

## **INDEX SHEET**

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# REQUEST FOR QUOTATION

|                                                                                   |                                                                                                                         |                                                                          |                                                                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------|
|  | <b>BHARAT HEAVY ELECTRICALS LIMITED</b><br>Electronics Division<br>PB No. 2606, Mysore Road Bangalore - 560026<br>INDIA | <b>RFQ NUMBER:</b><br>UKR0000047<br><br><b>RFQ DATE :</b><br>30.OCT.2017 | <b>Due Date</b><br><b>22.NOV.2017</b><br><b>Time: 13:00 HRS</b> |
| MMI:PU:RF:003                                                                     |                                                                                                                         |                                                                          |                                                                 |

|  |                                                                                                                                  |
|--|----------------------------------------------------------------------------------------------------------------------------------|
|  | (for all correspondence)<br>Purchase Executive : Udayakumar<br>Phone : 080 26998993<br>Fax :<br>E-mail: udayakumar@bheledn.co.in |
|--|----------------------------------------------------------------------------------------------------------------------------------|

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no.and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

| Sl No. | Description                                                                                                                                                                                      | Qty | Unit | Delivery qty | Delivery Date |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|--------------|---------------|
| 1      | PR0460003043 EPABX System for Bhadradi TPS<br>EPABX System & accessories supply & services for 4x270<br>MW Bhadradi<br>TPS, Unit 1 to 4 as per PS4702127<br>DRW PS4702127 00<br>Test Certificate | 1   | LOT  | 1            | 28.FEB.2018   |

Total Number of Items - 1

Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.

Preference will be given to vendors who accepts our standard payment terms i.e.100% payment - 30 days after receipt of material at our works subject to acceptance.

Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance,P&F, Freight and other taxes very clearly .

For evaluation,exchange rate(TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid incase of two part bid) shall be considered.

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected.The list of banned firms is available on BHEL web site [www.bhel.com](http://www.bhel.com)

- i). This is only RFQ not an order.
- ii). In all correspondence quote RFQ No. & due date.
- iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly.
- iv). Quotation Envelope / Fax not superscribed with RFQ No.and due date is liable for rejection.
- v). Quotation should remain valid for a minimum period of 90 days from due date.
- vi). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list.
- vii). All Prices should be written in words and numbers.
- viii). Excise Chapter Heading should be mentioned for all items where VAT is applicable .

For and On behalf of BHEL.



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್  
**भारत हेवी इलेक्ट्रिकल्स लिमिटेड**  
 Bharat Heavy Electricals Ltd.,  
 (A Government of India undertaking)  
 Electronics Division  
 PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 003- Rev 00

**SPECIAL COMMERCIAL CONDITIONS OF CONTRACT**

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 00) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 00). These documents along with required annexures are available in our website: \_\_\_\_\_ . These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No: UKR0000047

RFQ Date: 30.10.2017

Due Date: **22.10.2017**

Project: BHADRADRI TPS Unit 1 TO 4 (4x270MW)

Item Description: EPABX SYSTEM

~~Purchase Executives:~~ In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand, the offers are to be handed over to either of the following Purchase Officers:

~~Udayakumar / Manager/CE-MM-PR or Isaac KT /DGM/CE-MM-PR~~

~~E-mail IDs:~~ In case offers are sent through E-mail, please send the offers to both of the following email IDs:

~~udayakumar@bheledn.co.in & issac@bheledn.co.in~~

E-tendering: **Applicable** / Not Applicable

Type of Bid: **Three part Bid system** (Pls refer ITB for details)

Reverse Auction: **Not Applicable / Will be intimated** during commercial clarifications to technically acceptable vendors.

In case BHEL does not resort to Reverse Auction, the price bids and price impacts (if any) shall be opened as per BHEL's standard practice.

**Splitting of tendered quantity to MSE vendors:** The tendered quantity **will/will not** be split to MSE vendors subject to submission of relevant documents by vendors. **Refer clause H of Instructions to Bidders for conditions applicable and for information on documents to be submitted.**

**Destination:** Items are to be directly despatched to BHEL's Site Office or Stores/Customer's Stores located at/near **BHADRADRI – MANUGURU in TELENGANA State**. Road Permit, if applicable, will be issued by BHEL along with Despatch Clearance.

**For Import portion** **port of discharge will be Chennai sea port, port of delivery shall be ICD, Bangalore**

**Project Benefits: Reimbursements is not applicable for this project.**

• **Indigenous scope of supply:**

- a) ~~Project is Mega Power Project or Ultra Mega Power Project: Eligible for "NIL" Excise Duty. Necessary documents for availing Excise Duty exemption by suppliers will be furnished by BHEL.~~
- b) ~~Physical Export project: Eligible for complete exemption of Excise Duty & Sales Tax. Necessary documents for availing such benefits will be furnished by BHEL to suppliers.~~
- c) ~~Nuclear Power Project under a special category: Eligible for claiming Terminal Excise Duty benefit from DGFT as per present EXIM policy. Confirm submission of following in original:~~
  - ~~○ Disclaimer Certificate (Annexure -XI)~~
  - ~~○ Copy of Excise Invoice attested by Suptd of Central Excise authorities with signature and seal, in blue ink, to enable BHEL to claim terminal Excise duty benefit from DGFT.~~

• **Imported scope of supply:**

- a) ~~Project is Mega Power Project or Ultra Mega Power Project: Eligible for "NIL" Customs Duty.~~
- b) ~~Physical Export project: Eligible for complete exemption of Customs Duty.~~

**Terms of Delivery:**

Indicate station of despatch: \_\_\_\_\_

Indicate place of manufacturing (wherever applicable): \_\_\_\_\_

- **Indigenous scope of supply:** Ex-works (including Packing & Forwarding charges but excluding Taxes & Duties): \_\_\_\_\_
- **Imported scope of supply:** ~~C.I.F/Bangalore. (for air consignments)~~ **C.I.F/ ICD Bangalore. (for sea consignments)**  
 (Including Packing, Forwarding, Handling, Ancillary charges like processing of Sight Draft/ Letter of Credit, negotiation of bank Documents, Export declaration, Country of Origin etc.): \_\_\_\_\_
- Kindly Indicate the Approximate Weight of the total Consignment for the imported portion of subject item. This is required for calculating freight charges to the project Site \_\_\_\_\_ Kgs.

| S NO. | TERMS                                                    | BHEL ACCEPTABLE TERM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BIDDER'S CONFIRMATION                                                                                                                                         | DEVIATION IF ANY |
|-------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 01    | Validity                                                 | The offer will be valid for a period of 120 days from the date of technical bid opening.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | AGREE                                                                                                                                                         |                  |
| 02    | <del>Excise Duty &amp; Cess</del>                        | <p>If applicable, indicate current rate of Excise Duty and maximum rate of Excise Duty (against proof of Excise Invoice).</p> <p>However, for calculation purpose and arriving at "Total Cost to BHEL" maximum rate of Excise Duty will be considered. In case Excise Duty remains firm throughout the contract, the same shall be specifically indicated. Otherwise, maximum Excise Duty will be considered for arriving at lowest bidder.</p> <p>However, reimbursement of Excise Duty shall be at actuals against proof of Excise Invoice only. (Within contractual delivery).</p> <p>Physical export contract eligible for complete exemption of Excise duty against submission of necessary documents by BHEL like ARE 1/CT 1 form.</p> | <p><del>APPLICABLE / NOT APPLICABLE</del></p> <p>Present rate of Excise Duty with CESS<br/>.....%</p> <p>Maximum rate of Excise Duty with CESS<br/>.....%</p> | REFER LAST PAGE. |
| 03    | Central Sales Tax (CST)                                  | <p>If applicable, indicate current rate of sales tax against form "C".</p> <p>For issue of original form "C", vendor has to furnish "E1/E2" form. To enable vendor give E1/E2 form, photocopy of C form will be issued by BHEL.</p> <p>Please confirm submission of "E1/E2 Sale form".</p> <p>For physical export project, Sales Tax is exempted against necessary documents furnished by BHEL.</p>                                                                                                                                                                                                                                                                                                                                          | <p><del>APPLICABLE / NOT APPLICABLE</del></p> <p>Present Sales Tax rate against form "C"<br/>.....%</p> <p>CONFIRMED</p>                                      | REFER LAST PAGE. |
| 04    | <del>Value Added Tax (VAT)</del>                         | <p>If applicable, indicate current rate of VAT.</p> <p>When VAT is applicable, BHEL ROD's/ Nodal Agency's Name, TIN No. and address to be indicated in invoice. (Note that two original invoice and one tax invoice should be submitted to BHEL).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><del>APPLICABLE / NOT APPLICABLE</del></p> <p>VAT rate at present<br/>.....%</p> <p>NOTED</p>                                                              | REFER LAST PAGE. |
| 05    | <del>Octroi</del>                                        | If applicable, indicate current rate of octroi.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>AGREE</p> <p>Present Octroi rate<br/>.....%</p>                                                                                                            |                  |
| 06    | Freight Charges (for indigenous scope of supply)         | <p>Freight charges shall be to vendor's account.</p> <p>Quote lumpsum reasonable Freight charges separately in priced offer, Vendor's offer will be evaluated on "Total cost basis" including freight charges.</p> <p>Vendor shall book the consignment through their approved Road carriers on "Freight pre-paid" and door delivery consignee copy attached basis. Freight charges to be claimed from BHEL along with POD (Proof of Delivery) on original L/R.</p>                                                                                                                                                                                                                                                                          | <p>AGREED</p> <p>and quoted as lumpsum amount in price bid.</p>                                                                                               |                  |
| 07    | <del>Service Tax on E&amp;C and Training Charges</del>   | <p>If applicable, indicate current rate of Service Tax<br/>.....%</p> <p>Service Tax Regn. No. _____</p> <p>Confirmation that Service Tax register is maintained.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><del>APPLICABLE / NOT APPLICABLE</del></p> <p>CONFIRMED</p>                                                                                                | REFER LAST PAGE. |
| 08    | <del>Parting of license for imported raw materials</del> | In case of Mega project, Ultra Mega project and Physical Export project where Custom Duty and Excise Duty are NIL and vendor is importing any raw materials / components for the enquired item, same are eligible for Zero Customs duty. As per EXIM policy, BHEL will part the import licence with the vendors to obtain import licence by themselves and custom clear the raw materials/ components by availing zero customs duty. Hence, please furnish list of raw materials / components to be                                                                                                                                                                                                                                          | <p>AGREE</p> <p>—CIF value .....</p> <p>Yes, benefit passed on to BHEL in the priced</p>                                                                      |                  |

|    |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                  |  |
|----|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--|
|    |                                                 | <p><del>imported by you with Quantity and CIF value (for which BHEL has to share import licence). The benefit due to the above shall be passed on to BHEL and confirmed in the quotation.</del></p> <p><del>If there are no imported raw materials/components, same shall be confirmed in the offer.</del></p>                                                                                                                                                                                                                                                                                                        | <p><del>quotation.</del></p> <p><del>We confirm that there are no imported components.</del></p> |  |
| 09 | Delivery Period                                 | Within 04 months from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>AGREE</p> <p>..... weeks</p>                                                                  |  |
| 10 | Guarantee/Warranty                              | 36 months from the date of delivery of goods or 30 months from the date of commissioning of goods, whichever is earlier.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AGREE                                                                                            |  |
| 11 | Inspection agency                               | <p>Materials will be inspected by :</p> <ul style="list-style-type: none"> <li>BHEL</li> <li>Customer/Consultant/BHEL nominated Third Party Inspection Agency (TPIA)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       | AGREE                                                                                            |  |
| 12 | Terms of Payment at the time of material supply | <p>Refer Clause "F" of Instructions to Bidder for BHEL standard Payment terms and loading factors applicable for non-compliance against payment terms:</p> <p><b>Indigenous Scope:</b></p> <p>a) Supply with E&amp;C</p> <p>b) Supply with Supervision of E&amp;C</p> <p>c) Supply only</p> <p><b>Imported Scope:</b></p> <p>d) Supply with E&amp;C</p> <p>e) Supply with Supervision of E&amp;C</p> <p>f) Supply only</p> <p>Note: Kindly indicate if High Sea Sales will be operated. If yes, confirm submission of relevant documents as per Annexure V.</p>                                                       | <p>AGREE</p> <p>YES / NO</p> <p>CONFIRMED</p>                                                    |  |
| 13 | Performance Bank Guarantee (PBG)                | <p>PBG will be applicable for a period of 36 months + claim period of 6 months for a value equal to 10% of the basic value of the purchase order.</p> <p>Refer Clause "G" of Instructions to Bidders.</p>                                                                                                                                                                                                                                                                                                                                                                                                             | AGREE                                                                                            |  |
| 14 | Terms of Payment not related to material supply | <p><b>For Training:</b></p> <p>100% will be paid in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of documentation, whichever is later. Separate invoice shall be submitted for Training charges along with documentary evidence.</p> <p><del><b>For Engineering &amp; Documentation Charges:</b></del></p> <p><del>100% will be paid in 45 days from the date of approval of final documents or 15 days from the date of submission of invoice, whichever is later. Separate invoice to be submitted for Engineering &amp; documentation charges.</del></p> | AGREE                                                                                            |  |
| 15 | Mode of despatch                                | <p><b>Indigenous Scope:</b></p> <p>By Road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Despatch Instructions), only on receipt of Despatch Clearance from BHEL.</p> <p><b>Imported Scope:</b></p> <p>By Air/Sea through BHEL approved Consolidator/Supplier Freight Forwarder, only on receipt of Despatch Clearance from BHEL.</p>                                                                                                                                                                                                               | AGREE                                                                                            |  |
| 16 | Despatch Documents                              | <p>Complete set of despatch documents (original + 1 photocopy set) as per Purchase Order shall be forwarded to BHEL directly.</p> <p>Depending upon the project/customer demands, despatch documents may include one or more documents from the following:</p> <p>Commercial Invoice, Excise Invoice (if ED is applicable), Lorry Receipt (L/R), Packing List, Air Way Bill (AWB), Country of origin certificate, Warranty Certificate, Insurance Intimation letter, NIL Short Shipment Certificate, Original Performance Bank Guarantee</p>                                                                          | AGREE                                                                                            |  |

|    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                                          |
|----|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------|
|    |                                              | (directly from issuing bank to BHEL), POD (Proof of Delivery) on original L/R, Disclaimer Certificate (as per BHEL format attached as Annexure XI) along with ER-1 form & attested excise invoice (as per project demands like Nuclear Power plant) etc.<br><b>The precise list of despatch documents needed for a particular project will be specified in the Purchase Order.</b><br><br>One set of Invoice, Packing List and L/R or AWB shall be e-mailed/faxed immediately to BHEL-EDN after despatch. |                  |                                          |
| 17 | <b>O &amp; M Manuals</b>                     | As built Drawings, O & M Manuals and other approved documents shall be furnished in required no. of sets as per Specification/Purchase Order.<br><br>Note: Supply of above documents (O&M) in required no. of sets along with material shall be indicated in packing list. If not mentioned BHEL may insist for submission in required sets once again.                                                                                                                                                   | <b>AGREE</b>     |                                          |
| 18 | <b>Quantity Tolerance</b>                    | If applicable, indicate Quantity tolerance for each of the line item.<br><br><del>For Impulse/seamless/ GI pipes one random length applicable for each variety of pipes.</del>                                                                                                                                                                                                                                                                                                                            | <b>CONFIRMED</b> | Quantity Tolerance<br>.....% Per Variety |
| 19 | <b>Evaluation criteria for tendered item</b> | <del>Itemise evaluation of tendered item.</del><br><del>Splitting of tendered quantity to MSE vendors (if any) is applicable.</del><br><br>OR<br>Items will not be split on item wise lowest offer. Items to be evaluated and procured as a package.                                                                                                                                                                                                                                                      | <b>AGREE</b>     |                                          |
| 20 | <b>Integrity Commitment</b>                  | Integrity commitment will be applicable in the tender process and execution of contracts as mentioned in clause "I" of Instructions to Bidders.                                                                                                                                                                                                                                                                                                                                                           | <b>AGREE</b>     |                                          |

Vendor's scope against Erection and Commissioning as follows :

- 1) Deputation of Service Engineer for Erection & Commissioning activities at site & testing at site.
- 2) Commissioning and hand over of the complete system to customer is vendor's responsibility. Hence, request to submit the "LUMPSUM" amount only which include Travelling, Boarding and Lodging expenses with No. of persons.

**Note:**

Applicable GST only will be considered for evaluation and ranking. Pls. attach the tax structure (IGST or CGST, SGST, UGST) as applicable for the tender item & HSN code for each material and services along with filled SCC.

Vendor to mandatorily provide GSTN in the offer.

*With this, it is inferred that vendor has understood and accepts all terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 00) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 00).*

*The above filled-in and signed-sealed document (in original) shall be furnished as part of Part-I Bid without fail. If no deviations are brought, it will be treated as if all terms and conditions of this enquiry are accepted by vendor without any deviation.*

**A. \*.Delivery shall be as mentioned below.**

**For Imported portion:** Within 04(four) months from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later.

The date for which Inspection call is issued by vendor along with test certificates / test reports / Certificate of Conformance / Calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery. Supplier is supposed to arrange AWB within one weeks of dispatch clearance.

**For Indigenous Portion:** Within 04(four) months from the date of issue of approved documents or manufacturing clearance by BHEL, whichever is later

The date for which Inspection call is issued by vendor along with test certificates / test reports / Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. Supplier is supposed to arrange LR within one weeks of dispatch clearance.

**B. Evaluation criteria for tendered item:**

This project is having Customer approved vendors. If the quoted vendor, is not approved by ultimate Customer, such bidder will be referred to customer with credentials for their approval. Efforts will be made with Customer to get the approval. In case the customer does not approve a bidder for a project, then such bidder's offer will not be considered for opening of price bid.

Offers of customer approved vendor only will be evaluated and will be processed further. Priced offers of vendors, not approved by customer will not be opened

VENDOR'S SIGNATURE WITH SEAL



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್  
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,  
(A Government of India undertaking)  
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 001- Rev 02

## **INSTRUCTIONS TO BIDDERS (Common for all RFQs)**

Bidder is requested to read the instructions carefully and submit their quotation covering all the points:

### **A. GENERAL INSTRUCTIONS:**

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: CE: PR: 001 – Rev 02), General Conditions of Contract (document reference: CE: PR: 002 - Rev 02) and Special Conditions of Contract, if any, of the enquiry.
2. Any deviations from or additions to the “General Conditions of Contract” or “Special Conditions of Contract” require BHEL’s express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Bidders (also includes the term suppliers / contractors wherever used in this document) are instructed to quote their most competitive price and best delivery, etc. in the offer. Prices should be indicated in both figures & words. **(Please also refer clause 11 under section B)**
4. Regret letter (either through post or by mail) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. If a bidder fails to respond against 3 consecutive tenders for the same item, he will be liable for removal as a registered vendor of BHEL.
5. Procurement directly from the manufacturers shall be preferred. However, if the OEM / Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer / supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer / supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from the manufacturer / supplier and his agent, bid received from the agent shall be ignored.
6. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
7. If an Indian representative / associate / liaison office quotes on behalf of a foreign based bidder, such representative shall furnish compulsorily the following documents:
  - a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
  - b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
  - c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages / damages / replacement / repair of imported scope till system is commissioned and handed over to customer will be the sole responsibility of the Indian representative / associates / agent / liaison office.
  - d. Refer **Annexure IX** on “Guidelines for Indian Agents”.
8. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport / Seaport. Bidders must provide all original documents required for completing the customs clearance along with the shipment. Warehousing charges due to

incomplete or missing documentation will be recovered from the supplier's bill. All offers for imported scope of supply must be made from any of the gateway ports (within the country) indicated. **(Refer Annexure I)**

9. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: **www.bhel.com**
10. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices / misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike / lockout for a long period.

#### **B. GUIDELINES FOR PREPARATION OF OFFER:**

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:
  - **SINGLE PART BID:** Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.
  - **TWO PART BID:** Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid" without the prices** should be enclosed in one cover and the cover must be super scribed "**Techno-commercial offer**) and Priced offer i.e. "Price Bid" containing price summary in a separate sealed envelope and must be super scribed "**Price Bid**". Both these envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number due date of tender and any other details as called for in the tender document.
  - **THREE PART BID:** Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number due date of tender and any other details as called for in the tender document.

If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission or if any part of the offer is incomplete the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to super scribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid". Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.
3. BHEL standard Commercial Terms and Conditions (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only. Xerox copy will not be accepted.
4. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without deviation.
5. Deviation to this specification / item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.
6. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and / or any other relevant documents called in purchase specification as part of Technical Bid.
7. "Price Bid" shall be complete in all respects containing price break-up of all components along with all

applicable taxes and duties, packing & forwarding charges (if applicable), freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.

8. In addition, bidder shall also quote for erection & commissioning charges (E&C charges), documentation charges, service charges, testing Charges (type & routine), training charges, tax, etc. wherever applicable. The price summary must indicate all the elements clearly.
9. Vendors should indicate "lump sum" charges (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for Supervision of Erection, Commissioning and handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist and tax (if any).
10. Wherever bidders require PAC (Project Authority Certificate) for import of raw materials, components required for Mega Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.
11. All quotations shall be free from corrections /overwriting. Corrections if any should be authenticated with signature and seal. Any typographical error, totaling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure II** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid". BHEL decision will be final.
12. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder.

#### **C. GUIDELINES FOR OFFER SUBMISSION:**

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ. The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE." Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer. **(This clause will not be applicable for e-tenders)**
2. E-Mail / Internet / EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email ID specified in the SCC of the tender. (Refer to SCC document of tender)
3. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over either of the two officers whose names are mentioned in the RFQ. (Refer to SCC document of tender)
4. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. In case of e-procurement, bidders can see tender results till seven days after due date and time.
5. Vendor will be solely responsible:
  - a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.
  - b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.
  - c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box or if the tender document is handed over to the wrong person BHEL will not be responsible for any such delays.
  - d. For offers received through email etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time.

- e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, etc. will be the sole responsibility of the vendor. Wherever assistance is needed for submission of e-tenders, help line numbers and executives of service provider of BHEL may be contacted.

Service provider: M-junction

Website address: <https://bheleps.buyjunction.in/>

Helpline no.: 033-66106426/6217/6013/6046/6176 (9:30 am to 5:30 pm)

9163348283/9163348284/9163348285/9163348286/8584008116 (5:30 pm to 8:30 pm)

**Purchase Executive / BHEL will not be responsible for any of the activities relating to submission of offer.**

#### **D. PROCESSING OFFERS RECEIVED:**

1. Any discount / revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid). The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes / revisions are requested by BHEL.
3. In case there is no change in the technical scope and / or specifications and / or commercial terms & conditions, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening).
4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from vendors, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening.
5. a) BHEL EDN reserves the right to go for Reverse Auction (RA) (Guidelines as available on [www.bhel.com](http://www.bhel.com)) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.  
 b) Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/contractors (as available on [www.bhel.com](http://www.bhel.com)).  
 c) The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. ***The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.***

- d) If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealing with suppliers/contractors (as available on [www.bhel.com](http://www.bhel.com)).
6. Un-opened bids (including price bids) will be returned to the respective bidders after release of PO and receipt of order acknowledgement from the successful bidder.
  7. After receipt of Purchase Order, supplier should submit required documents like drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and / or any other relevant documents as per Specification / Purchase Order, as and when required by BHEL / Customer.
  8. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order.
  9. Evaluation shall be on the basis of delivered cost (i.e. "Total Cost to BHEL").  
 "Total Cost to BHEL" shall include total basic cost, packing & forwarding charges, taxes and duties, freight charges, insurance, tax for services, any other cost indicated by vendor for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions). Benefits arising out of Nil Import Duty on Mega Projects, Physical Imports or such 100% exemptions (statutory benefits), customer reimbursements of statutory duties (like GST) will also be taken into account at the time of tender evaluation. (wherever applicable and as indicated in SCC document of tender)
  10. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:
 

|                      |                            |
|----------------------|----------------------------|
| Single part bids:    | Date of tender opening     |
| Two/three part bids: | Date of Part-I bid opening |
| Reverse Auction:     | Date of Part-I bid opening |

In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.
  11. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers.

#### **E. INFORMATION ON PAYMENT TERMS:**

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format (**Refer Annexure IV**) for receiving all payments through NEFT. (Applicable for Indian vendors only)
2. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea / Air ports will be done by BHEL based on the original HSS documents provided by vendors. All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to suppliers account only. Such recovery will be made out of any of the available bills. (**Refer Annexure V**).
3. Statutory deductions, if any, will be made and the deduction certificate shall be issued. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act. (Applicable for Indian vendors only).  
 Foreign vendors shall submit relevant details of their bankers like Swift Code, Banker's Name & Address etc.
4. Vendors must submit bills & invoices along with required supporting documents in time. Incomplete documentation / delayed submission of invoice / documents will result in corresponding delay in payment.

**F. STANDARD PAYMENT TERMS OF BHEL-EDN**Purchase Orders for indigenous procurement**(a) SUPPLY WITH E&C:**

- 1) 85% of basic value (excluding E&C charges) + 100% of taxes, duties and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation whichever is later.
- 2) 15% of basic value (retention money), (excluding E&C charges) will be paid in 15 days from the date of submission of documents against supplementary invoice with proof of completion of E&C along with E & C charges (if any)

**(b) SUPPLY WITH SUPERVISION OF E&C:**

- 1) 90% basic value (excluding E&C charges) + 100% of taxes, duties and freight charges will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation whichever is later.
- 2) 10% of basic value (retention money), (excluding E&C charges) will be paid in 15 days from the date of completion of erection and commissioning against supplementary invoice with proof of completion of E&C along with supervision charges (if any)

**(c) SUPPLY ONLY:**

- 1) 100% of PO value with taxes, duties and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation whichever is later.

Purchase orders for import procurement:**(d) SUPPLY WITH E&C:**

- 1) 85% of the basic value (excluding E&C charges) will be paid in 45 days, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.
- 2) 15% of basic value (retention money), (excluding E&C charges) will be paid in 15 days from the date of completion of E&C along with E & C charges against supplementary invoice with proof of completion of E&C (if any).

**(e ) SUPPLY WITH SUPERVISION OF E&C:**

- 1) 90% of the value of the order will be paid on the 45th day, against usance draft of 45 days, from the date of AWB/BOL on submission of complete set of documents.
- 2) 10% of basic value (retention money) will be paid in 15 days from the date of completion of erection and commissioning against supplementary invoice with proof of completion of E&C along with supervision charges (if any).

**(f) SUPPLY ONLY:**

- 1) 100% of PO value will be paid against usance draft of 45 days from the date of dispatch or 15 days from the date of submission of complete set of documents whichever is later.

Purchase Orders for HSS procurement:

**(g) SUPPLY WITH E&C:**

85% basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation whichever is later.

15% of basic value (retention money), will be paid in 15 days from the date of completion of erection and commissioning against supplementary invoice with proof of completion of E&C

**(h) SUPPLY WITH SUPERVISION OF E&C:**

90% basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation whichever is later.

10% of basic value (retention money), will be paid in 15 days from the date of completion of Supervision of erection and commissioning against supplementary invoice with proof of completion of E&C

**(i) SUPPLY ONLY:**

100% basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation whichever is later.

**LOADING FACTORS FOR PAYMENT TERMS:**

- 1) For offers received with requests for negotiation of documents through bank loading will be 15% of basic value (all bank charges to be borne by the seller).  
**(This loading factor is applicable only for purchase orders for indigenous supply).**
- 2) In all cases where credit period is 30 days but not in line with the above mentioned standard payment terms offered loading applicable will be 5% of basic value.  
**(This loading factor is applicable only for purchase orders for indigenous supply).**
- 3) For offers received with Letter of Credit payment term in place of sight draft payment term, loading applicable will be 5% of basic value. Additional loading of 5% will be applicable for payment terms as Letter of Credit with usance of less than 45 days.  
**(This loading factor is applicable only for purchase orders for imported supply).**
- 4) For offers received with Sight Draft payment terms with usance of less than 45 days, loading of 5% will be applicable.  
**(This loading factor is applicable only for purchase orders for imported supply).**
- 5) In all cases where credit period is 30 days with the above offered standard payment terms for HSS procurement, loading applicable will be 5% of basic value.  
**(This loading factor is applicable only for purchase orders for HSS procurement).**
- 6) All payment terms with credit period of less than 30 days for indigenous supply and any other variation of payment terms are liable for rejection.
- 7) Standard payment terms indicated in para F (a), (b), (c), (d), (e), (f), (g), (h) and (i) will not attract any loading.

**Note 1:** Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight and E&C charges (wherever applicable).

Wherever the Purchase Order is split into import portion and indigenous portion of supply the retention money will be 15% or 10% (as applicable) of both purchase order values put together.

**Note 2: If the E&C could not be completed till the end of the Warranty period due to reasons not attributable to the supplier, BHEL may consider releasing the retention money to the supplier against Bank Guarantee for equivalent value valid for an initial period of one year.**

#### **G. Bank guarantee (BG) / Performance bank guarantee (PBG):**

1. Bank guarantee (BG) / Performance bank guarantee (PBG) will be applicable as called in the tender documents. Such PBG shall be valid for a period of 36 months + claim period of 6 months for a value equal to 10 % of the basic value of the purchase order. No deviation for the duration of PBG / BG will be permitted.
  - a. PBG shall be from any of the BHEL consortium of bankers (**refer Annexure VI**).
  - b. PBGs from nationalized banks are also acceptable.
  - c. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order. PBG should be in the format indicated. (**Refer annexure VII**). No deviation to this format will be allowed.
  - d. Confirmation from any of the BHEL consortium of banks or any of the Indian Public Sector Banks is essential for the acceptance of PBGs issued by foreign banks (located outside India).
  - e. Expired BGs / PBGs will be returned only after expiry of the claim period or on completion of the contractual obligation.
  - f. **Non acceptance for submission of PBG will attract loading as indicated below**
    - i. Loading will be equal to the percentage of value for which BG / PBG is not provided. (Ex: if PBG / BG is given for 3 % of the basic value against 10% specified, loading applicable will be 7% (10 – 3 = 7 %). This value will be added to the quoted price while evaluating the lowest offer.

#### **H. PROVISIONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES)**

Vendors who qualify as MSE vendors are requested to submit applicable certificates (as specified by the Ministry of Micro, Small and Medium Enterprises) at the time of vendor registration. Vendors have to submit any of the following documents along with the tender documents in the Part I / Technical bid cover to avail the applicable benefits.

- a. Valid NSIC certificate or
- b. Entrepreneur's Memorandum part II (EM II) certificate (deemed valid for 2 years).
- c. EM II certificate with CA certificate (**in the prescribed format given in Annexure VIII**) applicable for the year certifying that the investment in plant and machinery of the vendor is within permissible limits as per the MSME Act 2006 for relevant status where the deemed validity is over.
- d. Documents submitted for establishing the credentials of MSE vendors must be valid as on the date of part I / technical bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Documents submitted after the Part I / Technical bid opening date will not be considered for this tender.

#### **PURCHASE PREFERENCE FOR MSE VENDORS:**

- e. MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 20% of the requirement against this tender provided
  1. The MSE vendor matches the L1 price

2. L1 price is from a non MSE vendor
3. L1 price will be offered to the nearest vendor nearest to L1 in terms of price ranking (L2 - nearest to L1). In case of non-acceptance by the MSE vendor (L2) next ranking MSE vendor will be offered who is within the L1 + 15% band (if L3 is also within 15% band).
4. 20% of the 20% (i.e. 4% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) and (2) are fulfilled.
5. In case no vendor under SC / ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, in such cases the 4% quantity will be distributed among the other eligible MSE vendors who have participated in the tender.
6. Serial no. 1 to 5 will not be applicable wherever it is not possible to split the tendered quantity / items on account of customer contract requirement, or the items tendered are systems. Such information that tendered quantity will not be split will be indicated in the SCC.

#### **I. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:**

##### **1. Commitment by BHEL:**

BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

##### **2. Commitment by Bidder(s)/ Contractor(s):**

- a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.
- c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. The Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain or pass on to others, any information or document provided by BHEL as part of business relationship.
- d. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

**PURCHASE EXECUTIVE**



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್  
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,  
(A Government of India undertaking)  
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 002- Rev 02

#### GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' hereinafter referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects / customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

- a) 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
- b) 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
- c) 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent / acceptance / award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection / Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
- d) 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.

#### Interpretation:

In the contract, except where the context requires otherwise:

- a) words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
- d) "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

**Applicable Conditions:**

1. **Price Basis:** All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted unless otherwise such variations / escalations are provided for and agreed by BHEL in writing in the purchase order.
2. **Validity:** The offer will be valid for a period of 120 days from the date of technical bid opening date. Validity beyond 120 days, if required, will be specified in the SCC (special conditions of contract).
3. **Ordering and confirmation of Order:** Vendor shall send the order acceptance on their company letter head within two weeks from the date of Purchase Order or such other period as specified / agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.  
The purchase order will be deemed to have been accepted if no communication to the contrary is received within two weeks (or the time limit as specified / agreed by BHEL) from the date of the purchase order.
4. **Documentation:** After receipt of Purchase Order, vendor should submit required documents like drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.  
At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents /specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.
5. **Penalty:**  
**For delay in documentation:** In the event of delay in submission of complete set of documents ((like drawings, bill of materials, datasheets, catalogues, quality plan etc. as called in tender specifications including soft copies wherever applicable) in required sets beyond three weeks (or as agreed/indicated in the Purchase Order) from the date of Purchase Order, penalty at 0.5% (half percent) per week or part thereof, limited to a maximum of 5% (five percent) of the basic material value of the Purchase Order will be applicable.  
**For delay in delivery:** In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent ) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of document approval by customer / BHEL or date of issue of manufacturing clearance, whichever is later. The date for which Inspection call is issued by vendor along with test certificates / test reports / Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.  
Penalty for delayed documentation/delayed delivery, if applicable, shall be deducted at the time of first payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted. It may be noted that GST as applicable will be recovered along with penalty amount.
6. **Contract variations (Increase or decrease in the scope of supply):** BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be applied to such additional work. Vendor shall not

perform additional work before BHEL has issued written instructions / amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.

7. Reverse Auction: BHEL reserves the right to follow REVERSE AUCTION PROCEDURE (ONLINE BIDDING ON NETWORK) before finalising the Purchase order on technically competent bidders, as per the guidelines given in Annexure III. In case BHEL decides not to conduct RA, the envelope sealed price bids of all techno-commercially qualified bidders, along with price impact, if any, shall be opened and processed as per BHEL's standard practice.
8. Inspection: Prior written notice of at least 10 days shall be given along with internal test certificates / COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification / acceptance for issue of dispatch clearance.  
All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.
9. Transit Insurance: Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency (as mentioned in dispatch instructions issued by BHEL) through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.
10. High Sea Sales (HSS): Customs clearance of the consignment landed on Indian Sea / Air ports will be done by BHEL based on the original HSS documents provided by vendors.  
Any delay in submission of complete / correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete / incorrect HSS documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.
11. Packaging and dispatch: The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea / Air / Rail / Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures / hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.  
The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw / solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitary / Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.  
Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (L x B x H) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated.  
Separate packing & identification of items should be as follows.
  1. Main Scope - All items must be tagged with part no. & item description.
  2. Commissioning spares - All items must be tagged with part no. & item description.

3. Mandatory spares - All items must be tagged with part no. & item description.
12. Assignment of Rights & Obligations; Subcontracting: Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.
13. Progress report: Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.
14. Non-disclosure and Information Obligations: Vendor shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.
15. Cancellation / Termination of contract: BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.  
BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so, on account of any decline, diminution, curtailment or stoppage of the business.
16. Risk Purchase Clause: In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services NOT supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.  
In case of items demanding services at site like erection and commissioning, vendor should send his servicemen /representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase / service including additional handling charges due to the change.
17. Shortages: In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages shall be made good within a reasonable time that BHEL may allow from such intimation and free of cost. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will have to be reimbursed by the Supplier.  
Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, Supplier shall make good of all such damages within a reasonable time from such intimation by BHEL. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed.
18. Remedial work: Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.
19. Indemnity Clause: Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's men / property, during execution of the Purchase Order and related services. All

statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment.

20. Product Information, Drawings and Documents: Drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.

Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.

All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.

21. Intellectual Property Rights, Licenses: If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery (goods / related service) or accompanying documentation shall be the exclusive property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

22. Force Majeure: Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.

A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

23. Guarantee / Warranty: Wherever required, and so provided in the specifications / Purchaser Order, the Seller shall guarantee that the stores supplied shall comply with the specifications laid down, for materials, workmanship and performance. Unless otherwise specified, guarantee / warranty period shall be 30 months after the date of delivery of goods or 24 months from the date of commissioning of goods whichever is earlier. The guarantee / warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable guarantee / warranty period.

24. Limitation of Liability: Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.  
The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.
25. Liability during guarantee / warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation under the guarantee / warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.  
In case, defects attributable to vendor are detected during first time commissioning or use, vendor shall be responsible for replacement / repair of the goods as required by BHEL at vendor's cost. In all such cases expiry of guarantee / warranty will not be applicable.
26. Liability after guarantee / warranty period: At the end of the guarantee / warranty, the Vendor's liability ceases except for latent defects (latent defects are defects / performance issues notices after the guarantee / warranty has expired). The Contractor's liability for latent defects warranty for the plant and equipment including spares shall be limited to a period of six months from the end of the guarantee / warranty period of the respective plant and equipment including spares or first time commissioning whichever is later but not later than 3 (three) years from the date of shipment.
27. Compliance with Laws: Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.
28. Settlement of Disputes: Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).

29. Arbitration Clause: In case amicable settlement is not reached in the event of any dispute or difference arising out of the execution of the Contract or the respective rights and liabilities of the parties or in relation to interpretation of any provision in any manner touching upon the Contract, such dispute or difference shall (except as to any matters, the decision of which is specifically provided for therein) be referred by either party to the sole arbitration of an Arbitrator appointed by the Executive Director/ General Manager of the purchasing unit/ region/ division of BHEL. Vendor shall have no objection even if the Arbitrator so appointed is an employee of BHEL or has ever dealt/ had to deal with any matter relating to this Contract.

Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996 of India or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. It is a term of contract that the party initiating arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute. The venue for the arbitration shall be Bangalore, India. The award of the arbitrator shall be a speaking award and shall be final, conclusive and binding on all parties to this contract.

The cost of arbitration shall be borne equally by the parties. Notwithstanding the existence of any dispute or difference or any reference for the arbitration, the vendor shall proceed with and continue without hindrance the performance of the work under the contract with due diligence and expedition in a professional manner.

30. Applicable Laws and Jurisdiction of Courts: Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract. Subject to the conditions as aforesaid, the competent courts in BANGALORE alone shall have jurisdiction to consider over any matters touching upon this contract.

31. Fraud Prevention Policy: The bidder along with its associate/collaborators/sub-contractors/ sub-vendors/ consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

32. General Terms: That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.

That the headings used in this agreement are for convenience of reference only.

That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

**ANNEXURE - I**  
**LIST OF INTERNATIONAL GATEWAY AIRPORTS**

For airbased consignment, terms of delivery will be on FCA basis from following listed airports only.  
This list is valid from 01.03.2013 to 28.02.2015. Vendors are requested to verify this list for use after 28.02.2015.

| SCHEDULE NO | COUNTRY      | CURRENCY CODE | AIRPORT                                                                               |
|-------------|--------------|---------------|---------------------------------------------------------------------------------------|
| D01         | UK           | GBP           | LONDON (HEATHROW)                                                                     |
| D02         | UK           | GBP           | NEW CASTLE                                                                            |
| D03         | UK           | GBP           | OXFORD. CHETLAM                                                                       |
| D04         | UK           | GBP           | BRISTOL. WELLINGBOROUGH                                                               |
| D05         | UK           | GBP           | BIRMINGHAM                                                                            |
| D06         | UK           | GBP           | EAST MIDLANDS                                                                         |
| D07         | UK           | GBP           | MANCHESTER                                                                            |
| D08         | UK           | GBP           | LEEDS                                                                                 |
| D09         | UK           | GBP           | GLASGOW                                                                               |
| D10         | FRANCE       | EURO          | PARIS (ROISSY) & LYON                                                                 |
| D11         | SWEDEN       | EURO          | STOCKHOLM                                                                             |
| D12         | SWEDEN       | EURO          | GOTHENBERG & MALMO                                                                    |
| D13         | ITALY        | EURO          | ROMA, MILAN                                                                           |
| D14         | ITALY        | EURO          | TURIN, BOLOGNA, FLORENCE                                                              |
| D15         | NETHERLANDS  | EURO          | AMSTERDAM, ROTTERDAM                                                                  |
| D16         | AUSTRIA      | EURO          | VIENNA, LINZ, GRAZ                                                                    |
| D17         | BELGIUM      | EURO          | ANTWERP, BRUSSELS                                                                     |
| D18         | DENMARK      | DKK           | COPENHAGEN                                                                            |
| D19         | JAPAN        | JPY           | TOKYO, OSAKA                                                                          |
| D20         | SINGAPORE    | SGD           | SINGAPORE                                                                             |
| D21         | CANADA       | CAD           | TORONTO                                                                               |
| D22         | CANADA       | CAD           | MONTREAL                                                                              |
| D23         | USA          | USD           | NEW YORK, BOSTON                                                                      |
| D24         | USA          | USD           | CHICAGO                                                                               |
| D25         | USA          | USD           | SAN FRANCISCO, LOS ANGELES                                                            |
| D26         | USA          | USD           | ALANTA, HOUSTON                                                                       |
| D27         | GERMANY      | EURO          | MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG |
| D28         | GERMANY      | EURO          | FRANKFURT                                                                             |
| D29         | GERMANY      | EURO          | BERLIN                                                                                |
| D30         | SWITZERLAND  | SFR           | BASLE, ZURICH, GENEVA                                                                 |
| D31         | SPAIN        | EURO          | BARCELONA                                                                             |
| D32         | AUSTRALIA    | AUD           | SYDNEY                                                                                |
| D33         | AUSTRALIA    | AUD           | MELBOURNE                                                                             |
| D34         | AUSTRALIA    | AUD           | PERTH                                                                                 |
| D35         | CZECH        | EURO          | PRAGUE                                                                                |
| D36         | HONG KONG    | HKD           | HONG KONG                                                                             |
| D37         | NEW ZELAND   | NZD           | AUCKLAND                                                                              |
| D38         | RUSSIA       | USD           | MOSCOW                                                                                |
| D39         | SOUTH KOREA  | USD           | KIMPO INTERNATIONAL, INCHEON                                                          |
| D40         | FINLAND      | EURO          | HELSINKI                                                                              |
| D41         | ROMANIA      | EURO          | BUCHAREST                                                                             |
| D42         | NORWAY       | EURO          | OSLO                                                                                  |
| D43         | IRELAND      | EURO          | DUBLIN                                                                                |
| D44         | ISRAEL       | USD           | TEL AVIV                                                                              |
| D45         | UAE          | USD           | DUBAI                                                                                 |
| D46         | OMAN         | USD           | MUSCAT                                                                                |
| D47         | EGYPT        | USD           | CAIRO                                                                                 |
| D48         | TAIWAN       | USD           | TAIPEI                                                                                |
| D49         | UKRAINE      | USD           | KIEV                                                                                  |
| D50         | CHINA        | USD           | SHANGHAI, SHENZHEN                                                                    |
| D51         | PHILIPINES   | USD           | MANILA                                                                                |
| D52         | MALAYSIA     | USD           | KUALALUMPUR, PE NANG                                                                  |
| D53         | CYPRUS       | USD           | LARNACA                                                                               |
| D54         | SOUTH AFRICA | USD           | JOHANNESBERG, DURBAN                                                                  |
| D55         | SLOVAKIA     | EURO          | BARTISLOVA                                                                            |
| D56         | SAUDI ARABIA | SAR           | RIYADH                                                                                |
| D57         | TURKEY       | EURO          | ISTANBUL                                                                              |
| D58         | THAILAND     | USD           | BANGKOK                                                                               |
| D59         | BRAZIL       | USD           | SAO PAULO, RIO DE JANEIRO                                                             |

**ANNEXURE – II**  
**DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID**

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

(a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

(d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

**ANNEXURE-III**  
**GUIDELINES FOR REVERSE AUCTION PROCEDURE**

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ONLINE BIDDING (THROUGH A SERVICE PROVIDER). The Reverse Auction shall follow the philosophy of English Reverse (No ties).

1. For the proposed reverse auction, only techno-commercially qualified bidders shall be eligible to participate.
2. Those bidders who have given their acceptance with the offer for participation in Reverse Auction will have to necessarily submit ‘Process compliance form’ (to the designated service provider) as well as ‘Online sealed bid’ in the Reverse Auction. Non-submission of ‘Process compliance form’ or ‘Online sealed bid’ by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/contractors (as available on [www.bhel.com](http://www.bhel.com)).
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of online bidding on internet.
4. In case of reverse auction, BHEL will inform bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like Schedule, extension etc. also will be communicated through service provider for compliance.
6. Bidders are required to submit their acceptance to the terms/ conditions/modalities before participating in the Reverse Auction in the process compliance form to Service Provider. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., excel sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each techno-commercially qualified bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
10. Successful bidder shall be required to submit the final prices (L1) in prescribed format for price breakup including that of line items, if required, quoted during the Online Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to Service provider besides BHEL within two working days of Auction without fail.
11. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)).
12. In case BHEL decides not to conduct Reverse Auction for this tender enquiry, the envelope sealed price bids of all techno-commercially qualified bidders, along with price impact, if any, shall be opened as per BHEL’s standard practice.
13. If there is any clash between this business document and the FAQ available, if any, in the website of Service provider, the terms & conditions given in Business Rules will supersede the information contained in the FAQs. Bidders are advised to read the ‘Business Rules’ indicating details of RA event carefully, provided by the Service provider, before reverse auction event.

**ANNEXURE-III**  
**GUIDELINES FOR REVERSE AUCTION PROCEDURE**

14. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)), shall be initiated by BHEL.
15. In case BHEL decides to go for reverse auction, the H1 bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process. In case of tie for H1 bid (identical online sealed bids), 15 minutes additional time shall be provided to enable bidders submit revised online sealed bids so as to break the tie.

**ANNEXURE - IV**  
**Electronic Funds Transfer (EFT) OR**  
**Paylink Direct Credit Form**

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): \_\_\_\_\_ CREATE \_\_\_\_\_ CHANGE

|                                |  |
|--------------------------------|--|
| BHEL Vendor / Supplier Code:   |  |
| Company Name :                 |  |
| Permanent Account Number(PAN): |  |
| Address                        |  |
|                                |  |
|                                |  |

|       |  |         |  |       |  |
|-------|--|---------|--|-------|--|
| City: |  | PINCODE |  | STATE |  |
|-------|--|---------|--|-------|--|

|                   |  |
|-------------------|--|
| Contact Person(s) |  |
| Telephone No:     |  |
| Fax No:           |  |
| e-mail id:        |  |

|                                                                                     |  |
|-------------------------------------------------------------------------------------|--|
| 1 Bank Name:                                                                        |  |
| 2 Bank Address:                                                                     |  |
|                                                                                     |  |
|                                                                                     |  |
| 3 Bank Telephone No:                                                                |  |
| 4 Bank Account No:                                                                  |  |
| 5 Account Type: Savings/Cash Credit                                                 |  |
| 6 9 Digit Code Number of Bank and branch<br>appearing on MICR cheque issued by Bank |  |
| 7 Bank IFSC Code(applicable for NEFT )                                              |  |
| 8 Bank IFSC code(applicable for RTGS)                                               |  |

(Indian Financial System Code)

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:

Designation:

Telephone No. with STD Code

Company Seal

**Bank Certificate**

We certify that \_\_\_\_\_ has an Account No \_\_\_\_\_ with us and we confirm that the bank details given above are correct as per our records.

Date: \_\_\_\_\_ (.....)  
Place: \_\_\_\_\_ Signature

Please return completed form **along with a blank cancelled cheque or photocopy** thereof to:

Bharath Heavy Electricals Ltd,

Attn:

Electronics Division, Mysore Road,

BANGALORE - 560 026

In case of any Query, please call concerned purchase executive.

**ANNEXURE - V**  
**PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)**

In case of High Sea Sales, vendor should submit following documents:

**1. ORIGINAL HIGH SEA SALES AGREEMENT**

- Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
- The date of the stamp paper should be prior to the Air Way Bill / Bill of Lading date.
- Following shall be included in the High Sea Sales Agreement:  
“THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS”.

**2. ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE**

- Prices should be C.I.F., designated airport/seaport basis.
- I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
- Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
- Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

**4. ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING**

- The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

**5. ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.**

**6. ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.**

**7. ORIGINAL PACKING LIST.**

**8. A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.**

**9. A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.**

**REMARKS:** In case vendor needs any clarifications on the above, the same may be sought in writing.

| List of Consortium Banks ( As on 22.02.2017) |                           |    |                                                       |
|----------------------------------------------|---------------------------|----|-------------------------------------------------------|
|                                              | Nationalised Banks        |    | Nationalised Banks                                    |
| 1                                            | Allahabad bank            | 19 | Vijaya Bank                                           |
| 2                                            | Andhra bank               |    | <b>Public Sector Banks</b>                            |
| 3                                            | Bank of Baroda            | 20 | IDBI                                                  |
| 4                                            | Canara Bank               |    | <b>Foreign banks</b>                                  |
| 5                                            | Corporation bank          | 21 | CITI Bank N.A                                         |
| 6                                            | Central bank              | 22 | Deutsche Bank AG                                      |
| 7                                            | Indian Bank               | 23 | The Hongkong and Shanghai Banking Corporation Limited |
| 8                                            | Indian Oversea Bank       | 24 | Standard Chartered Bank                               |
| 9                                            | Oriental bank of Commerce | 25 | J P Morgan                                            |
| 10                                           | Punjab National Bank      |    |                                                       |
| 11                                           | Punjab & Sindh Bank       |    | <b>Private banks</b>                                  |
| 12                                           | State Bank of India       | 26 | Axis Bank                                             |
| 13                                           | State Bank of Hyderabad   | 27 | The Federal Bank Limited                              |
| 14                                           | Syndicate Bank            | 28 | HDFC                                                  |
| 15                                           | State Bank of Travancore  | 29 | Kotak Mahindra Bank                                   |
| 16                                           | UCO Bank                  | 30 | ICICI                                                 |
| 17                                           | Union Bank of India       | 31 | Indusind Bank                                         |
| 18                                           | United Bank of India      | 32 | Yes Bank                                              |

**BANK GUARANTEE FOR PERFORMANCE SECURITY**

Bank Guarantee No:

Date:

To

NAME

&amp; ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at \_\_\_\_\_<sup>1</sup> through its Unit at.....(name of the Unit) having awarded to ( Name of the Vendor / Contractor / Supplier) with its registered office at \_\_\_\_\_<sup>2</sup> hereinafter referred to as the 'Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated .....<sup>3</sup> valued at Rs.....<sup>4</sup> ( Rupees -----)/FC.....(in words.....) for .....<sup>5</sup> (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to .....% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, ....., (hereinafter referred to as the Bank), having registered/Head office at ..... and inter alia a branch at ..... being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- -----<sup>6</sup> ( Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. \_\_\_\_\_.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the .....bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We .....BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including.....<sup>7</sup> and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the .....<sup>8</sup>we shall be discharged from all liabilities under this guarantee thereafter.

We, ..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....<sup>6</sup>
- b) This Guarantee shall be valid up to .....<sup>7</sup>
- c) Unless the Bank is served a written claim or demand on or before .....<sup>8</sup> all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, \_\_\_\_\_ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of  
(Name of the Bank)

Dated.....

Place of Issue.....

<sup>1</sup> NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

<sup>2</sup> NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

<sup>3</sup> DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

<sup>4</sup> CONTRACT VALUE

<sup>5</sup> PROJECT/SUPPLY DETAILS

<sup>6</sup> BG AMOUNT IN FIGURES AND WORDS

<sup>7</sup> VALIDITY DATE

<sup>8</sup> DATE OF EXPIRY OF CLAIM PERIOD

**Note:**

1. Expiry of claim period may be kept 6 months after validity date.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In Case of Bank Guarantees submitted by Foreign Vendors-
  - a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** will be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
  - b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
    - b.1 In such cases,  
Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.
    - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
    - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time).

**Annexure - VIII**  
**Certificate by Chartered Accountant on Letter Head**

This is to certify that M/s .....  
.....(Hereinafter referred to as 'Company')  
having its registered office at ..... is registered under MSMED Act 2006,  
(Entrepreneur Memorandum No (Part-II ..... dtd .....  
Category: ..... (Micro/Small). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as  
on date..... **as per MSMED Act 2006 is as follows:**

- 1. For Manufacturing Enterprises:** Investment in plant and machinery ( i.e., original cost excluding land and building and the items specified by the Ministry of Small Industries vide its notification No.S.O.1722 (E) dated October 5, 2006:
- 2. For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:  
Rs. ....Lacs.

The above investment of Rs. .... Lacs in within permissible limit of  
Rs..... Lacs for.....Micro / Small (Strike off which is not  
applicable ) Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership Number -

Seal of Chartered Accountant

## ANNEXURE- IX

- **Definition of Indian Agent:** An Indian Agent of foreign principal is an individual, a partnership, an association of persons, a private or public company, that carries out specific obligation(s) towards processing of BHEL tender or finalization or execution of BHEL's contract on behalf of the foreign supplier.

In case of yes, vendor to note the following and reply accordingly:

- BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.
- It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.
- The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.
- Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.
- In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- The "Guidelines for Indian Agents of Foreign Suppliers" enclosed at annexure -'A' shall apply in all such cases.

- viii. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. In this regard, details may be checked as per Annexure-B (copy enclosed). It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on [www.bhel.com](http://www.bhel.com).

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

---X---

Vendor's Signature with Seal

### **Guidelines for Indian Agents of Foreign Suppliers**

- 1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BHEL shall apply for registration in the registration form in line with SEARP.
- 1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainership being paid by the principal to the agent before the placement of order by BHEL.
- 1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.
- 2.0 **Disclosure of particulars of agents/ representatives in India, if any.**
- 2.1 Tenderers of Foreign nationality shall furnish the following details in their offers:
  - 2.1.1 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agents/ representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent/ representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.
  - 2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.
  - 2.1.3 Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his agents/ representatives in India, may be paid by BHEL in Indian Rupees only.
- 2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:
  - 2.2.1 The Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.
  - 2.2.2 The amount of commission/ remuneration included in the price (s) quoted by the Tenderer for himself.
  - 2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by BHEL in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.
- 2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.
- 2.4 Failure to furnish correct and detailed information as called for in paragraph 2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL. Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

## ANNEXURE-X

### **Disclaimer Certificate For Deemed Export Benefits**

I, (Name & Designation) .....on behalf of M/s. .... (Name and address of the supplier) hereby certify that we have supplied the following goods to M/s..... (Name and address of the recipient):

| S.No. | Inv. No. & date | Description of goods | Unit | Qty. | Value |
|-------|-----------------|----------------------|------|------|-------|
|       |                 |                      |      |      |       |
|       |                 |                      |      |      |       |

1. We are the manufacturer exporters/suppliers and are registered/not registered with Central Excise and have not availed and will not avail CENVAT facility in respect of the input/components used in aforesaid supplies. We have also not availed and will not avail rebate on the inputs/components used in aforesaid supplies.

OR

We are the suppliers and our supporting manufacturer(s) is/are registered/not registered with Central Excise and have not availed and will not avail CENVAT facility in respect of the inputs/components used in aforesaid supplies.

2. We also certify that we have not been issued any Advance Authorization/Duty Free Import Authorization in respect of the aforesaid supplied goods and have not availed any benefit thereon.

3. We further state that we have not drawn nor will draw any benefit for deemed export and we have no objection if M/s..... (Name and address of the recipient) draws the deemed export benefits on the supplies mentioned above. (Required to be given in case benefits are claimed by recipient of goods).

OR

We have not given disclaimer certificate to M/s..... (Name and address of the recipient) and will not give disclaimer certificate, in future, in respect of these supplies for claiming deemed export benefits (Required to be given in case benefits are claimed by DTA suppliers).



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## Section - A

Ref : CE/470/EPABX/GI

REV. No. 00

PAGE 1 OF 2

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## GENERAL INSTRUCTIONS TO BIDDERS

REVISION: 00

Approved: Alok Mandal

Prepared

  
Patrali Sanyal

Issued

  
CE-Engg-SCADA

Date

21.10.17

|                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                                                                                |
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|                                                                                                                                                                                                                                              |  | <div><div><div>बी एच ई एल</div><div></div></div><div>A4-11</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | GENERAL INSTRUCTION | <div>Ref : CE/470/EPABX/GI</div> <div>REV. No. 00</div> <div>PAGE 2 OF 2</div> |
| <div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited.<br/>It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div> |  | GENERAL INSTRUCTIONS TO BIDDERS :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |                                                                                |
|                                                                                                                                                                                                                                              |  | <div>1.0 ALL REQUIRED DOCUMENTS AGAINST THIS TENDER / SPECIFICATION SHALL BE SUBMITTED IN <u>ENGLISH</u> ONLY.</div> <div>2.0 <u>Introduction</u> : Bidders are required to offer IP based EPABX system for 4x270 MW Bhadradri TPS, Unit-1 to 4, Manuguru for plant wide communication. The bidder shall be totally responsible for the desired performance of the offered EPABX system including survey, design, engineering, manufacturing, testing, supply, installation and commissioning (<b>Total Turnkey Project</b>).</div> <div>3.0 In order to accept the Technical offers / proposals from Bidders, certain Pre-qualification criteria are required to be met by Bidder.</div> <div>4.0 In case Bidder does not include the details or meet the requirements of Pre-qualification requirements, their offer shall be summarily <u>rejected</u> and Bidder's Technical offers shall not be evaluated.</div> <div>5.0 <u>Evaluation methodology</u> : BHEL shall initially open Bidder's PQR documents only as per Section-B of this specification for review &amp; acceptance. Only after acceptance of PQR documents, BHEL shall open Bidder's Technical Offers as per CI 2.0 of above for evaluation. Commercial bids of technically accepted vendors shall be processed and overall L1 status shall be determined.<div>a. If L1 vendor is already approved, purchase order shall be issued by BHEL for the project.</div><div>b. If L1 vendor is not approved, BHEL shall approach the customer for approval of make and model of EPABX system. Formal purchase order shall be issued only after acceptance by customer.</div></div> <div>6.0 Bidders are required to submit offers as detailed below :<div>a. Documents pertaining to Pre-Qualification requirement (CL AA of Section B of this Specification) shall be in a separate cover with reference no. "CE/470/EPABX/PQR/ CI AA of Section B" marked on it.</div><div>b. Documents pertaining to Pre-Qualification requirement (CI BB of Section B of this Specification) shall be in a separate cover with Reference no. "CE/470/EPABX/PQR/ CI BB of Section B" marked on it.</div><div>c. Technical offers/proposals for the Project, whose requirement is mentioned in sub-sections of Section-C of this specification, shall be submitted in separate cover with Project name &amp; reference marked on it.</div></div> <div>7.0 Whenever required during evaluation of PQR and Technical offers/bids, vendor is required to be present at BHEL Electronics Division, Bangalore, for discussions. Further in the event of order, during approval of the Vendor document by End users/Customers, Vendor shall accompany BHEL representative for discussions.</div> |                     |                                                                                |



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## Section - B

Ref : CE/470/EPABX/PQR

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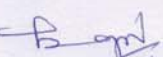
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## PRE-QUALIFICATION REQUIREMENTS

REVISION: 00

Approved: Alok Mandal

Prepared

  
Patrali Sanyal

Issued

  
CE-Engg-SCADA

Date

21.10.17

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                   |                             |                               |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | A4-11                                                                             |                             | <b>REV. No. 00</b>            |
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| <p><b>AA. Pre-Qualification Requirements (PQR) of Bidders for IP based EPABX system, as a part of Offer:</b><br/>Note : All documents shall be complied clause wise and submitted with proper tagging in following order.</p> <div><div><div><b>COPY RIGHT AND CONFIDENTIAL</b><br/>The information on this document is the property of Bharat Heavy Electricals Limited.<br/>It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div></div><div><ol style="list-style-type: none"><li>1. Bidder shall submit DOT/TEC certificate for the IP based EPABX system being offered.</li><li>2. Bidder shall submit reference list of projects wherein offered system is supplied &amp; commissioned. Reference list shall contain name of end user, latest contact email id and contact telephone number.</li><li>3. Bidder shall have successfully designed, installed and commissioned the offered system with minimum 50 lines (including both IP and TDM lines) and 5 external trunk lines in at least 2 industrial plant units, each of which has been in satisfactory commercial operation for at least 2 years. Bidder has to submit evidence of satisfactory performance of the offered system for at least two years as on date of opening bid. The following documents are required for acceptance:<ol style="list-style-type: none"><li>3.1 Minutes of meeting with end-user for commissioning and handing over.</li><li>3.2 Un-priced purchase order copy of end user placed on bidder.</li><li>3.3 Certificate issued by end user mentioning the date of installation, model number of the supplied system</li></ol>Note: If the furnished PTR, end user contact details are found wrong/incorrect, the offer will be rejected.</li><li>4. The responsibility of complete system including Engineering, selection of components, and erection and commissioning shall be with original EPABX manufacturer. For this OEM shall submit a letter in original. Further, OEM shall also submit letter indicating availability of service, spares for a minimum of 5 years after supply.</li><li>5. If Bidder is not Original Equipment Manufacturer (OEM), then Bidder has to include Authorization letter from OEM for Design, Engineering, Manufacture, Testing, Supply, Erection and Commissioning of the offered system.</li><li>6. Vendor shall submit duly-filled Source Request Form (SRF) online at our website <a href="https://suppliers.bheltry.co.in/">https://suppliers.bheltry.co.in/</a>.</li></ol></div></div> |  |                                                                                   |                             |                               |
| <p><b>BB. Along with the documents related to PQR above, following details shall also be included in the Offer:</b></p> <div><div><div></div><div><ol style="list-style-type: none"><li>6.1 Technical literature / Manuals of offered EPABX system</li><li>6.2 Reports of successful erection &amp; commissioning protocols &amp; minutes of meetings</li><li>6.3 Details of Manufacturing, testing &amp; inspection facility.</li></ol></div></div></div> <p><u>Important note:</u> In case Bidder does not submit details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily rejected and Bidder’s technical offers/proposals will not be evaluated. Please read carefully the General Instructions in Section-A of this specifications.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                   |                             |                               |



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## Section - C

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**PURCHASE SPECIFICATION****OF****EPABX SYSTEM****FOR****BHADRADRI TPS UNIT 1 to 4 (4x270 MW), MANUGURU****REVISION: 00**

Approved: Alok Mandal

Prepared  
  
Patrali Sanyal

Issued  
  
CE-Engg-SCADA

Date  
05.10.17

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                   | <div data-bbox="394 394 1430 485"> <ul style="list-style-type: none"> <li>j. The System shall feature one-to-one or one-to-multiple hotline voice communications with facility for immediate calling from a location to another location(s) without dialing.</li> <li>k. Interactive voice response capability and directory service shall be supported.</li> </ul> </div> <div data-bbox="337 516 617 546"> <b>3.2 System Architecture</b> </div> <div data-bbox="402 548 1430 1123"> <ul style="list-style-type: none"> <li>a. The system architecture shall be based on ITU-T H.323/3.0 and IETF SIP/2.0/MVCP standards and shall be capable of migration to IPv6.</li> <li>b. The system shall be equipped with total 600 no subscriber line including 400 no analog subscriber lines and 200 no IP lines, expandable up to 1000 lines by addition of suitable hardware and software in future.</li> <li>c. The main EPABX and the local survivable media gateway shall be interconnected through a FO cable backbone network.</li> <li>d. The TDM telephone sets shall be connected to nodal media gateway equipment through copper cable network and IP phone sets shall be connected to the Ethernet port of the same media gateway or other Ethernet switch.</li> <li>e. The nodes shall be connected by 1 GBPS Fiber optic Ethernet LAN. At each of the nodes, field Ethernet switch with fiber and electrical Ethernet interface shall be deployed. The Ethernet port of the field Ethernet switches shall be connected to the OFC backbone and shall comprise the OFC backbone network. The distributed media gateways connected to the Ethernet ports of the field Ethernet switched shall connect the TDM phones. At VoIP server end L3 switch in 1+1 clustering with high availability mode shall be connected to VoIP server. At nodes the Ethernet switches shall be L2 type with fiber and copper.</li> <li>f. IP telephone sets shall be connected to Ethernet switch directly over Cat-6 cables. TDM telephones shall be connected via copper cable lines.</li> </ul> </div> <div data-bbox="337 1155 855 1184"> <b>3.3 Design Objectives and Performance criteria</b> </div> <div data-bbox="402 1184 1430 2005"> <ul style="list-style-type: none"> <li>a. The telephone system shall be configured to ensure that the system availability is equal to or greater than 99.99%, with no complete loss of telephone service under any circumstance.</li> <li>b. Quality-of-Service supported by the network shall be compliant with the ITU-T Y.1541 recommendation.</li> <li>c. System shall guarantee voice and video applications to satisfy the mean delay and jitter values stated for Class-0 QoS : <ul style="list-style-type: none"> <li>i) Latency below 150 m sec;</li> <li>ii) Jitter below 50 m sec.</li> </ul> </li> <li>d. The System shall support the following signaling protocols, as a minimum: <ul style="list-style-type: none"> <li>i) QSIG</li> <li>ii) Q.931</li> <li>iii) SIP/2.0</li> <li>iv) H.323/3.0</li> <li>v) H.320</li> <li>vi) MVCP</li> </ul> </li> <li>e. The system shall comprise of standard call processing platform of call servers/ gatekeeper servers/ media servers based on industry standard hardware and software. The system shall be based on open standards multimedia communication protocols i.e. SIP. The system shall be configured to support Unix / Linux / Solaris, which is incorporated on open standards. No proprietary operating system shall be used.</li> <li>f. Processors and switches in the main exchange shall be configured in dual hot redundant mode (N : N) to avoid any single point of failure. The standby processor shall remain synchronized with the active server and shall be able to take over the database and telephony functions seamlessly in case of failure of active server without disruption of active calls.</li> <li>g. In case of catastrophic failure of the exchange, media gateways shall work independently as islanded units to provide telephony services to the extensions (Analog &amp; IP) of their respective plant areas without manual intervention.</li> </ul> </div> |                     |

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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                   | h. Fault in the network including link failure, switch failure etc. shall be flagged with visual indication to the operator with printing of the same.<br>i. The system shall offer BHCC of minimum 3,00,000 to ensure superior traffic handling capacities.<br>j. The offered system shall be modular in design. The architecture of IP PBX shall be capable of seamless migration to its maximum capacity by simply adding gateways and peripheral cards on the set of control server without compromising on any functions / features of this system or any degradation of service.<br>k. The system shall have universal slot architecture for maintaining flexibility in assigning any peripheral cards to any slots.<br>l. At the time of failure of the main exchange, media gateways at different locations shall function amongst the IP and TDM telephone sets. Switch back from survivable media gateways to main exchange shall be automatic on recovery, without manual intervention.<br>m. Once main call server fails, entire system (users of Media Gateway) shall not be affected & there shall not any feature limitation i.e. they shall get all the features which are permissible over IP backbone.<br>n. The system shall be configured to support interfacing with audio conferencing system at Plant central exchange on SIP trunks in case of external appliance based server.<br>o. The equipment shall be capable of supporting standard telephone instruments from any manufacturers. Not only basic voice-communication shall be supported, but also evolved services like multi-party, video, instant-messaging, as a minimum, shall be operational when a selection of COTS IP telephone sets are used.<br>p. The System shall be designed with the focus on security issues. Security shall be guaranteed with a solution based on, as a minimum, IPsec Policy, SSL, TSL and firewall. All necessary means to preserve confidentiality, authentication and integrity shall be evaluated. Procedures for user's authentication, authorization, and accounting shall be deployed for this purpose.<br>q. The System shall be provided with installed capacity to accommodate a 20% expansion.<br>r. Configuration of the system shall be achieved by software for maximum flexibility. A "user friendly" setting up and checking routine shall be provided which enables an operator using a PC to implement speed commissioning and fault finding functions. The use of these methods shall allow adjustments to be easily made when the system is installed without resulting in modifications to the system wiring. The system shall be provided with standard serial interface (preferably a USB connection) to be connected with a laptop for local and remote access for maintenance and operations activities. One Notebook PC shall be provided for these functions.<br>s. All software utilized shall be the latest and upgraded version.<br>t. The server shall be designed to comply with EMI and RFI Regulations particularly the requirements of IEC 61000 series.<br>u. The system shall be specifically designed for life safety application and shall be of proven design. The equipment shall comply with latest electromagnetic compatibility directives 89/336 EEC and shall also comply with the low voltage directive. The equipment shall be manufactured by a BSI accredited ISO 9001 certified company.<br>v. Serial Communications<br>Since communication to the system microprocessor is via an RS 232 serial data port (by USB is preferred), it shall be able to be used to give remote control and/or remote display. Accommodation of additional serial interfaces is to be achieved by use of additional serial interface modules.<br>w. Software<br>The software shall be "User Friendly", for easy re-configuration, maintenance and future expansions. The software shall be able to work with the latest windows version.<br>x. Multiple Sources of Speech<br>Announcements shall be able to be made from a variety of sources such as the engineers test panel, operator access panels, telephones via PABX units, radio units or digitally recorded messages.<br>y. Interface with PA System etc. |                     |
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| <div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <div>The VOIP Server shall have the provision of an interface to the telephone system to enable users to broadcast routine speech announcements from telephones assigned the correct class-of-service. Facilities shall be included to prevent acoustic feedback that may be generated from telephones situated close to loud-speakers. The IP PBX shall have the facility to be interfaced with GPS clock for Time Synchronization (preferably IP based GPS interface i.e. SNTP etc)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |              |
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| <div><div>3.5</div><div>Media Gateway</div><div><div>a.</div><div>The Media gateway shall be interoperable with other standard soft switch. The media gateway shall be registered in the soft switch as end equipment which shall cater the VOIP application. The Gateway shall be in distributed architecture for deployment. The Gateways shall communicate with each other through Central call server.</div></div><div><div>b.</div><div>The Media gateway shall be individually survivable within the gateway whereas can be registered to a local call server.</div></div><div><div>c.</div><div><b><u>The media gateway shall be modular in design. Min 2 no additional wired free slots shall be available in each gateway for future expansion.</u></b></div></div><div><div>d.</div><div><b><u>Analog line cards with same port sizing are to be considered for all media gateways.</u></b></div></div><div><div>e.</div><div>In case of failure of central server, the N:N backup redundant server shall take over the Media Gateway seamlessly .</div></div><div><div>f.</div><div>The Media gateway shall support the bellow VOIP functionality :<div><div>a)</div><div>SIP Proxy</div></div><div><div>b)</div><div>SIP 2.0</div></div><div><div>c)</div><div>H.323 3.0</div></div><div><div>d)</div><div>G.721 a law and L law 64 Kbps</div></div><div><div>e)</div><div>G.729 8Kbps</div></div><div><div>f)</div><div>G.168 LEC 8-32 Millisecond</div></div><div><div>g)</div><div>T.38 Fax Relay</div></div><div><div>h)</div><div>Automatic Fax/Modem</div></div><div><div>i)</div><div>VAD (Voice Activity Detection)</div></div><div><div>j)</div><div>Comfort Noise Generation (CNG)</div></div><div><div>k)</div><div>Caller ID</div></div></div></div></div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                   |              |

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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                   | l) Call Forward (Unconditional , on Busy, on No answer)<br>m) Call waiting<br>n) Call Hold<br>o) Message Waiting<br>p) 3-Way Call<br>q) QOS (Quality of Service)<br>r) TCP/UDP/RFC 1144<br>s) SNMP V1, V2,V3<br>t) TOS<br>u) 802.1p priority tagging<br>v) WEP,TKIP,WPA,IEEE802.1x and AES<br>w) IDS (Intrusion detection system)<br>x) L2 and L3 Functionality<br>y) VLAN IEEE 1p/Q<br>z) RTP/RTCP<br>aa) TELNET<br>bb) IPV4 RFC 791<br>cc) ITU G.992.5<br>g. The Media gateway shall be in distributed architecture for deployment and installed on each floor preferably. The media gateways shall communicate with each other through Central call server.<br>h. In case of failure of central server, the redundant server shall take over the media gateway seamlessly.<br>i. The Media gateway shall be operated through UPS for uninterrupted service.<br>j. The Media gateway shall be placed in any geographical locations.<br>k. The Media gateway shall handle the call processing locally whereas call process monitored by central server.<br>l. The Media gateway shall be on the standard platform to communicate with other vendor make Media gateway seamlessly.<br>m. The Media gateway shall be managed centrally or from any location through IP.<br>n. The Media gateway shall be operational with any Open standard SIP call server.<br>o. The Media gateway shall have minimum 04 Nos. Ethernet port.<br>p. The Media gateway shall be security enabled as firewall /NAT.<br>q. The Media gateway shall be operational on pure IP backbone to communicate with any other IP media gateway.<br>r. The media gateway shall have at least 01 No. WAN port.<br>s. The Media gateway shall have different uplink technology, LAN configuration and environmental conditions.<br>t. In case of complete cut off from all servers the local media gate way shall act independently for handling internal calls of the area where it is located and shall be further supported by analog CO for junction calls from/to main exchange if it shall become applicable in future.<br>u. The media gateways units shall be able to provide hybrid end points i.e. both IP and TDM (analog/digital).<br>v. The media gateways shall support DMZ, Access Control List.<br>w. The media gateways shall support remote management and configuration.<br>x. The media gateways shall support Intrusion Detection System: DoS, Port Scanning and Web Spoofing protection.<br>y. The media gateways shall be RoHS compliant.<br>z. The media gateways shall have the option to take directly fiber/ copper. (Fiber connection with Fiber module. Fiber module shall be from the Same OEM).<br>aa. The media gateways shall have minimum 30 MB of RAM.<br>bb. The media gateways shall have minimum 8 MB of Flash- ROM. |                     |
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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                   | <p>cc. The media gateways shall have the minimum LED indications for Power/System with WAN and LAN link/activity detection.</p> <p>dd. The media gateways shall have the VOIP indication for – ringing / use / activity.</p> <p>ee. The media gateways shall support the security features.</p> <p>ff. In case of complete cut off from the main &amp; redundant server the local media gate way shall act independently for handling internal calls of the telephone sets which shall be connected to it at the remote location where it is located.</p> <p>gg. These units shall be able to provide hybrid end points i.e. both IP and TDM (analog/digital).</p> <p>hh. There shall not be any distance limitation on positioning the media gateway. If there is any limitation on distance, Bidder shall mention the same.</p> <p><b>3.6 User Feature Requirement Specifications</b></p> <p>All the users connected over IP backbone shall avail of the following features along with the detailed sub features as mentioned thereof with no exception.</p> <ul style="list-style-type: none"> <li>a. Call Generation</li> <li>b. Call Hold</li> <li>c. Call Completion</li> <li>d. Ring Generation</li> <li>e. 3 way Conference</li> <li>f. Universal Numbering plan.</li> <li>g. Audio Level</li> <li>h. Call Forwarding unconditional</li> <li>i. Call Forward on No answer</li> <li>j. Call Forward on Busy</li> <li>k. T.38 Fax Relay</li> <li>l. VAD (Voice Activity Detection)</li> <li>m. CNG (Comfort Noise Generation)</li> <li>n. Caller ID</li> <li>o. Call Waiting</li> <li>p. Message waiting</li> <li>q. Camp on Busy 18. Camp on Idle</li> <li>r. Call Pickup</li> <li>s. DID ( Direct Inward Dialing)</li> <li>t. Hold Retrieve</li> <li>u. Speed Dial</li> <li>v. Toll restriction</li> <li>w. Day Night Scheduling</li> <li>x. Call Consultation</li> <li>y. Group Pickup</li> <li>z. Register</li> <li>aa. Speaker ON/OFF</li> <li>bb. Specific Trunk Group Seize</li> <li>cc. User Location (Country , Time Zone )</li> </ul> |                     |
|                                                                                                                                                                                                                                 |  |                                                                                   | <p><b>4.0 EPABX KEY FEATURES</b></p> <p>The server shall provide following features as a part of its telephony functions.</p> <ul style="list-style-type: none"> <li>a. Station Call: User can dial any extension anywhere in plant by dialing simple extension number under unified dialing scheme.</li> <li>b. Call Coverage: Min 5 independent coverage paths for various incoming call.</li> <li>c. Authorization Codes: 5 digit authorization code to make outgoing calls for ensuring no misuse of the system with enabling / disabling facility to be used by system administrator.</li> <li>d. Automatic Call Back: User can register ACB feature to any extension across all locations between main location, back up location, or any other remote gateway of this IP-PBX.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |

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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  | <ul style="list-style-type: none"> <li>e. Call Pick-Up: It shall be possible for an extension user to pick-up incoming calls of 6 to talk to each other at the same time on a conference circuit. One of the extension user or by the attendant may set up the conference call. This facility would be available throughout the network if more than one EPABX are interconnected in a private network.</li> <li>f. Alternate Routing: Automatically re-route calls which encounter a busy trunks on the initial route. Automatic digital translation is carried out by the system. Provides the possibility of reaching external destinations via different routes.</li> <li>g. Voice Guided Assistance Announcement System: The system shall be able to provide contextual voice guided assistance with codes in English, Hindi and local languages to all users irrespective of type of phone for all telephone feature like busy extension / trunk, Call Forwarding, Wakeup Alarm/ Registration / Cancellation DID messages, Appointment, Reminder Alarm / Registration / Cancellation, Wrong Dialing of Extensions etc. The system shall support at least 50 such simultaneous callers with recorded voice announcements. The announcements shall be digitized and stored in electronic memory devices. The system shall be able to store minimum of 5 such voice announcements.</li> <li>h. Real time Call Detail Recording: The system shall provide detailed call information on all incoming and outgoing calls on specified trunk groups and stations, including those administered for intra switch recordings, and send this information to any serial printer or other CDR security device and PC through the LAN. Call billing application software shall also be loaded which shall provide various types of reports as and when required. Necessary hardware and software if required to be quoted separately. In case the call billing application is offline due to PC failure or any other network related issues the call server shall buffer the CDR's for all incoming and outgoing calls for a minimum duration of last 30 days.</li> <li>i. Malicious Call Tracing / Record: Records detailed call information on all incoming calls (trunks &amp; stations) on any station at any point of time. This information can be stored in any file and can be sent to any printer or other CDR security device.</li> <li>j. Class of Restriction: Defines different call origination and termination privileges. There shall be support for minimum up to 50 CORs in the system.</li> <li>k. Class of Service: Defines whether or not voice terminal users may access the following features and functions: Automatic Callback, Call Forwarding, Call Forward Busy / Don't Answer, Data Privacy, Extended Forwarding, Extended Call Forward Busy / Don't Answer, Priority Calling, Restrict Call Forwarding Off-Net, Personal Station Access, Trunk to Trunk Transfer Restriction Override, Off-Hook Alert &amp; Console Permission.</li> <li>l. Direct Inward / outward Dialing: The proposed system must support direct inward/outward dialing to/from external parties with metering facility in Main &amp; other locations.</li> <li>m. Direct Inward / Outward Station Access: This feature must be optionally available, allowing an outside caller to access switch features by dialing a special telephone no. Without attendant assistance, it shall permit remote access to the server and long-distance facilities from off premise stations. For security, there shall be the option of turning off this feature.</li> <li>n. Auto Attendant: The system shall provide 16 port (apart from the voice mail and DISA ports) multi-level tree based auto attendant to help the callers to reach the desired extensions. The callers shall be given a choice of English, Hindi and &amp; local language. Auto attendant feature shall be provided the system itself and not by any external hardware/server.</li> <li>o. Day / Night Trunk Control: To reduce cost and improve system security it shall be possible to restrict the access to certain trunks depending on time of day.</li> <li>p. Distinctive Ringing: The system shall provide audibly different ringing patterns between internal, external and special feature calls.</li> <li>q. Flexible numbering plan: Support up-to 6 Digit for an extension number &amp; Allow phone number assigned to a station to be changed through software.</li> <li>r. Music on Hold: The system must provide music and/or a recorded announcement to callers on hold.</li> <li>s. Least Cost Routing: It must be possible to use private networks and alternate public networks from different Service Providers to optimize your communications traffic in terms of both access and cost.</li> <li>t. System Traffic Reports: Traffic statistics shall be provided on incoming and outgoing trunk groups, attendant consoles, station hunt groups, and individual stations. The information reported must</li> </ul> |                               |                                                               |

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| <div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div> |  | <p>include the number of calls and call duration. The Bidder must describe the proposed system's traffic reporting capabilities.</p> <ul style="list-style-type: none"><li>u. System Abbreviated Dialing: The system shall have the ability to store a list of frequently called numbers that shall be available on a system-wide basis to all users. Bidders must state the capacity limitations of the system including maximum digits per entry.</li><li>v. Uniform Numbering Plan: The system shall permit a uniform numbering plan (Closed Numbering Plan) system, to be used to simplify access to all extensions of different exchanges of the network. The system must be able to implement a uniform numbering plan up to 6 digit extension numbers for all sites. However connectivity to BSNL &amp; other service provider trunk shall be through access code for incoming &amp; outgoing calls.</li><li>w. 6-Party Conferencing: The system must have in-built ability to have conference circuits between minimum 10 nos. of 6 parties and unlimited no. of 3 party conferencing with the conferencing parties being a mix of both internal and external. (This facility is different from multi party audio conference systems).</li><li>x. Automatic Call Distribution: System shall offer In-Built/External Help-Desk software to support Automatic Call Distribution feature for complaint logging/emergency reporting etc.</li><li>y. Multi-Tenant: System shall allow multiple tenants whereby each tenant can be assigned an attendant group for service with each group having its own queue. System shall allow multiple tenants whereby each attendant group can serve more than one tenant. System shall allow multiple tenants whereby each tenant can have a designated night service station and when an attendant group is put into night service, the facilities of each tenant shall go to their night service station. System shall allow multiple tenants whereby each tenant can be assigned a unique source for music that is most appropriate to the business of the tenant, including type of music, special advertisements, and so on to be heard when a call is on hold.</li><li>z. Message Announcement System: This facility shall be available in the system. The system shall announce recorded message / greeting to maximum number of subscriber without any need of switching off exchange. The Bidder shall provide details for it in their offer.</li><li>aa. Automatic Line Testing: The system shall be configured to support testing of line parameters.</li><li>bb. Voice Mail System: The system shall be configured Software based voice mail system. It shall be fully embedded &amp; integrated with the call server without the need of any additional hardware, PC or software. Shall be manageable from the same interface as of IP PBX. It shall be configured for 24 port &amp; 200 Mail Box &amp; expandable up to 500 Voice Mail for all users by addition of suitable hardware and software in future.</li><li>cc. Wake up Call facility / Appointment Reminder: The system shall be configured to support wakeup call/appointment reminder facility (voice prompt) for all users.</li><li>dd. Hotline Facility: Hotline facility between all subscribers shall be possible via system programming.</li><li>ee. Integrated Voice Guidance: The system shall guide users during the various steps needed to activate specific features by means of voice guides that indicate the services available at each stage of a call.</li><li>ff. Fixed-Mobile Interface: The system shall be configured to provide fixed-mobile interface natively on any GSM or CDMA mobile to at least 50 people. The users shall be able to receive and make calls from the mobile phone.</li><li>gg. Programming and Interface: The system functions may be programmed from a variety of external and/or internal sources such as via the connection to a Notebook PC.<br/>Long range remote access which may be used for setting up, fault finding, system parameter changes etc., using the PTT network via V 32 bis dial up modem is an advantage.</li><li>hh. PABX Interface: This unit is required in order to gain direct access to the PA system via telephones for high priority announcements by such people as supervisors, etc. However, this interface shall need to be reviewed during the incorporation of this facility in future.</li><li>ii. Diagnostics: The system shall have many built in diagnostic features to ensure the integrity of the system on a regular basis. Checks shall include monitoring of audio paths from source to speaker loop, correct functioning of software and status of the duplicate system.</li></ul> |                               |                     |
|                                                                                                                                                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               |                     |

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| <div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div> |  | <div>5.0 SYSTEM POWER SUPPLY</div> <div>The EPABX system and maintenance &amp; diagnostic station shall be powered from a central UPS system at 240V AC, 50 Hz. A power supply unit shall provide the required low voltage levels to feed the equipment and their stand-by unit.</div> <div>The distribution board, 3 core- 2.5 sq mm power supply cables and protection device such as MCB etc shall be provided.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                   |               |
|                                                                                                                                                                                                                                          |  | <div>6.0 MEAN TIME TO REPAIR (MTTR)</div> <div>The design and construction of the EPABX system shall ensure high reliability and availability.</div> <div>The EPABX system shall employ modular constructional techniques in its design.</div> <div>Allowing a first line maintenance philosophy of module replacement shall be implemented. The average module replacement time for the system is less than 1 hour.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |               |
|                                                                                                                                                                                                                                          |  | <div>7.0 TECHNICAL DATA OF EPABX AND OTHER ASSOCIATED EQUIPMENT</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |               |
|                                                                                                                                                                                                                                          |  | <div>7.1 EPABX</div> <div><div>a) EPABX architecture : Distributed type</div><div>b) Code &amp; standard : ITU-T H.323/3.0 and IETF SIP/2.0/MVCP standards and capable of migration to IPv6</div><div>c) Zone Station : Safe Area</div><div>d) Number of Nodes : Six</div><div>e) Node connectivity : 1 GBPS Fiber Optic based LAN</div><div>f) Communication : Intra-site and inter-site voice and video</div><div>g) Interface :<div><div>• Mobile Services through PSTN (external connectivity)</div><div>• Radio System</div><div>• Videoconferencing Terminals</div><div>• Public Address &amp; General Alarm System / Partly-line.</div><div>• The system interface to the telephone system shall be via a 2-wire/4-wire E &amp; M tie-line or SIP channel</div></div></div><div>h) Operating Voltage : 240 Volts 50 Hz AC (UPS)</div><div>i) Supporting Signaling protocols :<div><div>• QSIG</div><div>• Q.931</div><div>• SIP</div><div>• H.323</div><div>• H.320</div></div></div><div>j) Inter-operability: Capable of full support of telephone instruments from different manufacturers.</div><div>k) Security: IPsec Policy, SSL, TSL and firewall.</div><div>l) Expansion / Support capability : In terms of users, bandwidth and equipment</div><div>m) Serial interface : Preferably a USB connection</div><div>n) Quality-of-service : ITU-T Y.1541 recommendation</div><div>o) Time Synchronization : Required, with Master GPS clock(NTP,SNTP)</div><div>p) Make : Ericsson-Aastra / Alcatel / Unify-Siemens / Tadiran / Avaya / Karel / Matrix /any other make approved by DOT/TEC</div></div> |                                   |               |
|                                                                                                                                                                                                                                          |  | <div>7.2 IP Telephone</div> <div><div>a) 8 line appearance/feature key buttons – with dual LED’s (Red, Green)</div><div>b) Backlit display – 3.5” diagonal, 3 rows by 20 characters</div><div>c) Full – duplex speaker phone &amp; Message waiting indication</div><div>d) Four-way navigation cluster button</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |               |

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|                                                                                                                                                                                                                                 |  | A4-11                                                                             | <ul style="list-style-type: none"> <li>e) Volume button- (separate volume levels in the handset , headset, speaker and ringer)</li> <li>f) Fixed Button like contacts button, Call Log button, Redial Button, Speaker button, Mute Button, Headset Button, Hold Button, Conference Button, Transfer Button etc.</li> <li>g) Ethernet (10/100) line interface with a secondary 10/100 port for collocated laptop or PC</li> <li>h) PoE 802.3 of class 2 device, also supports a local power supply</li> <li>i) Contacts application – supports up to 100 entries</li> <li>j) Call Log – contains last 100 calls</li> <li>k) H323 protocol support</li> <li>l) Standards - based codec support : G.711, G.726, G.729 A/B</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |
|                                                                                                                                                                                                                                 |  |                                                                                   | <p><b>7.3 TDM Telephone with CLI (Desktop &amp; Wall-mounted)</b></p> <ul style="list-style-type: none"> <li>a) Last number redial</li> <li>b) Manual pause</li> <li>c) Dual-tone ringer, volume adjustable in 2 steps ( high, low )</li> <li>d) Mute</li> <li>e) Pulse or tone dialing, temporary Switch-over possible with CLI display.</li> <li>f) Memory storage</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                   | <p><b>7.4 Telephone Protection / Acoustic Hood</b></p> <ul style="list-style-type: none"> <li>a) Housing - Rot/vandal resistant Fiberglass re-enforced polyester / Hot-galvanized sheet steel or stainless steel</li> <li>b) Self colour - yellow, visible during emergency / Paint - Powder Coated</li> <li>c) Luminous yellow green glow in dark condition, lasting up to minimum 10 hours or more</li> <li>d) Sound absorbent- 9 dB(A) or more when it shall be used as Acoustic Hood</li> <li>e) Resistant to chemical spillage/ vapours and are fire-retardant</li> <li>f) Flashing light/beacons, cabin lights, and hooter/sounders shall be attached to the hood</li> <li>g) Temperature Range : +60 Deg C to -10 Deg C</li> <li>h) Humidity : Up to 100%</li> <li>i) Insulation : Polyurethane foam/Rockwool RAF-SE</li> <li>j) Height : min 1000 mm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |
|                                                                                                                                                                                                                                 |  |                                                                                   | <p><b>7.5 Maintenance &amp; Diagnostic station</b></p> <p>PC and printer with following specifications shall be provided for Operator console, NMS software, Call billing maintenance, &amp; Diagnostics of EPABX.</p> <p><b>Printer:</b> One No dot matrix printer, 24 pin 136 columns, with USB port interface (Epson).</p> <p><b>PC:</b> Two nos of computer with minimum Intel i7 processor, 2.4 GHz minimum with latest Intel Chipset (IBM-Lenovo / HP)</p> <ul style="list-style-type: none"> <li>a) Shall operate in non-AC environment of 0-50 Deg C</li> <li>b) 230 V /240 V AC single Phase</li> <li>c) L2 cache, minimum 512K at full processor speed</li> <li>d) RAM 6GB minimum</li> <li>e) Min. 1 TB Hard disk drive, USB drive, 52x RW DVD Drive</li> <li>f) 21" Color TFT monitor with power saving features</li> <li>g) 10/100 BASE-T Ethernet network card.</li> <li>h) Minimum Two USB ports</li> <li>i) PS2 minimum 104 Keys keyboard</li> <li>j) Three button mouse (optical)</li> <li>k) 56 KBPS internal modem</li> <li>l) Pre-loaded Windows 7 or latest OS release with media, latest antivirus software and other required software/driver</li> <li>m) Computer Table &amp; Printer Table [Make: Godrej (Reflex Series), Featherlite (Freedom/Fusion Series), Pyrotech ]</li> </ul> |               |

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|                                                                                                                                                                                                                                          |  | n) Operator chair [Make: Godrej, Featherlite, Pyrotech ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |               |
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|                                                                                                                                                                                                                                          |  | UPS shall provide a regulated and uninterrupted single phase A.C. power during normal and emergency operation. UPS with following specification shall be provided at EPABX room for PCs, printer, EPABX system(server, switches, gateways etc.).                                                                                                                                                                                                                                                                             |                                   |               |
|                                                                                                                                                                                                                                          |  | a) Rating : Minimum 5000 VA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |               |
|                                                                                                                                                                                                                                          |  | b) Make : Emerson / Hitachi - Hirel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |               |
|                                                                                                                                                                                                                                          |  | c) Type : Online Redundant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |               |
|                                                                                                                                                                                                                                          |  | d) Backup Time : 1 Hour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |               |
|                                                                                                                                                                                                                                          |  | e) Battery bank : Lead Acid Plante type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |               |
|                                                                                                                                                                                                                                          |  | UPS battery sizing for required power load is to be furnished by vendor.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |               |
|                                                                                                                                                                                                                                          |  | 7.7 Power Cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                   |               |
|                                                                                                                                                                                                                                          |  | 3 core, 2.5 sqmm Power supply cable of any reputed make is to be supplied. Interconnecting power cables shall be heavy duty 1100 volts grade multicore stranded copper conductor, PVC insulated, FRLS, extruded PVC inner sheathed, galvanized round steel wire/ strip armored and extruded PVC overall sheathed conforming to IS:1554 as revised and amended up to date.                                                                                                                                                    |                                   |               |
|                                                                                                                                                                                                                                          |  | 7.8 CAT 6 Cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                   |               |
|                                                                                                                                                                                                                                          |  | a) No of Pairs : 4 Pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |               |
|                                                                                                                                                                                                                                          |  | b) Conductor : Solid tinned copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |               |
|                                                                                                                                                                                                                                          |  | c) Construction Parameters : Values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |               |
|                                                                                                                                                                                                                                          |  | d) Nominal DC Resistance : 67 ohms/1km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |               |
|                                                                                                                                                                                                                                          |  | e) Nominal Impedance : 100 ohms+/-15 Ohms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                   |               |
|                                                                                                                                                                                                                                          |  | f) Nominal Capacitance : 46 pf/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   |               |
|                                                                                                                                                                                                                                          |  | g) Nominal Velocity of Propagation : 68%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |               |
|                                                                                                                                                                                                                                          |  | h) Nominal Attention : 100 MHz:- 19.9 dB/100m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |               |
|                                                                                                                                                                                                                                          |  | 155 MHz:- 25.3 dB/100m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |               |
|                                                                                                                                                                                                                                          |  | 200 MHz:- 29.2 dB/100m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |               |
|                                                                                                                                                                                                                                          |  | i) Insulation Materials : Poly Vinyl Chloride                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |               |
|                                                                                                                                                                                                                                          |  | j) Cable Outer Diameter : 0.38 mm+/-0.15 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |               |
|                                                                                                                                                                                                                                          |  | k) Nominal Outer Diameter : 6.35 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |               |
|                                                                                                                                                                                                                                          |  | l) Bend Radius : 0.90" For 6.35 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |               |
|                                                                                                                                                                                                                                          |  | m) Make : Legrand (LCS2)/Ortronics/ Luscent/ Amp/Avaya/Belden/Digilink/D-link/any other Reputed make)                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |               |
|                                                                                                                                                                                                                                          |  | Cat6 cable shall be Unshielded Twisted Pair (UTP- CAT6 Cable) category 6 LAN (local area network) four pair cable per box (305 mtrs). Blue Colour 23 AWG, which is UL listed, 3P certified and tested, conforming to the following standards in Cat 6 UTP cable like 250 MHz speed, IEC 11 801 edition 2.0, Nominal Velocity Propagation (NVP) 72%, as per EIA/TIA standards and cable laying shall be through the existing MS/PVC conduit or floor raceways including connections etc. as required complete in all respect. |                                   |               |
|                                                                                                                                                                                                                                          |  | 7.9 PoE Based L3 Core Switch : Network Switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |               |
|                                                                                                                                                                                                                                          |  | a) The vendor shall select the port architecture of switches considering no of fiber optic and CAT-6 terminations from camera ends as well as from PCs and other equipment in line with the system configuration diagram to be submitted along with the offer.                                                                                                                                                                                                                                                               |                                   |               |
|                                                                                                                                                                                                                                          |  | b) The Central control switch shall be manageable type with minimum Layer-3 functionality. The switch shall have required nos. of fiber optic (FO)/SFP and RJ-45 port including 20% spare for                                                                                                                                                                                                                                                                                                                                |                                   |               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                         |                                   |               |
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| <div>each type of port. No media converter shall be used for connecting OFC cable to switches. All the switches shall be fed from UPS. The switches shall be <b>PoE</b> based.</div> <div><div>c)</div><div>All the switches shall operate with wire speed switching on the same Network Management Software and shall have required intelligence and synchronization to control, monitor and maintain the IP network of the EPABX system. It shall be possible to administer all the switches from a pre define PC in the network.</div></div> <div><div>d)</div><div>The switches shall support both ring and star architecture.</div></div> <div><div>e)</div><div>The minimum technical requirement of Central Control switch is given below :</div></div> <div><div><div><div>1.</div><div>Switch type</div></div><div>Layer-3 Switch. 19" Rack Mountable. Min. 24 Nos. 10/100/1000 BaseT (Auto Sensing) ports And Min.12 Nos. free mini SFP/GBIC slot to accommodate 1000 BaseSx / 1000BaseLx Ports upgradeable. Modular support for adding two 10G ports if required in future. All ports shall be switched ports.</div></div><div><div><div>2.</div><div>High Availability</div></div><div>Shall have the Active – Active Clustering technology capability of VSS / equivalent high availability technology to connect the switches with Min bandwidth for connecting 2 or more switches in a single cluster shall be of min 30Gbps or more with no single point of failure , all the required modules / other related cards shall be proposed from day 1 and The VSS or Equivalent technology shall work in Active - Active mode for IP Multicasting traffic as well as Layer-3 Traffic as well In case of VSS or equivalent module failure, the switch shall have the necessary technology to ensure nonet work loop is formed to avoid both chassis forwarding the network traffic</div></div><div><div><div>3.</div><div>Fiber Optic Interface</div></div><div>1 Gbps for Switch to Switch and 100 Mbps for camera direct single mode fiber termination.</div></div><div><div><div>4.</div><div>Routing</div></div><div>Support Up to 256K IPv4 routes, 16K MAC, 4K layer 3 interfaces , Up to 1K layer 3 IPv4 multicast groups and IPv6 routing option. Also Support IP routing and RIPv1 and RIPv2, OSPF, HSRP/VRRP, ICMP, TCP, ARP, RIP-2 MD5 Authentication, RIPng for IPv6, RIPng Protocol Applicability Statement etc.</div></div><div><div><div>5.</div><div>Switch fabric</div></div><div>160 Gbps</div></div><div><div><div>6.</div><div>Forwarding rate</div></div><div>100 Mbps</div></div><div><div><div>7.</div><div>Failover protection through ring redundancy</div></div><div>Supported</div></div><div><div><div>8.</div><div>Port-based, MAC-based and protocol-based VLANs</div></div><div>Supported</div></div><div><div><div>9.</div><div>Dynamic VLAN assignment, NAC, BPDU protection, Guest VLAN support, Web-based authentication</div></div><div>Supported</div></div></div> |  |                                                                                                                                                         |                                   |               |

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|                                                                                                                                                                                                                                 |  | <br>A4-11 | <b>PURCHASE SPECIFICATION</b>                                                                                                                                                                                                                                                                          | PS4702127                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            |                                                                                                                                                                                                                                                                                                        | REV. No. 00                                                                 |
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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                            | 10. Policy based QoS features, 8 QoS queues per port, IEEE 802.1p Priority Tagging and Highly configurable traffic classification Mixed scheduling, to support complex traffic queuing requirements                                                                                                    | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 11. Bootstrap Router for PIMSM, IGMP Proxy, IGMP Snooping, MLD Snooping (v1 and v2), RFC 1112 Host extensions for IP multicasting, RFC 3376 IGMPv3, Internet Group Management Protocol v2 (IGMPv2), Interoperability Rules for Multicast Routing Protocols etc                                         | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 12. SNMPV3, Web based, Telnet, RMON (4 groups) and command Line Interface, Support RFC 2741 Agent Extensibility (AgentX) Protocol and Shall have Gigabit management Port and Back-up SD/NVRAM Port allowing switch firmware, configurations to be stored for backup and distribution to other switches | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 13. Private VLAN to provide security and isolation between switch ports, helping ensure that users cannot snoop on other users' traffic                                                                                                                                                                | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 14. The switch shall support Port Mirroring based on port basis / VLAN basis to support intrusion prevention system deployment in different VLANs                                                                                                                                                      | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 15. TACACS+ and RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration                                                                                                                                                      | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 16. MAC address notification to allow administrators to be notified of users added to or removed from the network                                                                                                                                                                                      | Supported                                                                   |
|                                                                                                                                                                                                                                 |  |                                                                                            | 17. Certification                                                                                                                                                                                                                                                                                      | UL, cUL, TUV                                                                |
|                                                                                                                                                                                                                                 |  |                                                                                            | 18. Power supply                                                                                                                                                                                                                                                                                       | 240 VAC 50 Hz UPS supply from the Central Control Point whit RPS from Day 1 |
|                                                                                                                                                                                                                                 |  |                                                                                            | 19. Approved make                                                                                                                                                                                                                                                                                      | <b>Hirschmann</b>                                                           |

|  |  |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                      |
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|  |  | <div><div><div>बी एच ई एल</div><div></div></div><div>A4-11</div></div> | <div>PURCHASE SPECIFICATION</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <div>PS4702127</div> <div>REV. No. 00</div> <div>PAGE 15 OF 33</div> |
|  |  | 7.10                                                                                                                                                    | <div>PoE Based L2 Field Managed Switch (Type-1)</div> <div>a) The minimum technical requirement of Field switch is given below :</div> <div><div><div>1. Functionality</div><div>:</div><div>Minimum Layer-2 manageable type and minimum 8 port 10/100 Mbps port with 2 Nos. SFP FO Port. The switches shall be <b>PoE</b> based.</div></div><div><div>2. Fiber Optic interfaces</div><div>:</div><div>1 Gbps for Switch to Switch direct single mode fiber termination. The fiber ports shall be compatible to the L3/L2 switch</div></div><div><div>3. Performance</div><div>:</div><div>Switching capacity 5Gbps, Mac Address 8K or better, Flash and RAM as per switch. Shall Support Redundant Power option. MTBF Greater than 272,000 hours or better and Power Consumption nominal 8W or better.</div></div><div><div>4. Minimum Protocol Support</div><div>:</div><div>VLAN IEEE 802.1Q, GVRP, Port-based VLAN Redundancy using X-Ring, Dual Homing and Couple Ring, STP, RSTP, IP Access security, port security, DHCP Server, IP Binding per Port, IEEE 802.1x, IGMP Snooping / Query for multicast, Port trunking, Static IEEE 802.1p QoS /CoS /ToS / DSCP priority queuing, 802.3x flow control ,Port Mirroring, LLDP , Real-time trace and Support IEEE 802.3af and switch work on X-Ring Function Etc.</div></div><div><div>5. Physical</div><div>:</div><div>Enclosure IP30, Metal with aluminum shell and this Switch Shall be placed in IP65 encloser.</div></div><div><div>6. Management</div><div>:</div><div>TFTP firmware update, system configure, restore and backup , SNMP v3, Web, Telnet, CLI, Statistic, MAC Address Table, SNTP, Syslog, E-mail Alert, SNMP Trap, RMON Etc.</div></div><div><div>7. Environment</div><div>:</div><div>Operating Temperature -10 ~ 60oC, Storage Temperature -40 ~ 80°C and Humidity 5 ~ 95% (non-condensing) and Single Mode FO module operating Temperature -5 to 70°C</div></div><div><div>8. Safety Standard</div><div>:</div><div>UL, FCC, CE , Environment Compliance RoHS compliant and WEEE</div></div><div><div>9. Support Shock</div><div>:</div><div>IEC60068-2-27, Freefall IEC60068-2-32, Vibration IEC60068-2-6 EN61000-4-2 (ESD), EN61000-4-3 (Radiated RFI),EN6100-4-4 (Burst), EN61000-4-5 (Surge), EN61000-4-6 (Induced RFI) ,EN61000-4-8 (Magnetic Field)</div></div><div><div>10. Power Supply</div><div>:</div><div>UPS driven</div></div><div><div>11. Make</div><div>:</div><div><b>Hirschmann</b></div></div></div> <div>b) All switches shall be provided with surge protective device to withstand a minimum of 10 KA surge for each external signal cable, required connectors, trans-receivers, connecting cables etc. as required.</div> |                                                                      |

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|      |  | <div><div><div>बी एच ई एल</div><div></div></div><div>A4-11</div></div> | <b>PURCHASE SPECIFICATION</b> |   | <b>PS4702127</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|      |  |                                                                                                                                                         |                               |   | <b>PAGE 16 OF 33</b>                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      |  | c) All the switches shall be loaded with the same network management software which shall be administered from a pre-defined PC in the network.         |                               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      |  | d) All switches shall be PoE based and shall support both ring and star architecture.                                                                   |                               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 7.11 |  | <b>PoE Based L2 Field Managed Switch (Type-2)</b>                                                                                                       |                               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      |  | a) The minimum technical requirement of Field switch is given below :                                                                                   |                               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      |  | 1.                                                                                                                                                      | Functionality                 | : | Minimum Layer-2 Stackable manage type and minimum 24 port 10/100 Mbps port with 2 Nos. SFP FO Port and 2 Dedicated stacking ports as well come with Stacking cable. The switches shall be <b>PoE</b> based.                                                                                                                                                                                                                                 |
|      |  | 2.                                                                                                                                                      | Fiber Optic interfaces        | : | 1 Gbps for Switch to Switch direct single mode fiber termination. The fiber ports shall be compatible to the L2 switch.                                                                                                                                                                                                                                                                                                                     |
|      |  | 3.                                                                                                                                                      | Performance                   | : | Switching capacity 18Gbps, Mac Address 16K or better, Flash and RAM as per switch. Shall have internal Redundant Power option. MTBF Greater than equal to 430,000 hours or better and Power Consumption nominal. 19.5W or better and 10Gbps stacking bandwidth as well Single IP management support.                                                                                                                                        |
|      |  | 5.                                                                                                                                                      | QoS Support                   | : | 8 Hardware queues per port, endless rate limiting, DSCP for IP-based QoS, IEEE 802.1p Class of Service with strict and weighted round robin scheduling.                                                                                                                                                                                                                                                                                     |
|      |  | 4.                                                                                                                                                      | Minimum Protocol Support      | : | IEEE 802.3ad LACP - 8 groups, LLDP &LLDP-MED, RSTP, MSTP, DHCP snooping, DHCP option 82, DNS, ICMP. BootP, BPDU guard, Loop guard and Root guard, Broadcast storm control and Port mirroring, EAP, EAP-TLS, LEAP, PEAP, TTLS, NAC, RADIUS Client and RADIUS accounting, IGMPv1 and V2 snooping and IGMPv2 snooping querier, ICMPv6, Static IPv4 routing, RIP V1/V2, Dual-stack IPv4/IPv6 management, Port-based , MAC-Based, Private VLANs. |
|      |  | 6.                                                                                                                                                      | Management                    | : | Industry Standard CLI, Web GUI, SNMP V3, encrypted WEB and CLI management with SSH v2 and SSL, RMON 4 Group, Syslog and Event Log, supports Flow or equivalent.                                                                                                                                                                                                                                                                             |
|      |  | 7.                                                                                                                                                      | Environment                   | : | Operating Temperature 0°C to 40°C, Storage temperature: -25°C to 70°C, Operating Humidity 5 ~ 90% (noncondensing) and Single Mode FO module operating Temperature -5 to 70°C                                                                                                                                                                                                                                                                |
|      |  | 8.                                                                                                                                                      | Safety Standard               | : | UL, FCC, EN , Environment Compliance RoHS compliant and WEEE compliant and WEEE                                                                                                                                                                                                                                                                                                                                                             |
|      |  | 9.                                                                                                                                                      | Support Shock                 | : | IEC60068-2-27, Freefall IEC60068-2-32, Vibration IEC60068-2-6 EN61000-4-2 (ESD), EN61000-4-3 (Radiated RFI),EN6100-4-4                                                                                                                                                                                                                                                                                                                      |

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| <div>COPY RIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.</div> |  | <div>(Burst), EN61000-4-5 (Surge), EN61000-4-6 (Induced RFI) , EN61000-4-8 (Magnetic Field)</div> <div><div><div>10. Power Supply</div><div>:</div><div>UPS driven</div></div><div><div>11. Make</div><div>:</div><div>Hirschmann</div></div></div> <div><div><div>b)</div><div>All switches shall be provided with surge protective device to withstand a minimum of 10 KA surge for each external signal cable, required connectors, trans-receivers, connecting cables etc as required.</div></div><div><div>c)</div><div>All the switches shall be loaded with the same network management software which shall be administered from a pre-defined PC in the network.</div></div><div><div>d)</div><div>All the switches shall be PoE based and shall support both ring and star architecture.</div></div></div> <div><div>7.12 Network Management Software (NMS)</div><div><div>a)</div><div>Automatic topology discovery and creation of network maps for Layer 2 &amp; Layer 3 network</div></div><div><div>b)</div><div>It shall have high level network inventory polling capability for IP network nodes, all available L2 switch, camera, modules, ports, physical links, VLAN interfaces and all the other SNMP capable devices in the network</div></div><div><div>c)</div><div>Powerful administration control</div></div><div><div>d)</div><div>Detailed performance monitoring and management</div></div><div><div>e)</div><div>Extensive fault management capabilities with real time event and alarm notifications, system logs</div></div><div><div>f)</div><div>Scheduled device configuration back-up and restore functionality</div></div><div><div>g)</div><div>Automatic detection of configuration changes for easy troubleshooting</div></div><div><div>h)</div><div>It shall support 3rd party devices and end points</div></div><div><div>i)</div><div>It shall have the functionality of group provisioning/scheduled configuration roll out management</div></div><div><div>j)</div><div>It shall have the ability to perform scheduled or unscheduled network wide software or firmware upgrades</div></div><div><div>k)</div><div>It shall have ability to customize the NMS dash boards as per the requirements.</div></div><div><div>l)</div><div>It shall have the ability to perform/create group of devices for applying same task.</div></div><div><div>m)</div><div>It shall have extensive centralized trouble shooting tools in built.</div></div><div><div>n)</div><div>It shall provide the flexibility to the network administrator to assign task to an individual network engineer and assign ownership/track the status of the issue resolution</div></div><div><div>o)</div><div>The NMS solution shall be preferably from the same active switching vendor, in case vendors proposing for 3rd party NMS solution shall provide all the reports certified by both the NMS vendor and active switching vendor on seamless interoperability.</div></div></div> <div><div>7.13 Main Distribution Frame (MDF), Sub Distribution Frame (SDF) / Junction Boxes (JB) fitted with Krone modules</div><div><div>a)</div><div>The MDFs, SDF/junction boxes shall be sheet steel or die-cast alluminium enclosed, corrosion resistant, dust and weather proof complete in all respects with inspection covers, terminal strips etc. The covers shall be gasketed.</div></div><div><div>b)</div><div>The MDFs shall be installed indoor. The MDFs shall be complete with requisite number of test jack assemblies. All incoming &amp; outgoing telephone cables to/from MDF in the telephone Exchange room for the subject EPABX type exchange shall be terminated on the MDF in Telephone Exchange Room for which suitable connecting facilities shall be provided on the MDF in Telephone Exchange Room.</div></div><div><div>c)</div><div>The Junction boxes shall be of galvanized steel or die-cast aluminium alloy construction. It shall be complete with double compression type cable glands suitable for terminating or looping armoured signal/power cables and earthing stud. It shall be suitable for wall/ column/ structure mounting. The quantity of indoor and outdoor JB's shall be as per requirement.</div></div></div> |                        |  |               |  |

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| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  |                                                                                            | <b>7.14 Conduits</b> <ol style="list-style-type: none"> <li>Conduits shall of PVC, minimum size of conduits shall be limited to 20 mm.</li> <li>These shall be supplied in standard length with min. wall thickness.</li> <li>Rigid steel conduits shall be used to draw jelly filled cables that are laid in road-cutting trench, where heavy load movement is envisaged.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
|                                                                                                                                                                                                                                 |  |                                                                                            | <b>7.15 Accessories</b> <ol style="list-style-type: none"> <li> <b>Information Outlet (I/O) of CAT-6 UTP</b><br/> Information outlet shall be RJ45 Toolless Information Outlet of CAT-6 UTP with white colour RJ-45 transparent shuttered socket outlets (modular) with all accessories including label holder, both side colour marking as per EIA/TIA standards. conformity of standards like ISO/IEC ed. 2, EN 50173 and EIA/TIA 568 for fast connection socket and it takes fast tool-less connectors with contact marking by double colour code 568A and B and numbers connectors with insulation displacement contact (IDC). It has the possibility of min. 5 times re-wiring in the event of error, multidirectional cable entry. (Make : Legrand (LCS2)/Ortronics/ Luscent/any other reputed make). </li> <li> <b>Face Plate (Plastic Modular Face Plate white in Colour 1 Module)</b><br/> Face Plate shall be white modular plate type front plate with accessories for 1/2 nos RJ 45 data outlet, but excluding RJ45 data outlet complete in all respect with grid plate, screws, MS box etc with connections as required. (Make : Legrand (LCS2)/Ortronics/ Luscent//any other reputed make).) </li> <li> <b>Rack End Patch Cord-1 mtr. Blue in Colour</b><br/> The Patch Cord shall be of CAT6 UTP PATCH CORD - 1 MTR (3 feet) Blue Colour factory moulded as per EIA/TIA standards.<br/> (Make : Legrand(LCS2)/Ortronics/ Luscent/any other reputed make). </li> <li> <b>End User Site Patch Cord-2 mtr Blue in Colour</b><br/> End User Site Patch Cord shall be of CAT6 UTP LSC2 PATCH CORD – 2 MTR (7 feet) Blue Colour factory moulded as per EIA/TIA standards. (Make : Legrand (LCS2)/Ortronics/ Luscent/any other reputed make). </li> <li> <b>19" rack mountable 24 Port CAT6 UTP Patch Panel Loaded</b><br/> This item shall be 24 port PATCH PANEL RJ-45 Loaded CAT-6 UTP 19" rack mountable patch panel preferably with front loaded 6 in a blocks as per EIA/TIA standards, modular in mechanism. (Make : Legrand (LCS2)/Ortronics/ Luscent/any other reputed make). </li> <li> <b>Wall Mounting Rack/cabinet</b><br/> Cabinet shall be of Width (mm)-600 (max), Depth (mm) – 500 (max), height as required. CRCA 'D' Grade thickness (mm) - 1.2, Powder Colour for Cabinet - RAL9002, Glass - 4mm Toughened Tinted Glass Door, Accessories:, Cooling Fan (230V A/C 90 CFM, PDU 230VAC with MCB, Cable Manager Metal, Mounting Hardware, Wall Screws - 1 set, Door Lock, Front Metal Band. In the rack there must be maintained 1U = 1.75 inches space. (All Stand alone rack and server shall have 6A, 220V socket link with UPS line) (Make : Legrand (LCS2) / Ortronics / Rittal /any other reputed make). </li> <li> <b>Stand alone Rack /Cabinet</b><br/> Cabinet shall be of Width (mm) 800 (max), Depth (mm) 800 (max), and height max 42U. CRCA 'D' Grade thickness (mm) 1.2, Powder Colour for Cabinet RAL 9002, Glass: 4mm Toughened Tinted Glass Door, Accessories: Cooling Fan (230V A/C 90 CFM), Cable Manager Metal, PDU 230VAC with MCB, Cable Channel 100mm wide, Heavy Duty Stationary Shelf - 1 No., Mounting Hardware, Earthing Strips, Door Lock, Castor Wheels (with Brake), Castor Wheels (without </li> </ol> |               |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                            |                        |  |               |
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| <p>Brake, Front Metal Band. In the rack there must be maintained 1U = 1.75 inches space. (All Stand alone rack and server shall have 6A, 220V socket link with UPS line) (Make : Legrand (LCS2) / Ortronics / Rittal/any other reputed make )</p> <p>h) <b>19" LCS2 Modular LIU-Fiber Optic Drawer-24 Port</b><br/>The item shall be Modular fiber optic drawer modular 19"(LIU) 24 port - FIBER OPTIC DRAWER loaded with SC <b>Pigtail</b> - 9/125 μm for 6 Cr. OFC armoured LCS2 and adapter for 6 OFC SM LCS2 without Blanking plate (Make : Legrand (LCS2) / Ortronics/ Luscent/any other reputed make).</p> <p>i) <b>Screened Twisted Pair (STP) Cables</b><br/>All the STP cables shall be of Cat.6 variety conforming to ANSI/TIA/EIA 568-B.2-1, 4 pair UL/NEC rated and shall have maximum attenuation of 54.8 dB/100m at 600 MHz. Each pair shall be separately shielded with polyester Aluminium foil.</p> <p>j) <b>HDPE pipe</b><br/>The HDPE pipe shall be used for laying STP cables in outdoor environment. HDPE pipe shall be permanently lubricated type with ISI marked. The internal diameter of the HDPE pipe shall be suitably selected so that 50% free space is maintained during cable drawing. The pipe shall conform to DOT standard GR/CDS-08/02 Nov. 2004 with latest amendments.</p> <p>k) <b>Nameplate</b><br/>Nameplates shall be furnished for identification of devices and circuits. All junction boxes, switches, controls and indications shall be permanently and legibly marked in English as to their functions.</p> <p>l) <b>Consumables and Hardware</b><br/>a) The contractor shall furnish all consumables, hardware and erection material as required for the complete installation.<br/>b) These material shall include but not limited to<br/>Consumables: welding rods &amp; gas, oil &amp; grease, cleaning fluids, paints, cotton waste, electrical tape, soldering material etc.<br/>Hardware: bolts, nuts, washers, screws, brackets, supports, hangers, saddles, cleats, clamps etc.<br/>Materials: conduits and accessories, junction boxes, terminal blocks, connections, lugs, ferrules, brass glands, ground wires etc.</p> |  |                                                                            |                        |  |               |
| <p><b>8.0 SCOPE OF SUPPLY</b><br/>Scope of supply shall be as per <b>BOM Table 5</b>.</p> <p><b>9.0 SPARES</b><br/>a) Power supply module - 10% of supplied quantity or one whichever is more<br/>b) Controller module - 10% of supplied quantity or one whichever is more<br/>c) Line cards - 10% of supplied quantity or one whichever is more<br/>d) IP phone - 10% of supplied quantity<br/>e) Analog desktop phone - 10% of supplied quantity or one whichever is more<br/>f) Fuses – 120% of supplied quantity</p> <p><b>10.0 GROUNDING / EARTHING</b><br/>All metal enclosures, conduits, junction/pull boxes shall be grounded in compliance with I.E. rules. Separate ground earthing shall be provided for the EPABX system.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                            |                        |  |               |

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|                                                                                                                                                                                                                                 |  | <br>A4-11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>PURCHASE SPECIFICATION</b> | <b>PS4702127</b><br><b>REV. No. 00</b><br><b>PAGE 20 OF 33</b> |
| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. |  | <p><b>11.0 METHODS, MATERIAL AND WORKMANSHIP</b><br/> All work shall be done in a first class, neat and workmanlike manner by mechanics / electricians skilled in the trade involved.</p> <p><b>12.0 ERECTION TOOLS AND TACKLES</b><br/> The supplier shall arrange all tools, tackle, implements, scaffoldings, ladders etc, which are required for handling and erection of the equipment and materials.</p> <p><b>13.0 CLEANING UP OF WORK SITE</b></p> <ul style="list-style-type: none"> <li>i) The Contractor shall, from time to time, remove all rubbish resulting from execution of his work. No materials shall be stored or placed on passage driveways.</li> <li>ii) Upon completion of work, the Contractor shall remove all rubbish, to scaffoldings, temporary structures and surplus materials etc. to leave premises clean and fit for use.</li> </ul> <p><b>14.0 INSTALLATION AND COMMISSIONING</b><br/> Erection and commissioning of the Telecommunication equipment (VOIP EPABX Servers, media gateways, Network panels, UPS, MDF, JB's, IP and TDM Telephone instruments etc.) is in the scope of supplier. Supplier has to quote for erection and commissioning of the EPABX system (EPABX Servers, media gateways, Network panels, UPS, Operator Console, grounding/ Earthing, MDF, JB's, RB's etc.). Vendor has to supply of all required associated accessories as per Table 3.</p> <p>The vendor shall perform survey of site for cable routing and estimation after the site is ready. After cable routing and estimation, vendor shall prepare layout and erection drawings showing location of all system equipment &amp; components, cable routing, detailed cable scheduling in cable trays/ racks/ trenches/ buried underground, conduits routing along with distribution schemes of the system. Vendor shall submit the above mentioned drawings to BHEL for approval. Vendor has to cable terminations of all the telephones to SDF junction boxes. Vendor shall provide identification tags for all junction boxes, MDF, SDF. The vendor shall design the IP networking in an intelligent and efficient way. IP networking architecture drawings are to be submitted to BHEL for approval. Vendor has to configure network Ethernet switches with all necessary networking features required to establish trouble free voice and data connectivity.</p> <p><u>Laying of telecom cables and FO cable is NOT in vendor's scope. Vendor has to supervise and coordinate all the cable laying activities with BHEL site office.</u></p> <p>After completion of telephone cable laying activities, vendor has to do SDF/JB fixing and terminations.</p> |                               |                                                                |
|                                                                                                                                                                                                                                 |  | <p>Vendor has to perform Final Integrated testing for SAT (Site Acceptance Test). After SAT (Site Acceptance Test) at site, the vendor shall furnish to BHEL "AS BUILT" layout and erection drawings along with distribution schemes properly incorporating changes / alterations/field modifications, if any, as carried out at field.</p> <p><b>15.0 DOCUMENTATION &amp; TOOLS</b><br/> In the event of order, the supplier shall provide each 6 sets of following documents to BHEL Immediately after award of order for main equipment.</p> <ul style="list-style-type: none"> <li>a) Bill of material</li> <li>b) Layout drawing indicating dimensions of all equipment, power supply requirements</li> <li>c) OGA drawings and Technical Data Sheets with Catalogues of all items</li> <li>d) System architecture drawing</li> <li>e) Technical detail of network panel, wiring diagram of panel</li> <li>f) Manufacturing Quality Plan document shall be prepared by vendor in consultation with BHEL and shall be submitted to M/s. TSGENCO for final approval.</li> </ul> <p>After manufacturing clearance from BHEL</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |                                                                |

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| <p>a) Test Certificates and reports for all the items as per agreed manufacturing quality plan (MQP) document.</p> <p>After site survey and before installation and commissioning</p> <p>a) Telephone cable schedule and routing drawings covering all the plant buildings interconnections.</p> <p>After SAT at site, the vendor shall furnish to BHEL “AS BUILT” layout and erection drawings along with distribution schemes, cable schedule properly incorporating changes/ alterations/ field modifications, if any, as carried out at field.</p> <p>The supplier shall provide each one sets of following documents to BHEL and 4 sets shall be sent along with the system to site after technical datasheets customer approval / dispatch clearance of the main equipment.</p> <p>a) O&amp;M manuals</p> <p>b) Technical Catalogues of the equipment.</p> <p>c) Programming manual</p> <p>d) Installation and commissioning instruction</p> <p>e) General maintenance documents</p> <p><b>16.0 SPECIAL NOTES</b></p> <p>a) <u>POINT WISE CONFORMATION FOR THE ENTIRE SPECIFICATION SHALL BE FURNISHED AT THE TECHNICAL OFFER STAGE AFTER FILLING IN THE TABLE 1, 2, 3 , 4 AND 5. DEVIATION IF ANY SHALL BE LISTED OUT CLEARLY.</u></p> <p>b) Any other hardware &amp; software required but not mentioned in the specifications but important to make complete system functional, shall be in the scope of supplier.</p> <p>c) Supplier shall submit catalogues of all offered products, EPABX configuration drawing with BoM along with technical bid.</p> <p>d) Supplier shall submit dimensions of the equipment being supplied.</p> <p>e) Boarding and lodging charges at site shall be borne by the supplier.</p> <p>f) Supplier shall mention in his offer the nearest authorized service center for reporting any malfunctioning of EPABX system.</p> <p><b>17.0 TRAINING</b></p> <p>Supplier shall offer training for the staff of M/s. TSGENCO for operation and maintenance of the telecommunication system.</p> <p><b>18.0 WARRANTY</b></p> <p>Supplier shall offer standard warranty for 3 years .</p> <p><b>19.0 AFTER SALES SERVICE AND SPARES</b></p> <p>Supplier shall confirm availability of spares and after sales service support for the offered system for minimum 5 years.</p> <p><b>20.0 BILL OF MATERIAL</b></p> <p>Supplier shall submit bill of material as per table 5 and PVC casing, CAT 6 cable, JB etc BoM as per Table 3.</p> |  |                                                                                   |                               |                      |

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**Table 1: Technical Compliance**

| S. No. | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Supplier's Confirmation | Deviations |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|
| 1.     | Clause 1.0 : General                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |            |
| 2.     | Clause 2.0 : Design Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |            |
| 3.     | Clause 3.0 : Technical Specifications<br>3.1 General Requirements<br>3.2 System Architecture<br>3.3 Design Objectives and Performance criteria<br>3.4 EPABX Communication server<br>3.5 Media Gateway(self-survivable)<br>3.6 User Feature Requirement Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |            |
| 4.     | Clause 4.0 : EPABX Key Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |            |
| 5.     | Clause 5.0 : System Power Supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |            |
| 6.     | Clause 6.0 : Mean Time To Repair (MTTR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |            |
| 7.     | Clause 7.0 (Technical Data of EPABX and Other Associated Equipment)<br>7.1 EPABX<br>7.2 IP Telephone<br>7.3 TDM Telephone<br>7.4 Telephone Protection / Acoustic Hood<br>7.5 Maintenance & Diagnostic Station<br>7.6 Online Redundant UPS<br>7.7 Power Cable<br>7.8 CAT 6 Cable<br>7.9 PoE Based L3 Core Switch – Network Switch<br>7.10 PoE Based L2 Field Switch (Type-1)<br>7.11 PoE Based L2 Field Switch (Type-2)<br>7.12 Network Management Software (NMS)<br>7.13 Main Distribution Frame (MDF), Sub Distribution Frame (SDF) / Junction Boxes (JB) fitted with Krone modules<br>7.14 Conduits<br>7.15 Accessories<br>a) Information Outlet (I/O) of CAT-6 UTP<br>b) Face Plate (Plastic Modular Face Plate white in Colour 1 Module)<br>c) Rack End Patch Cord-1 mtr Blue in Colour<br>d) End User Site Patch Cord-2 mtr Blue in Colour<br>e) 19" rack mountable 24 Port CAT6 UTP Patch Panel Loaded<br>f) Wall Mounting Rack/cabinet<br>g) Stand alone Rack/cabinet<br>h) 19" LCS2 Modular Liu-Fiber Optic Drawer-24 Port<br>i) Screened Twisted Pair (STP) Cables |                         |            |

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|-----|-------------------------------------------------------------|--|--|
|     | j) HDPE pipe<br>k) Nameplate<br>l) Consumables and Hardware |  |  |
| 8.  | Clause 8.0 Scope of Supply                                  |  |  |
| 9.  | Clause 9.0 Spares                                           |  |  |
| 10. | Clause 10.0 Grounding/Earthing                              |  |  |
| 11. | Clause 11.0 Method, Material and workmanship                |  |  |
| 12. | Clause 12.0 Erection Tools and Tackles                      |  |  |
| 13. | Clause 13.0 Cleaning up of work site                        |  |  |
| 14. | Clause 14.0 Installation and Commissioning                  |  |  |
| 15. | Clause 15.0 Documentation & Tools                           |  |  |
| 16. | Clause 16.0 Special Notes                                   |  |  |
| 17. | Clause 17.0 Training                                        |  |  |
| 18. | Clause 18.0 Warranty                                        |  |  |
| 19. | Clause 19.0 After Sales Services & Spares                   |  |  |
| 20. | Clause 20.0 Bill of Material                                |  |  |

**Table 2: Compliance (Installation, commissioning, prices etc)**

| S. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Vendor's Confirmation | Deviation, if any |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|
| 1.     | All the junction boxes and EPABX accessories shall be of reputed make.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |                   |
| 2.     | <p>The vendor shall perform survey of site for cable estimation after the site is ready.</p> <p>After cable estimation, vendor shall prepare layout and erection drawings showing location of all system equipment &amp; components, cable routing in cable trays/ racks/ trenches/ buried underground, conduits routing along with distribution schemes of the system. Vendor shall submit the above mentioned drawings to BHEL for approval.</p> <p>After SAT at site, the vendor shall furnish to BHEL "AS BUILT" layout and erection drawings along with distribution schemes, cable schedule properly incorporating changes/ alterations/ field modifications, if any, as carried out at field.</p> |                       |                   |
| 3.     | In case of any additional requirement of telephone instruments, cables, accessories and labour charges at the time of commissioning of telephones, unit price offered in this enquiry shall be valid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |                   |
| 4.     | Prices offered as per this BoM shall be valid for one year from the date of placement of PO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                   |
| 5.     | All laying & fixing charges, Labour charges shall be considered as per actual Work completed at site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |                   |

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**Table 3: BoM for JBs, Conduit, Power cables, Cat6 cables, misc. loose items**

| S. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | UoM   | Tentative Qty | Prices / UoM (To be filled in price bid only) |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------|-----------------------------------------------|
|        | <b>A. PVC casing, conduits etc</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |               |                                               |
| 1.     | ½" box type PVC casing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Meter | 8000          |                                               |
| 2.     | ¾" box type PVC casing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Do    | 8000          |                                               |
| 3.     | 1" PVC conduit with bents & coupler                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Do    | 1000          |                                               |
| 4.     | 2" PVC conduit with bents & coupler                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Do    | 500           |                                               |
| 5.     | Flexible tubes 1½"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Do    | 300           |                                               |
| 6.     | Other items not listed above but necessary for fixing PVC casing (Pl list down here such items)                                                                                                                                                                                                                                                                                                                                                                                                         | Set   | 1             |                                               |
|        | <b>B. Junction Boxes (with double compression type cable glands &amp; earthing stud) with SDF</b>                                                                                                                                                                                                                                                                                                                                                                                                       |       |               |                                               |
| 7.     | 10 pair Krone SDF JB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No.   | 150           |                                               |
| 8.     | 20 pair Krone SDF JB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No.   | 40            |                                               |
| 9.     | 50 pair Krone SDF JB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No.   | 4             |                                               |
|        | <b>C. CAT 6 UTP Cable &amp; Accessories</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |               |                                               |
| 10.    | CAT 6 UTP cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mtr   | 13000         |                                               |
| 11.    | RJ-45 connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.   | 800           |                                               |
| 12.    | Crimping tool for 8 pin RJ-45 UTP connector with integrated cable cutter                                                                                                                                                                                                                                                                                                                                                                                                                                | No.   | 5             |                                               |
| 13.    | Portable LAN cable tester                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | No.   | 3             |                                               |
|        | <b>D. Power Cable</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |               |                                               |
| 14.    | 3 core, 2.5 sq mm Power cable Armoured                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mtr   | 3000          |                                               |
|        | <b>E. Misc Loose Items</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |               |                                               |
| 15.    | Miscellaneous items<br>i. Earthing materials<br>ii. Loose items as per actual requirements for E&C and cable laying like Ferrules, terminations, route markers, consumables hardware, nameplates, sleeves, conduits, JB glands, clamps, Cable identification tags, ground wires, all tools for cable terminations, etc<br>iii. AC & DC Distribution box ( 1ph, 3 ph) with MCBs (in EPABX room)<br>iv. All EPABX components and accessories mentioned in specification as per actual requirement at site | Lot   | 1             |                                               |

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**PURCHASE SPECIFICATION**

PS4702127

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**Table 4: Laying and Fixing charges for JBs**

|    | Description                                                    | UOM | Tentative Qty | Prices / UoM<br>(To be filled in price bid only) |
|----|----------------------------------------------------------------|-----|---------------|--------------------------------------------------|
|    | <b>Junction Boxes Fitting and Termination charges</b>          |     |               |                                                  |
| 1. | 10,20,50 pair JB with Krone SDF and fixing Termination charges | No. | 194           |                                                  |

**Table 5: Format for BoM (Complete System) :**

**Vendors shall necessarily fill Bill of Material in this format only. Vendor shall provide make/model, details of all items and attach catalogues of all items.**

| SI.NO | ITEM DESCRIPTION                                                                                                                                                                                                                         | Make / Model / Rating Details<br>(to be filled for technical bid) | Catalogue attached<br>(Yes / No / NA) | QTY          | Unit Price (To be filled in price bid only)                                                  | Total Price<br>(To be filled in price bid only)            |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------|--------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------|
| 1.    | EPABX System as per details of purchase specification.<br>Note:<br>Mention no of ports & total quantity considered against each card in Details column.<br>Add any other module if required to make system complete but not listed here. |                                                                   |                                       | 1 Set        | <b><u>Please mention individual unit price of each item under sl no 1 in this column</u></b> |                                                            |
| 1.1   | Gateway Panel (with Ethernet switch & media gateway) at EPABX room in Service Building shall be consisting of following :                                                                                                                |                                                                   |                                       | <b>1 Set</b> | Individual prices for all item under 1.1 is to be mentioned in this column                   | Total price for all item under 1.1 is to be mentioned here |
|       | i) Primary server -1 no                                                                                                                                                                                                                  |                                                                   |                                       |              |                                                                                              |                                                            |
|       | ii) Secondary server -1 no                                                                                                                                                                                                               |                                                                   |                                       |              |                                                                                              |                                                            |
|       | iii) Server SIP IP Voice Extensions license – 200 nos                                                                                                                                                                                    |                                                                   |                                       |              |                                                                                              |                                                            |
|       | iv) Server analog extension ports license – 400 nos                                                                                                                                                                                      |                                                                   |                                       |              |                                                                                              |                                                            |
|       | v) PA system interface card (SIP                                                                                                                                                                                                         |                                                                   |                                       |              |                                                                                              |                                                            |

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|                                                                                                                                                                                                                                 |  | <br>A4-11 | PURCHASE SPECIFICATION                                                                                                                                                      |  |  |       | PS4702127                                                                  |
|                                                                                                                                                                                                                                 |  |                                                                                            |                                                                                                                                                                             |  |  |       | REV. No. 00                                                                |
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|                                                                                                                                                                                                                                 |  |                                                                                            | vi) POE based L3 core switch (managed network switch) - 2 nos                                                                                                               |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | vii) POE based L2 field managed switch (24 cu port & 2 FO port) - 1 no                                                                                                      |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | viii) 24 Port, 200 User Voice Mail (server based)                                                                                                                           |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | ix) Self survivable distributed media gateway to cater min 36 Analog ports                                                                                                  |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | x) Analog line Cards for gateway for min 36 ports.                                                                                                                          |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xi) Analog trunk card for gateway - 8 ports and Server license.                                                                                                             |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xii) GSM gateway ( 8 port)                                                                                                                                                  |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xiii) Suitable Power conversion units for gateway ,switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]           |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xiv) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF, network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired. |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xv) 30 Port Meet Me Conference Audio Conference Bridge including required Hardware & Software                                                                               |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | xvi) Network Management Software (NMS) (Original software CD to be provided)                                                                                                |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  | 1.2                                                                                        | Gateway Panel (with Ethernet switch & media gateway) at Gate complex shall be consisting of following :                                                                     |  |  | 1 Set | Individual prices for all item under 1.2 is to be mentioned in this column |
|                                                                                                                                                                                                                                 |  |                                                                                            | i) POE based L2 field switch (8 cu port & 2 FO port) - 1 no                                                                                                                 |  |  |       | Total price for all items under 1.2 is to be mentioned here                |
|                                                                                                                                                                                                                                 |  |                                                                                            | ii) Self survivable distributed media gateway to cater min 12 Analog ports                                                                                                  |  |  |       |                                                                            |
|                                                                                                                                                                                                                                 |  |                                                                                            | iii) Analog line Cards for gateway                                                                                                                                          |  |  |       |                                                                            |

|                                                                                                                                                                                                                                              |  |                                                                                                                              |                                                                                                                                                                              |  |  |        |                                                                           |                                                             |
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|                                                                                                                                                                                                                                              |  | <div><div>बी एच ई एल</div><div></div></div> | PURCHASE SPECIFICATION                                                                                                                                                       |  |  |        | PS4702127                                                                 |                                                             |
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|                                                                                                                                                                                                                                              |  |                                                                                                                              | iv) 1 no E1/PRI connectivity for BSNL/Telecom service provider connectivity and Server license.                                                                              |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | v) Interface card for 8 Tie lines and Server license                                                                                                                         |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | vi) Integrated OEM make 16 port auto attendant with required extensions                                                                                                      |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | vii) Suitable Power conversion units for gateway , switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]            |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | viii) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF, network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired. |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  | 1.3                                                                                                                          | Gateway Panel (with Ethernet switch & media gateway) at Admin bldg shall be consisting of                                                                                    |  |  | 1 Set  | Individual price for all item under 1.3 is to be mentioned in this column | Total price for all item under 1.3 is to be mentioned here  |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | i) POE based L2 field switch (24 cu port & 2 FO port) - 1 no                                                                                                                 |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | ii) Self survivable distributed media gateway to cater min 64 Analog ports                                                                                                   |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | iii) Analog line Cards for gateway for min 64 ports.                                                                                                                         |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | iv) Suitable Power conversion units for gateway, switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]              |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  |                                                                                                                              | v) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired.     |  |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                              |  | 1.4                                                                                                                          | Gateway Panel (with Ethernet switch & media gateway) at Control Equipment Room, Unit 1 to Unit 4 shall be consisting of                                                      |  |  | 4 Sets | Individual price for all item under 1.4 is to be mentioned in this column | Total price for all items under 1.4 is to be mentioned here |



|                                                                                                                                                                                                                                          |     |                                                                                                                                                                                                                        |                        |  |        |                                                                           |                                                             |
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|                                                                                                                                                                                                                                          |     | ii) Self survivable distributed media gateway to cater min 48 Analog ports                                                                                                                                             |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | iii) Analog line Cards for gateway for min 48 ports.                                                                                                                                                                   |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | iv) Suitable Power conversion units for gateway , switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]                                                       |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | v) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired.                                               |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          | 1.7 | Gateway Panel (with Ethernet switch & media gateway) at Switchyard Control Room, PTP plant control room, MCC-2 & CHP control room, MCC-1 control room (CHP), Raw Water Pump House, Storage area shall be consisting of |                        |  | 6 Sets | Individual price for all item under 1.7 is to be mentioned in this column | Total price for all items under 1.7 is to be mentioned here |
|                                                                                                                                                                                                                                          |     | i) POE based L2 field managed switch (8 cu port & 2 FO port) - 1 no                                                                                                                                                    |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | ii) Self survivable distributed media gateway to cater min 16 Analog ports                                                                                                                                             |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | iii) Analog line Cards for gateway for min 16 ports.                                                                                                                                                                   |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | iv) Suitable Power conversion units for gateway , switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]                                                       |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          |     | v) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired.                                               |                        |  |        |                                                                           |                                                             |
|                                                                                                                                                                                                                                          | 1.8 | Gateway Panel (with Ethernet switch & media gateway) shall be consisting of                                                                                                                                            |                        |  | 1 Set  | Individual price for all item under 1.8 is to be mentioned in             | Total price for all items under 1.8 is to be mentioned      |

|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            |                                                                                                                                                                          |                        |         |                                                                           |                                                             |               |  |
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|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            | i) POE based L2 field managed switch (8 cu port & 2 FO port) - 1 no                                                                                                      |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            | ii) Self survivable distributed media gateway to cater min 10 Analog ports                                                                                               |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            | iii) Analog line Cards for gateway for min 10 ports.                                                                                                                     |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            | iv) Suitable Power conversion units for gateway ,switch etc. power distribution boxes, MCBs [230V AC input power supply shall be considered for Network panels]          |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      |                                                                                                                                                                            | v) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired. |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          | 1.9  | Network Panels (with Ethernet switch) shall be consisting of                                                                                                               |                                                                                                                                                                          |                        | 22 sets | Individual price for all item under 1.9 is to be mentioned in this column | Total price for all items under 1.9 is to be mentioned here |               |  |
|                                                                                                                                                                                                                                          |      | i) POE based L2 field managed Ethernet switch (8 Cu port & 2 FO port) - 1 no                                                                                               |                                                                                                                                                                          |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      | ii) Suitable Power conversion units for switch, power distribution boxes, MCBs [230V AC input supply shall be considered for Network panels]                               |                                                                                                                                                                          |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          |      | iii) Panel with all type of connectors, TBs, UTP to Krone patch panel rack, SDF network cables, FO patch cables, LIU to achieve network connectivity. Assembled and wired. |                                                                                                                                                                          |                        |         |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          | 1.10 | Any other hardware or software licenses not included in the list but necessary to make system complete and functional as per specification. Please mention all the items   |                                                                                                                                                                          |                        | 1 set   |                                                                           |                                                             |               |  |
|                                                                                                                                                                                                                                          | 2.   | Analog Desktop Telephone Instruments with CLI with RJ-11 telephone cord (min 5 mtr length)                                                                                 |                                                                                                                                                                          |                        | 251 Nos |                                                                           |                                                             |               |  |

|                                                                                                                                                                                                                                          |     |                                                                                                                                                                               |                        |  |         |  |               |  |
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|                                                                                                                                                                                                                                          | 4.  | SIP IP Voice Phones                                                                                                                                                           |                        |  | 200 Nos |  |               |  |
|                                                                                                                                                                                                                                          | 5.  | Outdoor weather proof telephone with canopy with RJ-11 telephone cord (min 5 mtr length)                                                                                      |                        |  | 69 Nos  |  |               |  |
|                                                                                                                                                                                                                                          | 6.  | Acoustic Hood                                                                                                                                                                 |                        |  | 75 Nos  |  |               |  |
|                                                                                                                                                                                                                                          | 7.  | Flush mounted RJ-45 Rosette box                                                                                                                                               |                        |  | 225 Nos |  |               |  |
|                                                                                                                                                                                                                                          | 8.  | Flush mounted RJ-11 Rosette box                                                                                                                                               |                        |  | 425 Nos |  |               |  |
|                                                                                                                                                                                                                                          | 9.  | Desktop Workstation PC (Hardware & License) for<br>1) PC Based Operator Console<br>2) Maintenance & Diagnostic Station                                                        |                        |  | 2 Sets  |  |               |  |
|                                                                                                                                                                                                                                          | 10. | Workstation accessories:<br>i) Dot Matrix Printer-1no<br>ii) Computer table -2nos<br>iii) Printer table- 1no<br>iv) Chair for Operator-2nos                                   |                        |  | 1 set   |  |               |  |
|                                                                                                                                                                                                                                          | 11. | Online redundant UPS (min 5 KVA) with battery for 1 hour back for PCs, printer, server, gateway, switches at EPABX room                                                       |                        |  | 1 set   |  |               |  |
|                                                                                                                                                                                                                                          | 12. | Notebook PC for Local & Remote maintenance with latest hardware & software configuration                                                                                      |                        |  | 1 No    |  |               |  |
|                                                                                                                                                                                                                                          | 13. | Krone Tool                                                                                                                                                                    |                        |  | 2 Nos   |  |               |  |
|                                                                                                                                                                                                                                          | 14. | Dial Tester                                                                                                                                                                   |                        |  | 2 Nos   |  |               |  |
|                                                                                                                                                                                                                                          | 15. | Lineman Hand held telephone set                                                                                                                                               |                        |  | 2 Nos   |  |               |  |
|                                                                                                                                                                                                                                          | 16. | JBs with double compression type cable glands and earthing studs, PVC pipes, Conduits, CAT 6 UTP cable & accessories, power cable and misc. loose items as per <b>Table 3</b> |                        |  | 1 Set   |  |               |  |
|                                                                                                                                                                                                                                          | 17. | Original Software CD's with license certificate shall be                                                                                                                      |                        |  | 1 Set   |  |               |  |

|                                                                                                                                                                                                                                 |     |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
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|                                                                                                                                                                                                                                 | 18. | Spares                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                          |  | 1 Set | Individual price for all item under 18 is to be mentioned in this column | Total price for all items under 18 is to be mentioned here |
|                                                                                                                                                                                                                                 |     | i) Power supply module - 10% of supplied quantity or one whichever is more                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 |     | ii) Controller module - 10% of supplied quantity or one whichever is more                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 |     | iii) Line cards - 10% of supplied quantity or one whichever is more                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 |     | iv) IP phone - 10% of supplied quantity or one whichever is more                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 |     | v) Analog desktop phone - 10% of supplied quantity or one whichever is more                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 |     | vi) Fuses – 120% of supplied quantity                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                          |  |       |                                                                          |                                                            |
|                                                                                                                                                                                                                                 | 19. | Erection and Commissioning Charges of EPABX Servers, Ethernet switches, Media gateway, UPS with battery bank, Operator console, maintenance PC, MDF, Earthing with terminations etc. and software programming of all the telephone sets of EPABX system in EPABX Room at site. |                                                                                                                                                                                                                                                                          |  | 1 Set |                                                                          |                                                            |
|                                                                                                                                                                                                                                 | 20. | Charges for site survey for Cable estimation and submission of cable routing drawings by vendor at site.                                                                                                                                                                       |                                                                                                                                                                                                                                                                          |  | 1 Set |                                                                          |                                                            |
|                                                                                                                                                                                                                                 | 21. | JB fixing and termination charges as per <b>Table 4.</b>                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                          |  | 1 Set |                                                                          |                                                            |

|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                      |                        |  |        |  |               |  |
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|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <br>A4-11                                                           | PURCHASE SPECIFICATION |  |        |  | PS4702127     |  |
|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                      |                        |  |        |  | REV. No. 00   |  |
|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                      |                        |  |        |  | PAGE 33 OF 33 |  |
| <b>COPY RIGHT AND CONFIDENTIAL</b><br>The information on this document is the property of Bharat Heavy Electricals Limited.<br>It must not be used directly or indirectly in anyway detrimental to the interest of the company. | 22.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Charges for (SAT) final system integration, testing and hand over of EPABX system at site and submission of "AS BUILT" layout and erection drawings. |                        |  | 1 Set  |  |               |  |
|                                                                                                                                                                                                                                 | 23.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DOT Liaison and other charges for BSNL trunk lines as mentioned in the specification                                                                 |                        |  | 1 Set  |  |               |  |
|                                                                                                                                                                                                                                 | 24.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Documents                                                                                                                                            |                        |  | 1 Set  |  |               |  |
|                                                                                                                                                                                                                                 | 25.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Training                                                                                                                                             |                        |  | 1 Set  |  |               |  |
|                                                                                                                                                                                                                                 | 26.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Warranty                                                                                                                                             |                        |  | 3 year |  |               |  |
|                                                                                                                                                                                                                                 | <p><b>Note:</b></p> <ol style="list-style-type: none"> <li><u>For Technical bid, Table 1 &amp; 2 shall be duly filled. Deviations if any, shall be mentioned with proper justification.</u><br/><br/> <u>Technical datasheet/catalog of Server, media gateway, different types of EPABX modules/cards, IP phone, desktop &amp; wall mounted analog phone, outdoor weatherproof telephone , acoustic hood, workstation PC, printer, UPS, furniture, Notebook PC, cable etc are to submitted along with technical offer.</u> </li> <li><u>For Price bid, Table 3, 4 &amp; 5 shall be duly filled. Unit prices of all individual items are STRICTLY to be mentioned, failing which offer is liable to be rejected.</u></li> <li><u>The system shall be complete in all respect and shall not be limited to the above. All necessary hardware and software shall be supplied as a package to meet the specification and trouble free operation. Please note that all the items required for commissioning for EPABX system up to Telephone instruments is in the scope of vendor. Therefore list down all such material in BoMs without fail.</u></li> </ol> |                                                                                                                                                      |                        |  |        |  |               |  |