GUJARAT ENERGY TRANSMISSION CORPORATION LTD.

SARADAR PATEL VIDYUT BHAVAN,
RACE COURSE, BARODA – 390 007.

TECHNICAL SPECIFICATIONS

FOR

DIGITAL PLCC VERSION EPAX

GETCO/E/TS- PLCC EPAX - 05501/R0, Dt: 01.10.11

TECHNICAL SPECIFICATIONS
FOR
DIGITAL PLCC VERSION EPAX

(A) SPECIAL INSTRUCTIONS TO BIDDER

Please read following instructions carefully before submitting your bid.

1. All the drawings, i.e. elevation, side view, plan, cross sectional view etc. in AutoCAD format and manuals in PDF format, for offered item shall be submitted. Also the hard copies as per specification shall be submitted.
2. The bidder shall submit Quality Assurance Plan for manufacturing process and Field Quality Plan with the technical bid.
3. The bidder shall have to submit all the required type test reports for the offered item. ***In case of non-submission of the type test reports with the offer, the bid shall be liable to be rejected.***
4. The bidder must fill up all the point of GTP for offered item/s. Instead of indicating "refer drawing, or as per IS/IEC", the exact value/s must be filled in.
5. All the points other than GTP, which are asked to confirm in technical specifications must be submitted separately with the bid.
6. The bidder is required to impart training in view of manufacture, assembly, erection, operation and maintenance for offered item, at his works, to the person/s identified by GETCO, in the event of an order, free of cost. The cost of logistics will be bear by GETCO.
7. Please note that the evaluation will be carried out on the strength of content of bid only. No further correspondence will be made.
8. The bidder shall bring out all the technical deviation/s only at the specified annexure.
9. The bidder should indicate manufacturing capacity by submitting latest updated certificate of a Chartered Engineer (CE).

(B) QUALIFYING REQUIREMENT DATA

(For Supply)
Bidder to satisfy all the following requirements.

1) The bidder shall be Original Equipment Manufacturer (OEM). The offered equipment have to be designed, manufactured and tested as per relevant IS/IEC with latest amendments.

2) The bidder should indicate manufacturing capacity by submitting latest updated certificate of a Chartered Engineer (CE).

3) Equipment proposed shall be of similar or higher rating and in service for a minimum period of THREE (3) years and satisfactory performance certificate in respect of this is to be available and submitted.

4) The bidder should clearly indicate the quantity and Single Value Contract executed during last FIVE (5) years, for the offered equipment. Bidder should have executed one single contract during last five years for the quantity equivalent to tender / bid.

The details are to be submitted in following format,

Sr. No	ITEMS SUPPLIED TO	ORDER REFERENCE No. & DATE	ITEMS	QUANTITY	ORDER FULLY EXECUTED YES/NO	STATUS, IF ORDER UNDER EXECUTION	REMARK

5) Equipment offered shall have Type Test Certificates from accredited laboratory (accredited based on ISO/IEC Guide 25 / 17025 or EN 45001 by the National accredition body of the country where laboratory is located), as per IEC / IS / technical specifications not older than FIVE (5) years and shall have validity till expiry of validity of technical bid.

(C) SYSTEM REQUIREMENT:

The EPAX designed especially for use on PLCC network is required for switching of outgoing, incoming and transit calls effectively and reliably. GETCO is coming up with wideband communication facility. The EPAX is, therefore, required to support E1 Optical/Electrical connectivity over Optic Fibre, UHF radio links, VOIP & GSM in addition to PLCC communications on dialing & express trunks. The exchange shall support CO lines also.

The EPAX device has to operate in remote stations in hot, humid climate without air conditioning. Therefore, the device shall be manufactured from latest components designed to withstand high temperature. The EPAX shall have low D.C. Power consumption so that it works satisfactorily during prolonged power failure conditions without draining back up battery. The equipment has to work on -48V D.C. Battery.

The decadic dialing pulses suffer distortion while passing through a number of the line sections. This aspect must be taken into account while designing the EPAX. The bidder will explain this in detail. Similarly care shall be taken for over voltage protections, lighting stroke, etc.

The EPAX shall have to support as PLCC express switch & point to point connectivity for inter connecting important locations of 400KV & 220KV sub-station with SLDC & ALDCs by express telephone through E&M trunk over PLCC network shall be obtained by means of programming of any E&M trunk not limited to particular card/slot through system software, means it shall be possible to program E&M trunk of E&M card either for express trunk or dialing trunk. Each single location of mesh network topology shall require to be connected with other nodes over express trunks for point to point connectivity & connectivity through transit location. To establish this, interface of PLCC EPAX shall have 6 wire E&M trunks (2 W for Tx, 2 W for Rx & 1 W each for call send & receive either on test tone (1000Hz) and/or pilot shift (3750 or 3631 Hz)) to be wired with carrier terminal of our PLCC network. Express connectivity over particular E&M trunk shall be initiated by activating Call signal (either 1000Hz or 3750 or 3631 Hz) of PLCC carrier terminal by just touching once the button of digital phone programmed for that E&M trunk & call outgoing activation status shall be indicated by LED for selected trunk on button of digital phone.

Similarly on receipt of call over express trunk the system shall receive the call & sound the ringer on digital phone with display of station name which shall be software programmable and shall give indication of inbuilt LED at location of selection button of particular trunk, so that operator can identify the trunk and access it by just selecting button at one touch with off hook the receiver or enabling the speaker of digital phone. The PLCC EPAX shall also work for express trunk call send/receive operation even if at opposite distance sub-station end the same EPAX may not be connected but only 4 wire express telephone instrument connected directly with the PLCC carrier terminal. The EPAX shall provide suitable interface for connecting digital phone just over 2 wires to be used for Speech, Data and power. The PLCC EPAX functionality as express switch shall offer,

C.1 The intuitive and easy making & receiving calls from the key phone with the name of the called & calling location shall be displayed on LCD display. Each selection key with dual color LED to show elaborate status of the line and Conversation through built-in speaker or handset.

C.2 Extended coverage to digital key phone to locations next to the site to attend emergencies during odd hours.

C.3 Flexibility to adjust ringer & speech volume as per user preference. Ring tune & cadence shall be programmed to differentiate between different phones ringing simultaneously. Also it shall provide flexibility for placing a call in a desired sequence by means of flexible hunting the groups with simultaneous and round-robin rings.

C.4 Level of integration for express trunks within the same EPAX such that it shall be the superset of all the switching function and capable to work as a PLCC EPAX with transit functions. It shall have to support role of normal office PBX.

C.5 Modular, Centralized and Software driven architecture with redundant critical hardware blocks so to meet needs of critical applications.

C.6 Universal accessibility by means of making it possible to configure the EPAX to provide express lines access to normal subscribers using analog phones. For making an outgoing call, the user will have to dial just the trunk port number and call would be placed on the other end of the express line. The incoming calls from the express lines shall be routed or transferred to these phones.

C.7 Value added features like Call transfer, Call toggle between two calls and multi-party conference etc. These features shall be programmable on the Digital key phones to make it easy to use.

(D) The System design should have,

1. High speed processor to provide real time response to all the incoming and outgoing calls fluently.
2. 19”rack mounted design leads to occupy lesser space.
3. Dedicated DTMF circuit for each user port which provides 100 % Non-Blocking operation even while dialing.
4. Multiprocessor architecture, wherein each interface card with own dedicated microprocessor (slave processor) for local processing of events and commands and the master processor manages all the slaves. Such design to enhance greater flexibility and reliability.
5. Built-in PCM/TDM digital technology and switching matrix to provide unrestricted communication to all users simultaneously.
6. Platform which allows replacing old or faulty interface cards without switching off the system.
7. To support in addition to E&M (6 wire- 2W Tx, 2W Rx , E wire & M wire) ports , CO lines, ISDN BRI, ISDN PRI, T1/E1, GSM/3G and VoIP network operation simultaneously using respective interface cards, which enable the system to be used as a common switch for PLCC, POTS,ISDN,GSM/3G and the VoIP telephony network.
8. Primary Protection by means of providing IPM (Inter Protection Module) that consists of resettable fuses and GD Tubes to be mounted on MDF.
9. To offer redundancy for its all critical functional cards like switching card, 48V DC Power supply card and main processor (master) Card. In the event of failure of the power card and Switch card, the stand-by card should have to take over without interruption of their functionalities. Whereas, if the active Master card fails, the system should restart and take over automatically.
10. DSP based Subscriber Loop Integrated Circuit (SLIC) which allows having programmable line parameters features.
11. Standard 19” powder coated aluminum Sub Rack enclosure and thus can be mounted in a rack with other data and networking telecom equipment.
12. All the expansion slots universal in nature, so that, it would be possible to insert any of the cards in any slot and it will be automatically configured by the System when inserted. Thus, design

will eliminate configuration bottleneck and offer true flexible configuration.

13. Flexible and user friendly web browser based GUI which would help to program the offered PLCC Digital EPAX from any where on IP network. To configure the EPAX remotely using internet, EPAX should also require having built-in server.

(E) CONSTRUCTION :

It will be of plug in modular construction with motherboard arrangement. Sufficient clearance shall be maintained between tracks, pins etc to avoid short circuits and capacitive effects. The track thickness shall be sufficient to avoid opening of tracks due to flow of heavy current and to ensure proper functioning of circuit. The circuit shall be designed in such a way that the EPAX works without any such problems. The construction shall be robust to take transit vibrations.

The EPAX shall be based on PCM/TDM Technology. It will support DTMF facility without compromising with suitability of matching existing switching network of the Grid. It shall have the hot standby facility for CPU & PSU. It shall have universal slot architecture. It shall be wired for full capacity for offered model. It shall have E1 connectivity port for digital trunk for 30 channels multiplexer.

The equipment shall be supplied in 19" rack duly mounted inside a spacious cabinet with sufficient natural cooling facility and with D.C. operated Exhaust Fan. Cabinet doors should open from front as well as backside. Sufficient arrangement shall be made to dissipate the heat of Power Supply Unit in such a way that performance of CPU is not adversely affected. The Power supply shall be equipped with over voltage protection.

Main EPAX will be mounted on upper side of cabinet. MDF will be mounted on lower side & cable entry will be from bottom side. The wiring facility will be available from the backside of cabinet. The construction details of the EPAX offered should be explained in detail with relevant drawings.

The exchange shall be supplied with mountable A type MDF with Krone make connectors & required tools for punching & testing will be in the scope of supply. The cabinet shall be vermin proof.

The surge arrestors and fuses on all ports of subscriber and trunk lines shall be provided for Protection of electronic circuitry against external induction, short circuits, high voltage surges, etc. Fuse socket shall be of good quality to avoid lose connection.

Proper lighting arrangement shall be provided for visual inspection of Mother Board & working in EPAX cabinet.

The 2 wire Telephone instrument shall be supplied along with EPAX as per schedule of requirement having following facilities.

1. Push button number key.
2. DTMF and pulse Dialing.
3. Flash key.
4. Pause key.
5. Redial key.
6. LED indication for incoming ring.
7. Long cord connecting between handset and base unit.
8. Adjustable ring volume.

The Digital key Phone shall be supplied along with EPAX as per schedule of requirement having following features:

1. LCD Display
2. Minimum 15 Direct station Selection Keys
3. Auto answer
4. Adjustable Ringer Volume level
5. Adjustable speech level
6. Call duration display
7. Call cost display
8. Directory dialing by name
9. Dual color LED's for port status
10. Full duplex
11. Forced answer
12. Hands free operation
13. Headset Connectivity
14. Missed calls
15. Multiple ringer tones
16. Ring LED indication
17. Text message

(F) SPECIFICATION AND FUNCTIONAL DESCRIPTION

(1) SYSTEM ARCHITECTURE:

System architecture shall have,

1.1 PCM/TDM 100% non-blocking
1.2 Digital ISDN switching platform for PLCC
1.3 High density digital switching
1.4 32 bit processor architecture
1.5 Distributed processing architecture wherein each card of EPAX should have its own dedicated Micro-controller, EPROM & RAM.
1.6 Open, Universal slots architecture to allow flexible configuration and easy expansion in future without changing the basic platform.
1.7 System should support separate dedicated DTMF circuit for each port.
1.8 The latest surface mount technology
1.9 Secondary protection on each port with resettable fuse in addition to the primary protection.
1.10 Support PLCC and normal PBX switching operation simultaneously.
1.11 SLIC based design
1.12 Redundancy for critical cards
1.13 Support Hot-swapping of cards

(2) Facilities:

System should have following facilities:

2.1 Built-in RS 232 port for operation of Debug and system activity monitoring simultaneously.
2.2 Built-in Ethernet Port for programming the EPAX through PC and printing of reports by printer connected to PC.
2.3 Built-in USB Port.
2.4 Built-in Digital Extension Port & also the provision to insert card for Digital Extension subscriber.
2.5 Built-in port for connecting external music source.
2.6 Built-in port for connecting Public Address System (PAS)
2.7 Built-in port for potential free contact (PFC) relay connection to interface external error annunciation device.
2.8 Built-in Auto Attendant functionality.
2.9 Built-in Voice mail System functionality.
2.10 Generation & printing of System Configuration reports

2.11 Generation & printing of System Activity Log reports
2.12 Transferring the file using external modem
2.13 Display of Software version

(3) INTERFACES:

The System should support following interfaces.

3.1 Trunk (Network) Interfaces

3.1.1 CO (TWT) Lines:

This interface shall allow terminating 2-Wire Analog Trunks (CO lines) to function the EPAX as both PLCC EPAX and Conventional PBX at the same time.

3.1.2 E&M Trunks:

E&M card shall provide interface to PLCC panel to extend connectivity for both 6 Wire E&M (2W Tx speech, 2W Rx Speech, E wire & M wire) Dial-in/Tie line as well as E&M Express lines. Using E&M interface, the offered EPAX shall also to be integrated in the network with Routers, VSAT, DACS/Multiplexers, etc.

3.1.3 GSM/3G (Mobile)Trunks:

GSM/3G card shall support GSM/3G connectivity by means of GSM/3G (SIM) line to avail benefits offered by GSM networks.

3.1.4 ISDN BRI/PRI Trunks:

This interface shall support connectivity to ISDN BRI (2B+D) and ISDN PRI (23B+D or 30B+D) lines to the system. These lines when configured as NT or TE as per application requirement, the system with this card should allow an ISDN terminal; Video Phone or LAN connectivity to ISDN port in NT mode.

3.1.5 T1/E1 Trunks:
This interface shall provide connectivity based on T1/E1 standard and interface of EPAX to Radio link, STM, xDSL Modem, Multiplexers etc.

3.1.6 VoIP Trunks:

Each VoIP card shall provide 32 channels and enable users to call on channels simultaneously.

3.2 **Extension Interfaces:**

3.2.1 Analog Telephones (FXS):

This interface shall provide FXS port to interface standard Analog (2-Wire) telephone instruments. The system shall also be programmed using any analog telephone connected to FXS port.

3.2.2 Digital Phone Interface:

This interface shall provide digital extension port to connect Digital phone through 2-Wire full duplex Digital Subscriber Network interface circuit. The each key of digital phone shall be programmable for required function/application viz. Call transfer, call pick up, to access Express trunk of E&M card, to access trunk by single touch push button by programming & storing the access number etc.

3.2.3 IP Extension:

The IP phone, PC with soft phone or Mobile phone with SIP client shall function as IP extension. Each IP extension shall be assigned unique user name and password to authenticate and established calls using system resources regardless of being located anywhere on the global IP network.

3.2.4 ISDN Extension (NT mode):

This interface shall provide ISDN BRI (2B+D) and ISDN PRI (23/30B+D) ports.

3.3 Auxiliary Interface:

3.3.1 External Music Port:

The external music port shall allow an external music source to connect to EPAX.

3.3.2 Public Address System Port (PAS):

The public address system port shall allow any station user to make public announcement on external speakers.

3.3.3 Security Dialer Port:

This interface shall allow sensor devices to connect to its digital input port. In case of emergency, the EPAX will dial different predefine numbers and play a prerecorded message. In case of emergency a hooter shall also be activated.

3.3.4 Call accounting System (CAS) Interface:

The offered EPAX should have to support interface for most types of call accounting System protocols available world-wide which will help in easy integration of the third party call accounting software.

(4) PLCC FEATURES :

The EPAX shall have the following PLCC features.

4.1 Alternate Routing :

In a typical PLCC network, there can be multiple paths that a call can take to reach the destination. The offered EPAX shall have the facility to select an alternate route if a particular route is busy.

4.2 Compander Control Signal:

To improve S/N ratio in a PLCC network, speech signals are necessary to be compressed at source and decompressed at the destination. This process is activated by the CCS. The offered EPAX shall have to provide CCS for each E&M port.

4.3 Destination restricted Dialing:

This feature shall restrict all the users of the system to make a call to certain destination even though availability of trunk line to that destination.

4.4 Disable out-of-Order Trunk:

In the event of faulty trunk line, the EPAX shall disable the faulty trunk and takes it out of service to avoid routing of calls on such trunk lines.

4.5 Field Programming:

The hardware & software configuration should be changed in the field to adapt to the dynamic field requirement. Hardware capacity, port configuration and programming should be managed at the installation site. No specific tool should be required while expanding the configuration on field.

4.6 Flexible extension numbering:

The EPAX should offer flexible numbering plan for all the stations users (1 to 3 digits) and even overlapping numbers is also possible.

4.7 Flexible Station ID:

In a PLCC network, each EPAX is require to give a programmable Station Identification Number (SID), which helps to route a call to its correct destination. EPAX should allow setting of SID from 1 to 3 digits, allowing seamless integration of offered EPAX in any existing PLCC network.

4.8 Multiple station ID:

The same EPAX shall be programmed for multiple stations ID with mixed digit length which provides flexibility to connect the EPAX with multiple PLCC networks.

4.9 Priority:

In a PLCC network it is desired that calls from selected users have precedence over others. Such important users may be allowed to interrupt an ongoing call to request them for release of current call. The offered EPAX shall extend this feature for both priority within a system & priority over E&M lines.

4.10 The EPAX shall be programmable using normal analog telephone, digital phone and remotely using web-based GUI.

4.11 Web based Programming:

For offered EPAX, it shall also be possible to change programming from remote location once it will be connected to the internet which will save valuable time and efforts in providing essential technical support.

4.12 The EPAX shall provide facility to search detailed reports for Calls Viz. outgoing, incoming & internal and also to print the same when ever require for analysis. The EPAX shall have sufficient & separate buffer capacity for each type of call i.e. outgoing, incoming & internal in multiplication of 1000.

4.13 The important events viz. module going faulty, System restarting, port getting hang etc. shall be recorded in internal log file of the system and shall also provide option to print by connecting printer on parallel or a serial printer and to transfer log file to PC/laptop.

4.14 The EPAX shall have suitable relay port to announce failure of a card or related problems.

4.15 The EPAX shall have system fault log to maintain the log of all faults occurring in system & on event of fault it would have to activate buzzer.

4.16 The EPAX shall have transit barring feature to block unauthorized routing of calls to streamline the flow of traffic only on the designated routes.

4.17 The EPAX shall have trunk restricted dialing feature to group the trunks to avoid traffic on critical routes which allow keeping the trunk reserved for specific traffic. Similarly user restricted dialing feature shall also to be supported.

4.18 The EPAX shall have “allowed & denied lists” and “auto attendant functionality” features to restrict dialing of long distance & international calls made by users and to perform the task of virtual operator.

4.19 The EPAX shall offer interface for most types of call accounting system protocols available world-wide to have easy integration of the third party call accounting software.

4.20 The EPAX shall also support features like Call Duration Control, Caller line identification, Conference Dial in, Conference – Multiple Participants.

4.21 The EPAX shall support paging, Voice mail system & Voice message application.

4.22 Call routing progression Tone to the caller- A beep should be given to the caller every time the call passes through a station.

4.23 Trunk disable option to avoid call on an out-of-order trunk

4.24 Trunk Groups to restrict ordinary traffic on a certain trunks/routes.
4.25 Maximum digit on E&M Trunks should be programmable.

4.26 The EPAX shall support for following requirements,

1. Engage Pulse : Suitable for PLCC version exchange so as to match with various existing EPAX in PLCC network of GETCO.
2. Priority Pulse : Same as engage pulse. The priority facility should be available for all subscribers through programming.

3. Release Pulse : 800 ms min.

4. Digit Pulse : 50 ms ± 2 ms make
   : 50 ms ± 2 ms break

5. Inter digit Pause : 500 ms min

6. Loop resistance : 1000 Ohm subscriber line

7. 4 wire transmit level : - 3.5 dBm

   Receive level : - 3.5 dBm
   600 ohm balanced

Frequency response : ± 0.5 dB
0.3 - 3.4 kHz

8. Dialing Trunk/ Express
   Trunk Interface : 4W-E&M (card should support mixed configuration)
   Dialing procedure : Pulse dialing and DTMF dialing

9. Supply : - 48V DC +/- 20% & 2 Amp max

10. Operating Temperature : -10 to + 50 deg. C

11. Operating Humidity : 5 to 95 % RH, Non-condensing

12. Storage Temperature : -40 to +85 deg. C

13. Storage Humidity : 0 to 95 % RH, Non-condensing
14. Ring : 75VRMS 17-23 HZ

15. Dial Tone : 440 HZ continuous

16. Ring back : 440 HZ tons, 360 mS ON, 180 mS OFF
    360 mS ON, 2340mS OFF

17. Busy tones : 440 HZ tons, 540 mS ON, 540mS OFF

(5) System Features :

System shall have following features.

5.1 Programmable feature Access codes
5.2 Allowed and denied Lists
5.3 Call cost calculation
5.4 Configuration report
5.5 Conferencing
5.6 DID
5.7 DISA
5.8 Distinctive rings
5.9 External call forward
5.10 External music input port
5.11 Help report
5.12 Voice mail system integration

5.13 Music on hold
5.14 Remote programming
5.15 Station message detail recording
5.16 System activity log for diagnostic purpose
5.17 Trunk Access groups-Programmable
5.18 Trunk landing group-Programmable
5.19 Field up gradation of software using a PC
5.20 Control application using a relay port
5.21 Voice messages

(6) <u>Extension features :</u>

The extension shall have following features.

6.1 Abbreviated Dialing
6.2 Alarms – Time, daily, Date & Time, Multiple
6.3 Auto answer
6.4 Auto call back : (a) Busy, (b) No reply
6.5 Auto Redial on Normal trunk
6.6 Call duration control
6.7 Call forward: (a) All calls, (b) On busy, (c) On no reply
6.8 Call park
6.9 Call pick up: (a) Group, (b) Selective
6.10 Call splitting
6.11 Call Transfer
6.12 Calling line identification presentation in DTMF and FSK format
6.13 Calling line identification restriction
6.14 Conference : (a) 3 Party, (b) Multi party, (C) Dial-in
6.15 Do Not disturb
6.16 Dynamic lock
6.17 Follow me
6.18 Forced call disconnection
6.19 Call hold
6.20 Hot line
6.21 Last caller recall
6.22 Last number redial
6.23 Missed calls
6.24 Over ride
6.25 Paging
6.26 Priority
6.27 Selective trunk access
6.28 Voice prompts for tones

6.29 Programmable speech level for each port
6.30 Programmable ring cadences

(G) COMPLIANCES:

The offered system shall comply for following tests confirming to standard mention & latest amendment if any & necessary Type test reports of NABL accredited Lab/Central Government approved testing Lab/International Lab for the same shall be submitted with tender bid.

Sr.No.	Test Description	Test Name	Standard
1.	Safety	Safety test	IEC 60950:2001 First edition
2.	EMI/EMC	Conducted Emission	CISPR 22, FCC Part 15
		Radiated Emission	CISPR 22, FCC Part 15
		Harmonic Current Emission	IEC 61000-3-2
		Voltage flicker	IEC 61000-3-3
		Electro-Static Discharge	IEC 61000-4-2
		Radiated Susceptibility	IEC 61000-4-3
		Electrical Fast Transient	IEC 61000-4-4
		Surge	IEC 61000-4-5
		Conducted immunity	IEC 61000-4-6
		Power Frequency Magnetic Field Immunity	IEC 61000-4-8
		Voltage interruption & Dips	IEC 61000-4-11
3.	Mechanical	Shock test	IEC- 68-2-27
		Vibration test	IEC- 600068-2-6: 2007
		High Voltage	IEC-255-5
		Insulation resistance	
		Impulse Voltage	
4.	Environmental	Dry Heat test	IS 9000 Part 3/ Section 5
		Cold test	IS 9000 Part 2/ Section 4
		Damp Test	IS 9000 Part 5/ Section 1

Sr.No.	Test Description	Test Name	Standard
5	Telecom-TEC (Telecom Engineering Center, India)	Telecom Standard to use system in India	IR/IPX-01/03 APR 2005
6	Telecom-FCC (Federal Communication Commission, USA)	Telecom Standard to use system in USA	FCC Part 68 Specification
7	RoHS	Restricted over Hazardous Substance	RoHS applicable standard

(H) Diagnostic and Maintenance :

- Power on self test, logic on each card to indicate hardware failure on a particular card.
- Port status and activity indication for E&M lines.
- Auto indication of an error condition
- System should have capability of generating of system Activity Log with
  (a) Any error, exception or important activity should be logged in a non-volatile memory file with date, time and details of event.
  (b) Activity log should be transferred to a computer for storage.
  (c) Facility to print system activity log on a standard printer
  (d) Facility of on line printing/transferring of system activity for continuous monitoring

(I) Programming / Configuring the EPAX :

- The System should have capability to program it using any standard analog telephone.
- Interactive programming using Digital Key phone.
- Window based GUI tool to program the EPAX using PC.
- Facility for remote programming.

(J) Dialing Scheme:

For a subscriber dialing scheme will be as follows:

1. Dialing '0' for access to tie lines.

2. Double digit or 3 digit station number.
3. Double digit or 3 digit number for the subscriber.

(K) GENERAL:

1. The EPAX shall work satisfactorily in a PLCC, Optic fiber & P&T trunk-dialing network using electronic exchange and other switching devices.
2. The equipment shall be well designed and shall occupy less space.
3. The power consumption shall be minimum to avoid air conditioning and to conserve 48V D.C. Battery capacity in case of system failure.
4. Over voltage protection above 57 Volts D.C. shall be provided through MCB of reputed make.
5. The exchange shall have periodic reset facility and the time shall be specified. This feature shall be programmable.
6. All trunk wiring & sub wiring connection should be provided with identification mark for wiring.
7. The bidder shall give the details of after sales service intended to be provided.
8. The bidder shall have full fledged testing facility.
9. The EPAX shall be compatible with PC operated console in Windows environment.
10. The bidder shall clearly indicate the optional items offered.
11. The bidder shall quote for the set of recommended spare modules and this shall be valid for period of two years from date of order.
12. In the event of order, the bidder shall have to first offer proto type for inspection & only after getting clearance of GETCO further Process of manufacturing of balance quantity shall be taken on hand.

NOTE: A detailed technical literature and manual shall be provided by the bidder with full technical particulars and technology used & schematic drawings. The offer without which shall be evaluated accordingly. All bidders shall arrange demonstrations within a week's time after opening of the technical bid.

(L) THE SCOPE:

The following shall be in the scope of supply

(1) EPAX with necessary System software for programming through PC and equipped/ wired for full capacity.
(2) D.C. power supply cord with necessary lugs.
(3) Testing cords and Krone punching tools.
(4) EPAX mounted in 19" rack mounted in cabinet with exhaust fan and lighting and MDF.
(5) The extension card for testing.
(6) Operating, Programming and service manual with all relevant circuit diagrams.
(7) The Programming console instrument.
(8) 2 wire Telephone instruments and Digital key phone.

The technical particulars shall be furnished in the form of schedule - B and deviation in the form of separate statement.

SCHEDULE -'B'

GUARANTEED TECHNICAL PARTICULARS

(Particulars to be furnished by the bidder)

EPAX - PLCC VERSION

SR. NO.	DESCRIPTION	PARTICULARS
1.	Name & Address of Manufacturer	
2.	Type /Model	
3.	Type of technology used	
4.	Architecture used	
5.	Method of mounting cubicle	
6.	Method of connection to External circuits	
7.	Cable entry	
8.	Literature to be enclosed for typical layout of equipment	
9.	Operating temperature range °C	

TECHNICAL SPECIFICATIONS
FOR
DIGITAL PLCC VERSION EPAX

SR. NO.	DESCRIPTION	PARTICULARS
10.	Operating relative humidity	%
11.	Operating voltages	V
12.	Power requirement	W
13.	Operating voltage range	
14.	Numbering Scheme.	
15.	Max. number of trunk lines (4 W E&M)	
	Normal Dialing	
	Express	
16.	Max. number of Analog lines (2W extension)	
17.	Nos. of CO lines	
18.	No. of ports for Digital key phone	
19.	No. of E&M Trunks per module	
20.	No. of Analog subscribers per module	
21.	No. of CO lines per module	
22.	No. of Digital subscriber port per module	
23.	Method of extending capacity	
24.	Method of implementing and Modifying Scheme	
25.	programmable Speech signal levels	

SR. NO.	DESCRIPTION	PARTICULARS

26. Description of audible tones

- dial tone
- busy tone
- ringing tone

27. Pulse criteria

Description	Standard	Tolerance
Engage Pulse:		
Digit Pulse :		
Inter Digit Pause:		
Release Pulse:		
Priority Pulse:		

28. Insertion loss

29. Specify the facilities that are available.

- as standard
- at an extra cost.

30. Dimensions in mm

31. Weight of complete equipment Kg.

32. Supports Interface for ISDN BRI & PRI YES/NO

33. Supports interface for E1 2048 kbps/ HDB3 YES/NO

34. Supports interface having Quad GSM Modem YES/NO

35. Supports VOIP interface YES/NO

TECHNICAL SPECIFICATIONS
FOR
DIGITAL PLCC VERSION EPAX

SCHEDULE OF REQUIREMENTS

PLCC 16 Trunks X 16 Subscribers EPAX:

Sr. No.	Description	Qty.
1.	PLCC VERSION EPAX WITH 16 NOS. OF TRUNKS & 16 NOS.OF SUBSCRIBER SUITABLE FOR BOTH EXPRESS AND DIALING CONNECTIVITY FOR SPEECH COMMUNICATION WITH UNIVERSAL SLOT ARCHITECTURE AND ALSO WITH PROGRAMMING FACILITY ON GUI TO CONFIGURE THE DIFFERENT FUNCTIONS & PARAMETERS OF EPAX as per technical specification & configuration given at Annexure – A here under.	16 Nos.

ANNEXTURE – 'A'

Each Single Exchange at Sr. No. 1 above comprising of

Sr. No.	Item	Description	Unit	Qty.
1.	PLCC EPAX with 48VDC Power supply card (Including Required Cards for HOT STANDBY Facility).	ISDN digital integrated PLCC Switch having Universal Slots architecture out of which 6 slots (3 Main slots + 3 Redundancy Slots for Master card, Switch card & power supply card). System having with digital key phone ports, auto attendant, remote maintenance facility, public address system port, external music port, parallel printer port and RS-232C ports, Ethernet Port. **Basic System comprising of:** (1) System Enclosure (2) Back Plane (3) Master card (4) Switch card (5) 48V DC Power Supply Card which also includes quantity of card (3), (4) & (5) for Hot Stand by facility.	No.	1
2.	4 W E&M trunk for Normal PLCC dialing trunk & PLCC express trunk	E&M Trunk (2 W Tx, 2W Rx , E wire & M wire)	No.	16
3.	Digital Key phone as per specification	Digital key phone for digital extension line connectivity.	No.	2
4.	Interface card with port for Digital key phone	Digital extension line port (RJ 45)	No.	4
5.	Rack Enclosure	19" Rack mounting type cabinet to house PLCC EPAX.	No.	1
6.	Analog Subscribers	Analog Extension lines.	No.	16
7.	Central office Trunk	CO trunk lines	No.	---
8.	Push button type standard telephone instrument of reputed make for analog subscriber	Push button type analog telephone	No.	8