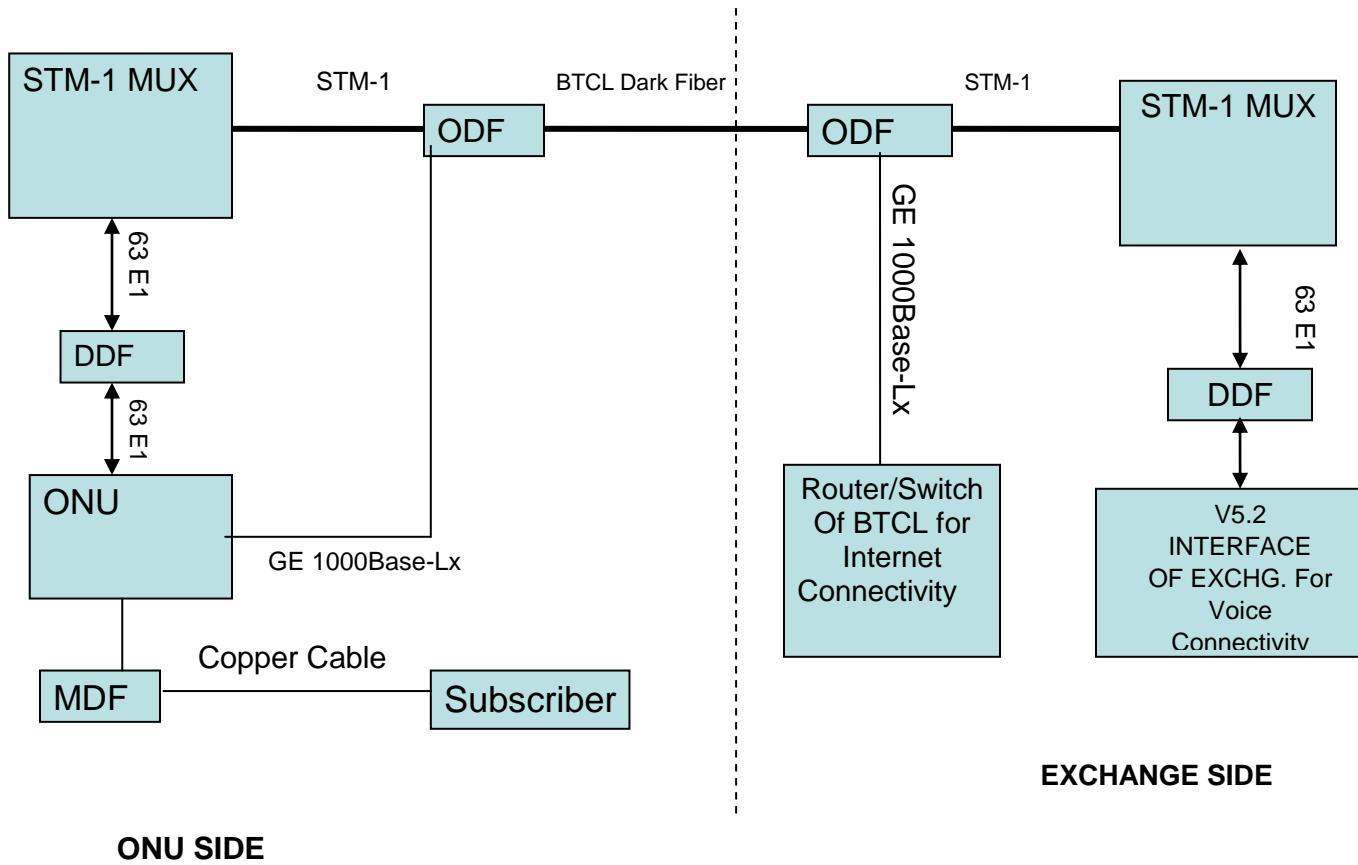
- 7.11 The Bidder shall not quote unit or total price for any goods and services as "free" or "zero" or "FOC" (Free of Charge).
- 7.12 The Bidder shall be responsible for turn-key implementation of the project and during execution of the contract if any shortfall of quantity of any item is detected; it shall be considered that the Contractor will supply required quantities of respective item without any additional charges to TSS under this purchase and TSS will not provide any CD VAT or any other duties for such type of goods.
- 7.13 In case of any item, other than mandatory has been quoted as additional/optional and if TSS decided to purchase such item(s), its price shall be considered for evaluation and the unit price shall be taken from the bidder's own quotation.
- 7.14 If the bidder wishes to give any discount in its financial offer, it shall be given after the "Total Price" of the bid, either as a lump sum or as a percentage. If the bid contains any irregular discount, the bid shall be treated as "Change of Substance" and the bid will not be evaluated further.

If the bidder has given any regular discount in the bid, such discount shall be treated in percentage of the total bid price and each of the unit prices of the bid shall be re-fixed by reduction with the same percentage [i.e., new unit price = (discounted total price ÷ total price before discount) x quoted unit price]. Such re-fixed unit prices shall be regarded as the final unit prices for that relevant item of the bid. Such re-fixed unit prices shall be valid for any subsequent purchases up to the entire life-time of the project, i.e., 8 (Eight) years from the date of issuance of FAC.

- 7.15 If the "The Quoted Total Price" of the "successful bidder" is found to be higher or lower than the "Evaluated Total Price" of the bid, then "Evaluated Total Price" shall be considered as bid price.
- 7.16 For each of the "responsive" bids, TSS shall calculate the "Evaluated Total Price" after making the relevant and necessary corrections as stated in this chapter.
- 7.17 TEC, in the Tender Evaluation Report shall list, in descending order, the evaluated price of all responsive bidder. **The bidder has the lowest evaluated price shall be recommended for award of contract by the TEC and sent for approval to the approving authority .**

=== End of Chapter ===

Fig-1.1
Network Diagram



Annex 1.1

Requirement of Package

SL No	Description	Quantity
1	Package A	15
2	Package B	17
3	Package C	04

Annex 1.2

Details of Package A

SL. No	Description	Unit	Quantity
1	ONU – Capacity 800 Subscriber, with all necessary hardware, software	Lot	1
2	E1 interface at ONU	Nos	63
3	GE (1000 Base- LX) Interface	Nos	2
4	MDF for 800 Subscriber	No	1
5	MDB	No	1
6	STM-1 Mux	Nos	2
7	ODF	Nos	2
8	DDF	Nos	2
9	Rectifier	Lot	1
10	Battery	Lot	1
11	Coaxial Cable	Lot	1
12	Coaxial Connector	Lot	1
13	Patch Cord	Lot	1
14	Insertion Tools (For MDF)	No	2
15	Operator Terminal	Nos	2
16	Printer	No	1
17	Splitter and Modem for Customer Premises	Nos	5

Annex 1.3

Details of Package B

SL. No	Description	Unit	Quantity
Equipment			
1	ONU – Capacity 1600 Subscriber, with all necessary hardware, software	Lot	1
2	E1 interface at ONU	Nos	63
3	GE (1000 Base- LX) Interface	Nos	4
4	MDF for 800 Subscriber	No	1
5	MDB	No	1
6	STM-1 Mux	Nos	2
7	ODF	Nos	2
8	DDF	Nos	2
9	Rectifier	Lot	1
10	Battery	Lot	1
11	Coaxial Cable	Lot	1
12	Coaxial Connector	Lot	1
13	Patch Cord	Lot	1
14	Insertion Tools (For MDF)	Nos	2
15	Operator Terminal	Nos	2
16	Printer	No	1
17	Splitter and Modem for Customer Premises	Nos	5

Annex 1.4

Details of Package C

SL. No	Description	Unit	Quantity
Equipment			
1	ONU – Capacity 2400 Subscriber, with all necessary hardware, software	Lot	1
2	E1 interface at ONU	Nos	63
3	GE (1000 Base- LX) Interface	Nos	4
4	MDF for 800 Subscriber	No	1
5	MDB	No	1
6	STM-1 Mux	Nos	2
7	ODF	Nos	2
8	DDF	Nos	2
9	Rectifier	Lot	1
10	Battery	Lot	1
11	Coaxial Cable	Lot	1
12	Coaxial Connector	Lot	1
13	Patch Cord	Lot	1
14	Insertion Tools (For MDF)	Nos	2
15	Operator Terminal	Nos	2
16	Printer	No	1
17	Splitter and Modem for Customer Premises	Nos	5

Form A

Summary Price of Financial Quotation

The summary price must match with Form B.1 to B.7 and D.1. In case of any mismatch TSS's decision is final.

Sl. No.	Name of Items	Unit Level	Total Cost	
			USD (FOB)	BDT
Part-1	<i>Prices for Equipment/ Materials</i>			
1	Package A Equipment (For 15 Locations) [Sub-Total (A) of Form B.1]	Lot		
2	Installation Materials [Sub-Total (B) of Form B.1]	Lot		
3	Package B Equipment (For 17 Locations) [Sub-Total (A) of Form B.2]	Lot		
4	Installation Materials [Sub-Total (B) of Form B.2]	Lot		
5	Package C Equipment (For 4 Locations) [Sub-Total (A) of Form B.3]	Lot		
6	Installation Materials [Sub-Total (B) of Form B.3]	Lot		
7	Test Equipment [Sub-Total (A) of Form B.4]	Lot		
8	Miscellaneous Items [Sub-Total (A) of Form B.5]	Lot		
9	Installation Materials [Sub-Total (B) of Form B.5]	Lot		
10	Additional Equipment and Service [Sub-Total (A) of Form B.6]	Lot		
11	Installation Materials [Sub-Total (B) of Form B.6]	Lot		
12	Maintenance Spares for Two Yeats (Total of D.1)	Lot		
	X. Grand Total Equipment/ Materials			
	Y. Freight	Lot		
	Z. C & F (X+Y)			
Part-2	Prices for Services			
1	Package A Equipment (For 15 Locations) [Sub-Total (C) of Form B.1]	Lot		
2	Package B Equipment (For 17 Locations)			

Sl. No.	Name of Items	Unit Level	Total Cost	
			USD (FOB)	BDT
	[Sub-Total (C) of Form B.2]			
3	Package C Equipment (For 4 Locations) [Sub-Total (C) of Form B.3]			
4	Miscellaneous Service [Sub-Total (C) of Form B.5]			
5	Additional Equipment and Service [Sub-Total (C) of Form B.6]			
6	Test and Training [Sub-Total of Form B.7]			
K. Grand Total Services				
Bid Total (Z + K)				

Note1: Form 'A' contains summary price from 'B' Form plus D.1 form.

Note2: To solve any dispute or mismatch in calculating price, Form 'C' shall be the reference.

Note3: Any dispute in the language or Format of Form, Bidder is requested to make remarks below the respective Form(s) without changing or editing Form(s).

Form B.1
Quotation for Financial Evaluation For Package A (For 15 Locations)

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
				USD FOB	BDT
1	<i>Package A (For 15 Locations)</i>				
1.1	Package A Systems and Accessories	Lot	15		
1.1	Installation materials	Lot	15		
1.1	Installation, testing & commissioning.	Lot	15		
	Total				
	A. Sub-Total of ALL Equipment				
	B. Sub-Total of Installation Materials				
	C. Sub-Total of Installation, Testing & Commissioning				
	Grand Total (A+B+C)				

Note 1. Bidder must fill-up this Evaluation Forms with Total price from individual Form C.1 for all stations with the financial document.

Note2: Form 'B.1' contains summary price from 'C.1' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.1' shall be the reference.

Note4: Quantities mentioned in form B.1 are subject to revise BoQ finalization by BoQ team.

--END --

Form B.2
Quotation for Financial Evaluation For Package B (For 17 Locations)

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
				USD FOB	BDT
1	<i>Package B (For 17 Locations)</i>				
1.1	Package B Systems and Accessories	Lot	17		
1.1	Installation materials	Lot	17		
1.1	Installation, testing & commissioning.	Lot	17		
	Total				
	A. Sub-Total of ALL Equipment				
	B. Sub-Total of Installation Materials				
	C. Sub-Total of Installation, Testing & Commissioning				
	Grand Total (A+B+C)				

Note 1. Bidder must fill-up this Evaluation Forms with Total price from individual Form C.2 for all stations with the financial document.

Note2: Form 'B.2' contains summary price from 'C.2' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.2' shall be the reference.

Note4: Quantities mentioned in form B.2 are subject to revise BoQ finalization by BoQ team.

--END --

Form B.3
Quotation for Financial Evaluation For Package C (For 4 Locations)

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
				USD FOB	BDT
1	<i>Package C (For 4 Locations)</i>				
1.1	Package C Systems and Accessories	Lot	4		
1.1	Installation materials	Lot	4		
1.1	Installation, testing & commissioning.	Lot	4		
	Total				
	A. Sub-Total of ALL Equipment				
	B. Sub-Total of Installation Materials				
	C. Sub-Total of Installation, Testing & Commissioning				
	Grand Total (A+B+C)				

Note 1. Bidder must fill-up this Evaluation Forms with Total price from individual Form C.3 for all stations with the financial document.

Note2: Form 'B.3' contains summary price from 'C.3' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.3' shall be the reference.

Note4: Quantities mentioned in form B.3 are subject to revise BoQ finalization by BoQ team.

--END --

Form B.4

Quotation for Financial Evaluation of Test Equipments

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
				USD FOB	BDT
	<i>Test Equipment</i>				
1	Combined Stabilized Light Source & Power Meter	Pc	1		
2	SPARE PATCH CORD				
A	Patch Cord with FC/PC Connector				
I	10 Meter	Each	100		
Ii	30 Meter	Each	50		
B	Patch Cord with LC/PC Connector				
I	5 Meter	Each	50		
ii	10 Meter	Each	100		
	Total				
3	SPARE OPTICAL FIBER ATTENUATORS:				
i	5 dB (FOR 1310 nm)	Each	20		
ii	10 dB (FOR 1310 nm)	Each	20		
Grand Total					

Note1: Bidder must fill-up this Evaluation Forms with Total price from individual Form C.4 for all stations with the financial document.

Note2: Form 'B.4' contains summary price from 'C.4' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.4' shall be the reference.

Note4: Quantities mentioned in form B.4 are subject to revise during BoQ finalization by BoQ team.

Form B.5
Quotation for Financial Evaluation of Miscellaneous Items

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
				USD FOB	BDT
	<i>Miscellaneous Items</i>				
1	Design, Engineering, Planning and Implementation of the Equipment and associated System	Lot	1		
2	Survey and Study of route and related Terminal Station	Lot	1		
3	Local Transport to Sites, Storage and other Services.	Lot	1		
4	Maintenance Support for 2 year Warranty Period	Lot	1		
5	Consumables required for 1 year warranty period (From Form D.3)	Lot	1		
6	Documentation	Lot	1		
7	Post Guarantee Maintenance Assistance Program (For 1 Year)	Lot	1		
A. Sub-Total of Miscellaneous Items					
B. Sub-Total of Installation Materials					
C. Sub-Total of Installation, Testing & Commissioning					
Grand Total (A+B+C)					

Note1: Bidder must fill-up this Evaluation Forms with Total price from individual Form C.5 for all stations with the financial document.

Note2: Form 'B.5' contains summary price from 'C.5' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.5' shall be the reference.

Note4: Quantities mentioned in form B.5 are subject to revise during BoQ finalization by BoQ team.

Form B.6

Quotation for Financial Evaluation of Additional Items

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
	<i>Additional Items</i>			USD FOB	BDT
1	Cost of other items which the bidder found necessary for the successful completion of the project, as per relevant clause of Book 2	Lot			
2	Installation Materials	Lot			
3	Installation, Testing and Commissioning	Lot			
A. Sub-Total of Additional Items					
B. Sub-Total of Installation Materials					
C. Sub-Total of Installation, Testing & Commissioning					
Grand Total (A+B+C)					

Note1: Bidder must fill-up (if necessary) this Evaluation Form with Total price from individual Form C.6 for all stations with the financial document.

Note2: Form 'B.6' contains summary price from 'C.6' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.6' shall be the reference.

Note4: Quantities mentioned in form B.6 are subject to revise during BoQ finalization by BoQ team.

--END --

Form B.7

Quotation for Financial Evaluation of Test and Training

Sl. No.	Name of Items	Unit Level	Quantity	Total Cost	
	Test and Training			USD FOB	BDT
1	Factory Test.(CPOC)	Lot	1		
2	Provisional Acceptance Test.	Lot	1		
3	Final Acceptance Test.	Lot	1		
4	Factory Training for BTCL	Lot	1		
5	Local Training for BTCL	Lot	1		
Grand Total					

Note1: Bidder must fill-up this Evaluation Forms with individual Total price from individual Form C.7 for all stations with the financial document.

Note2: Form ‘B.7’ contains summary price from ‘C.7’ Form.

Note3: To solve any dispute or mismatch in calculating price, Form ‘C.7’ shall be the reference.

Note4: Quantities mentioned in form B.7 are subject to revise during BoQ finalization by BoQ team.

--END --

Form C.1

Quotation for Financial Evaluation of Package A
 (The BoQ will be as per requirements of the Technical Specification)
 (Detail break up of each type of equipment /item/work separately up to individual card/component level under this purchase.)

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
	<i>Package A System</i>		USD FOB	BDT		USD FOB	BDT
1	All individual items / parts / components of quoted equipment, cards, interface, Equipment Rack and sub rack with redundant common unit etc. (detail break up)	Unit					
Total of Package A System							
2	Installation materials(detail break up)	Unit					
Total of Installation materials							
3	Installation, testing & commissioning. (detail break up)	Unit					
Total of Installation, testing & commissioning							

- Note1:** Bidder must fill-up this Evaluation Form with unit price and total costs for all Package A in all locations separately with the financial document as per requirement of Book 2 .
- Note2:** Form C.1 shall be fill up by the bidder according the technical requirement of Book-1 and Book-2
- Note3:** The bidder shall give the detail breakup of each type of equipment/item/work separately upto individual card/component level. If any bidder fails to give these detail break up, then a penalty equivalent to **“Material Deviation”** shall be imposed during evaluation.
- Note4:** Quantities mentioned in form C.1 are subject to revise during BoQ finalization by BoQ team.

-- END --

Form C.2

Quotation for Financial Evaluation of Package B
 (The BoQ will be as per requirements of the Technical Specification)
 (Detail break up of each type of equipment /item/work separately up to individual card/component level under this purchase.)

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
	<i>Package B System</i>		USD FOB	BDT		USD FOB	BDT
1	All individual items / parts / components of quoted equipment, cards, interface, Equipment Rack and sub rack with redundant common unit etc. (detail break up)	Unit					
Total of Package B System							
2	Installation materials(detail break up)	Unit					
Total of Installation materials							
3	Installation, testing & commissioning. (detail break up)	Unit					
Total of Installation, testing & commissioning							

Note1: Bidder must fill-up this Evaluation Form with unit price and total costs for all Package B in all locations separately with the financial document as per requirement of Book 2 .

Note2: The form shall be fill up as per the technical requirement of Book-2

Note3: The bidder shall give the detail breakup of each type of equipment/item/work separately upto individual card/component level. If any bidder fails to give these detail break up, then a penalty equivalent to “**Material Deviation**” shall be imposed during evaluation.

Note4: Quantities mentioned in form C.2 are subject to revise during BoQ finalization by BoQ team.

--END --

Form C.3

Quotation for Financial Evaluation of Package C
 (The BoQ will be as per requirements of the Technical Specification)
 (Detail break up of each type of equipment /item/work separately up to individual card/component level under this purchase.)

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
	<i>Package C System</i>		USD FOB	BDT		USD FOB	BDT
1	All individual items / parts / components of quoted equipment, cards, interface, Equipment Rack and sub rack with redundant common unit etc. (detail break up)	Unit					
Total of Package C System							
2	Installation materials(detail break up)	Unit					
Total of Installation materials							
3	Installation, testing & commissioning. (detail break up)	Unit					
Total of Installation, testing & commissioning							

Note1: Bidder must fill-up this Evaluation Form with unit price and total costs for all Package C in all locations separately with the financial document as per requirement of Book 2 .

Note2: The form shall be fill up as per the technical requirement of Book-2

Note3: The bidder shall give the detail breakup of each type of equipment/item/work separately upto individual card/component level. If any bidder fails to give these detail break up, then a penalty equivalent to **“Material Deviation”** shall be imposed during evaluation.

Note4: Quantities mentioned in form C.3 are subject to revise during BoQ finalization by BoQ team.

--END --

Form C.4

Quotation for Financial Evaluation of Test Equipment
(The BoQ will be as per requirements of the Technical Specification)
(Detail break up of each type of equipment /item/work separately up to individual card/component level under this purchase.)

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
			USD FOB	BDT		USD FOB	BDT
	<i>Test Equipment</i>						
1	Combined Stabilized Light Source & Power Meter	Pc			5		
2	SPARE PATCH CORD						
a	Patch Cord with FC/PC Connector						
i	10 Meter	Each			100		
ii	30 Meter	Each			50		
b	Patch Cord with LC/PC Connector						
i	5 Meter	Each			50		
ii	10 Meter	Each			100		
	Total						
3	SPARE OPTICAL FIBER ATTENUATORS:						
i	5 dB (FOR 1310 nm)	Each			20		
ii	10 dB (FOR 1310 nm)	Each			20		
	Grand Total						

Note1: Bidder must fill-up this Evaluation Form with detail price.

Note2: The bidder shall give the detail breakup of each type of equipment/item/work separately up to individual card/component level. If any bidder fails to give these detail break up, he will get penalty equivalent to ***“Material Deviation”***.

-- END --

Form C.5

Quotation for Financial Evaluation of Miscellaneous Items

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
			USD FOB	BDT		USD FOB	BDT
	<i>Miscellaneous Items</i>						
1	Design, Engineering, Planning and Implementation of the Equipment and associated System	Lot			1		
2	Survey and Study of route and related Terminal Station	Lot			1		
3	Local Transport to Sites, Storage and other Services.	Lot			1		
4	Maintenance Support for 2 year Warranty Period	Lot			1		
5	Consumables required for 1 year warranty period (From Form D.3)	Lot			1		
6	Documentation	Lot			1		
7	Post Guarantee Maintenance Assistance Program (For 1 Year)	Lot			1		
	A. Sub-Total of Miscellaneous Items						
	B. Sub-Total of Installation Materials						
	C. Sub-Total of Installation, Testing & Commissioning						
	Grand Total (A+B+C)						

Form C.6

Quotation for Financial Evaluation of Additional Items

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
			USD FOB	BDT		USD FOB	BDT
1	<i>Cost of other items which the bidder found necessary for the successful completion of the project, as per relevant clause of Book 2</i>	Lot					
2	<i>Installation Materials</i>	Lot					
3	<i>Installation, Testing and Commissioning</i>	Lot					
	A. Sub-Total of Additional Items						
	B. Sub-Total of Installation Materials						
	C. Sub-Total of Installation, Testing & Commissioning						
	Grand Total (A+B+C)						

Quotation for Financial Evaluation of Test and Training

Sl. No.	Name of Items	Unit	Unit Price (m)		Quantity (n)	Total Cost (mxn)	
			USD FOB	BDT		USD FOB	BDT
	Test and Training						
1	Factory Test (CPOC)	Lot			1		
2	Provisional Acceptance Test.	Lot			1		
3	Final Acceptance Test.	Lot			1		
4	Factory Training for Engineers.	Lot			1		
5	Local Training for Engineers.	Lot			1		
	Grand Total						

Note1: Bidder must fill-up this Evaluation Forms with individual Total price from individual Form C.7 for all stations with the financial document.

Note2: Form 'B.7' contains summary price from 'C.7' Form.

Note3: To solve any dispute or mismatch in calculating price, Form 'C.7' shall be the reference.

Note4: Quantities mentioned in form C.7 are subject to revise during BoQ finalization by BoQ team.

--END --

BOOK-2

Form D.1

Price List for Spares (Maintenance Spares for two years after end of warranty period)

Sl. No	Name of Item	Quantity	Unit price		Total Price	
			USD FOB	BDT	USD FOB	BDT
1	Spares as per requirement of the technical specification					
Total						

Note 1: Bidder shall fill up this form for the whole system and submit it with the financial offer.

Note 2: Any disagreement will be treated as “Change of Substance”..

BOOK-2

Form D.2

Quotation for Provision of On Demand Maintenance Assistance & Card Repair

The bidder shall give the following details of on demand maintenance support.

Sl.No.	Items	Unit Price	
		USD	BDT
1	Card Repair		
2	Man-Days		
3	Per Journey		

4. Type of Maintenance Personnel.
5. Time require to response for Card repair, to send and reach maintenance personnel to Bangladesh.(incase of Foreigner only)
6. Terms and Conditions for on demand maintenance assistance.(not annual maintenance basis)
7. Any disagreement will be treated as **“Change of Substance”**..

BOOK-2

Form D.3

Detail BoQ for Spares and Consumables (For two year Warranty Period)

Sl	Name of Item	Quantity	Unit Price			Total Price		
			USD	+	BDT	USD	+	BDT
Total								

Note 1: Bidder must fill up this form with necessary spares and consumables.

Note 2: Any disagreement will be treated as “Change of Substance”..

BOOK-2

Form D.4

Price List for Optional Items (if any)

SI	<i>Name of Item</i>	Unit Price		
		USD	+	BDT
	The Bidder shall show the detail BoQ as per his choice and shall satisfy all requirements specified in this tender document.			
Total				

Form E

QUOTATION FOR FUTURE ORDER

- (a) Future Order Formula for Equipment:
- (b) Future Order Formula for Service:

BOOK-2

Form F-1

Manufacturing Information of Equipment and Accessories

Sl	Name of Item	Model Number & Name	Manufacturer's Name	Manufacturer's Address	Country of Origin
1	ONU				
2	STM-1 MUX				
3	Rectifier				
4	Battery				
5	Combined Stabilized Light source & Power Meter				
6	PATCH CORD				
7	Power Cables				

