1. **Introduction**

1.1 Tenderers are invited to bid for the supply, delivery, installation and maintenance of facsimile equipment to schools. Thermal paper facsimile equipment and plain paper facsimile equipment are required in this contract. Trade-in service shall be offered to allow schools to replace some existing thermal paper facsimile equipment.

2. **Background**

2.1 At present, there are more than 850 facsimile equipment being used in schools. They are all G.3 equipment which use thermal paper as the recording medium.

2.2 It is estimated that about 300 sets of facsimile equipment, which includes trade-in requirement, will be purchased by schools in this contract. It is expected that 200 sets of plain paper facsimile equipment will be required. The actual figures may vary depending on the actual needs of individual schools.

3. **General Requirements**

3.1 Tenderers shall be able to supply both thermal paper facsimile equipment and plain paper facsimile equipment.

3.2 The facsimile equipment offered shall be able to be connected to the Public Switched Telephone Network (PSTN) and provide facsimile transmission service by dial-up access. The NCC/PTC letter issued by the Telephone Company shall be submitted together with the tender.

3.3 The facsimile equipment offered shall be able to be connected by leased circuits provided by the Telephone Company and provide facsimile service on a point to point basis. The NCC/PTC letter issued by the Telephone Company shall be submitted together with the tender.

3.4 The Contractor shall deal directly with individual user schools regarding the orders, installation of equipment, payment correspondences and settlement of payment.

3.5 The Contractor shall be responsible for the installation of the offered facsimile equipment. The procedure and practice as recommended by the equipment manufacturer shall be strictly followed.

3.6 The Contractor shall be responsible for all the necessary liaison and co-ordination with the Telephone Company for the application and installation of faxlines.

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3.7 The Contractor shall keep record of the facsimile equipment sold under the contract. The record shall include the name of user school, location of office, telephone number of facsimile equipment, model of equipment, installation date, type of maintenance service and other relevant details. Two copies of the equipment record/update should be forwarded to the user school on a monthly basis.

4. General Technical Requirements of Equipment

4.1 All the facsimile equipment offered shall comply in full with CCITT Blue Book Recommendation T.4, Standardization of Group 3 Facsimile Apparatus for Document Transmission.

4.2 The facsimile equipment shall comply with the CCITT Blue Book Recommendation T.30, Procedures for Document Facsimile Transmission in the General Switched Telephone Network.

4.3 If proprietary procedures and protocols are used for transmission between same brand of equipment, the offered equipment shall be able to work with other brands of facsimile equipment which fully comply with the relevant CCITT Recommendations.

4.4 The equipment shall be able to operate satisfactorily and continuously within the temperature ranging from 10 to 35 degree C and with relative humidity between 50% and 90% for 24 hours a day and 7 days a week.

4.5 The equipment shall be powered by AC mains at 220V with 10% tolerance and 59Hz with 1Hz tolerance.

4.6 The facsimile equipment shall be able to be connected to encryption device as specified in Section 7.

5. Facsimile Transmitter Specifications

5.1 The scanning system of the transmitter of the facsimile equipment shall be able to accept and fully scan any size of documents up to the sizes as specified below :-

5.1.1 A4 size, 210 mm width and 297 mm length
5.1.2 B4 size, 250 mm width and 353 mm length
5.1.3 Computer printout with size of 280 mm width and 369 mm length
5.1.4 Paper thickness between 0.06 mm to 0.15 mm
5.2 The scanning system shall have the following level of resolution:

5.2.1 For normal transmission, standard resolution of 3.85 line/mm with 1% tolerance and 8 pels/mm

5.2.2 For fine transmission, high resolution of 7.7 line/mm with 1% tolerance and 8 pels/mm

5.2.3 It is desirable that a superfine mode with resolution of 15.4 line/mm with 1% tolerance and 8 pels/mm shall be available

5.3 The scanning spot size shall be 0.259 mm times 0.259 mm with 0.005 mm tolerance and be constant along the scanning line.

5.4 The line advance shall be 0.259 mm with 0.005 mm tolerance for standard resolution.

5.5 The accuracy of the linear scanning in both horizontal and vertical directions shall be better than 0.26 mm per 24.5 mm movement.

5.6 The signal output of the facsimile equipment shall be adjustable from +15 dBm to 0 dBm. The output impedance shall be 600 ohms, balanced to ground, with minimum return loss of 20 dB against a 600 ohms resistance over the frequency range of 300 Hz to 3400 Hz. The electrical symmetry shall be sufficient to suppress longitudinal currents by 40 dB. No signal shall be transmitted when the equipment is in standby or idle condition. The carrier frequency shall be maintained at an accuracy of at least 8 parts per million (ppm).

5.7 The signal contrast shall be 20 dB with 1 dB tolerance. Both black and white transmission shall be provided on a selectable basis.

5.8 The facsimile equipment shall have built-in time signal for the control and operation of the equipment. Crystal component with high stability or other circuitry with identical performance shall be used at timing source. The AC mains supply shall not be used to derive any frequency or timing rates within the equipment.

5.9 The equipment shall comply with CCITT Recommendations V.27 ter and V.29 for the one line transmission. It shall be capable to monitor the transmission status and select the highest transmission rate of 9600 bps with automatic fallback to 7200 bps, 4800 bps or 2400 bps as appropriate.

6. Facsimile Receiver Specifications

6.1 The input impedance of the facsimile equipment shall be 600 ohms, balanced to ground, with minimum return loss of 20 dB against a 600 ohms resistance over the frequency range of 300 Hz to 3400 Hz. The electrical symmetry shall be sufficient to suppress longitudinal currents by 40 dB. The input circuit shall be designed to withstand the ringing voltage impressed on a telephone circuit.
6.2 The input circuit shall be able to detect the ringing tone and connect the circuit when there is a telephone call. It shall be able to detect the incoming signal and determine whether it is a facsimile call.

6.3 The line advance shall be 0.259 mm with 0.005 mm tolerance.

6.4 The receiver shall be able to adjust the size of the received document automatically so that it can be printed on the paper without losing information.

6.5 Contrast adjustment shall be available to adjust the contrast level of the print-out.

7. External Interface and Encryption Interface

7.1 The facsimile equipment shall have an optional RS232C port for external connection to personal computer. It shall be able to send and receive information in facsimile format, which complies with relevant CCITT Recommendations, between the equipment and the personal computer. Tenderers shall submit detailed information regarding the RS232C port and its application.

7.2 The facsimile equipment shall have an encryption interface for connecting to an external digital encryption device. The encryption interface shall perform the following functions and meet the following requirements:

   7.2.1 The information transmitted or received will be ciphered or de-ciphered by the encryption device through the encryption interface of the facsimile equipment.

   7.2.2 The encryption interface shall be an optional add-on module which can be installed inside the main equipment easily without any equipment modification.

   7.2.3 The facsimile equipment equipped with the encryption interface shall be able to work with other normal facsimile equipment without any degradation and difficulties.

8. Functional Requirements of Facsimile Equipment

8.1 All the facsimile equipment offered shall have the following functions and features.

8.2 The scanner of the facsimile equipment shall be large enough to accept B4 size paper with width of 252 mm.
8.3 Push button type key-pad dialing shall be provided for inputting digits. The layout of the key-pad shall comply with the CCITT Recommendation Q.11.

8.4 A reasonable large LCD type display shall be available for displaying relevant information and telephone numbers.

8.5 At least 40 one-touch automatic dialing and sending shall be available. The memory shall be capable of storing up to 16 digits for each one-touch dialing telephone number.

8.6 A programmable timer shall be available and a document can be present to be sent later by inputting the sending time into the equipment. The equipment shall be available to send and receive other documents even when this feature is activated.

8.7 When the calling party is busy, the equipment shall be able to redial the number again at least three times.

8.8 The equipment shall be able to stock up to 30 sheets at one time for continual sending.

8.9 The equipment shall be programmable to poll or to be polled and receive information from a particular equipment. The polling capacity shall be at least 20. The equipment shall verify the identity of the other party before sending or receiving information.

8.10 The equipment shall be able to reprint and copy a document.

8.11 Adjustment of contrast shall be available to set the contrast of receiving document.

8.12 The equipment shall have at least 16 levels of grey scale for the image document transmission.

8.13 The equipment shall have at least the standard and high resolution modes for selection.

8.14 Help function and detailed instructions shall be available which help the user to operate the equipment.

8.15 The equipment shall be able to display various kinds of information, such as receiving terminal identification, time, speed, etc. during the transmission.

8.16 The equipment shall automatically print the sender's identity, facsimile number, time, date and page number on the top edge of the receiving documents.

8.17 The equipment shall be able to print the result and records of transaction when required.
8.18 A user selectable stamp shall be printed on the documents which have been sent successfully.

8.19 An indicator or other means shall be available to indicate the run out of recording paper.

8.20 The equipment shall employ the CCITT Error Correction Method (ECM) for error-free operation.

8.21 The equipment shall be able to add memory when required. The memory shall be optional and the cost shall be quoted in the Price Schedule. The memory together with the facsimile equipment shall be able to comply with the following requirements and functions:

8.21.1 The memory shall be able to be installed inside the equipment.

8.21.2 The memory shall be sufficient to store at least 20 pages of A4 size documents. The CCITT test chart No. 1 will be used as reference.

8.21.3 The equipment shall be able to show the spare capacity of the memory when inputting documents.

8.21.4 The equipment shall be able to use the memory to store received documents and the documents to be transmitted. It shall be able to identify different documents by assigning different file number.

8.21.5 The memory shall be able to used together with the sequential broadcast feature which allows to send the stored document to a number of selected stations in sequential order. The feature shall be able to store up to 20 different locations for sequential broadcast. The transmission to each location shall follow a present time table. Automatic redial shall be available for those busy stations.

8.21.6 The memory shall be able to be used together with the group broadcast feature which allows to send the same documents to a group of present locations. The equipment shall be able to support at least 8 groups with at least 10 different locations per group.

8.22 Tenderers shall state the size of the memory offered in order to meet the requirements stated in para. 8.20. Tenderers shall indicate whether the size of the memory can be expanded. If applicable, the size of additional memory, the cost and the method involved shall be stated.
9. **Requirements of Thermal Paper Facsimile Equipment**

9.1 The thermal paper facsimile equipment offered shall comply with all the requirements of Section 3 to Section 8.

9.2 The facsimile equipment shall be able to accept thermal papers supplied by other suppliers. Tenderers shall give a specification of thermal paper which the equipment can provide satisfactory service.

9.3 The power consumption of the equipment shall meet the following requirements:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3.1 standby mode</td>
<td>less than 40 watts</td>
</tr>
<tr>
<td>9.3.2 transmitting mode</td>
<td>less than 80 watts</td>
</tr>
<tr>
<td>9.3.3 receiving mode</td>
<td>less than 100 watts</td>
</tr>
<tr>
<td>9.3.4 copying mode</td>
<td>less than 100 watts</td>
</tr>
</tbody>
</table>

10. **Requirements of Plain Paper Facsimile Equipment**

10.1 The equipment offered shall comply with all the requirements as specified in Sections 3 to 8 and shall be equipped with built-in memory which complies with the requirements as specified in para. 8.20.

10.2 The plain paper facsimile equipment shall employ non-chemical out-sheet of standard A4 size as recording paper. Tenderers shall state the specifications of paper to be used as recording paper. The facsimile equipment shall be able to accept papers supplied by other suppliers as long as the papers satisfy the requirements.

10.3 The paper tray shall be able to store at least 200 A4 sheets for recording purpose.

10.4 The recording system shall use toner as the printing material to print information received. The image shall be firmly printed on the recording paper and will not be damaged by light rubbing between papers.

10.5 The method adopted shall be based on laser printing technology and well proven in the market. The printout shall be able to be kept as permanent record. Tenderers shall supply all technical information of the recording system adopted.

10.6 The power consumption shall be less than 1KW in any case and tenderers shall give the power consumption rate of the equipment offered during standby, transmitting and receiving modes.

10.7 The equipment shall be light and compact. It shall be of desktop type.
10.8 Tenderers shall supply a list of consumable materials and accessories required to maintain the equipment in good working conditions. The consumption rate of each consumable material and the normal service life of each accessory shall also be given.

11. **Reliability of Facsimile Equipment**

11.1 The facsimile equipment offered shall have a service life of at least six years. Tenderers shall supply detailed information regarding the service life of equipment.

11.2 Tenderers shall provide detailed information about the mean time between failures (MTBF) of the equipment offered.

11.3 Tenderers shall provide detailed information on the mean time to repair (MTTR) of the equipment offered.

11.4 Tenderers shall provide detailed information regarding the reliability of major components such as scanner, thermal print head of thermal paper facsimile equipment, laser component of plain paper facsimile equipment, the probability of fedded document and recording paper jaming, etc.

12. **Maintenance Requirements**

12.1 **General Requirements**

12.1.1 The successful tenderer will be nominated as the maintenance contractor of the facsimile equipment offered.

12.1.2 The maintenance contractor shall provide maintenance service on fixed contract sum basis as well as on call basis. On call maintenance will only be applied to thermal paper facsimile equipment. The user school shall decide the particular maintenance arrangement two months before the expiry of the first year warranty.

12.1.3 The maintenance shall cover the whole facsimile equipment including all accessories as well as the encryption interface, if installed.

12.1.4 The maintenance contractor shall hold sufficient spare parts and accessories for supporting the facsimile equipment throughout its whole service life.

12.2 **Fixed Contract Sum Maintenance**

12.2.1 The maintenance contractor shall perform preventive maintenance and corrective maintenance as specified below:
12.3 **Preventive Maintenance**

12.3.1 inspection of the facsimile equipment installed;
12.3.2 cleaning of filters of electric fans or other parts if applicable;
12.3.3 routine checks on the scanner, printing system and mechanical system;
12.3.4 functioning test and performance test of the equipment; and
12.3.5 any other routine tests or checks as recommended by the manufacturer.

12.4 **Corrective Maintenance**

12.4.1 The maintenance contractor shall provide maintenance service from 9 a.m. to 5 p.m. during the working day.

12.4.2 The maintenance staff shall try too replace all faulty parts on site in order to restore the service as soon as possible.

12.4.3 The maintenance staff shall arrive on site to effect repair within 4 hours when a fault is reported to the contractor.

12.5 **On Call Maintenance (for thermal facsimile only)**

12.5.1 The maintenance contractor shall provide corrective maintenance from 9 a.m. to 5 p.m. during working day to the facsimile equipment offered on per call basis.

12.5.2 The maintenance staff shall carry all essential spare parts and components and arrive on site to effect repair within 4 hours when a fault is reported to the contractor.

12.5.3 The maintenance staff shall try to identify the fault and inform the school concerned the components and parts required to be replaced, if required. Upon agreement from the office-in-charge, the maintenance staff shall try to replace all faulty components on site.

12.5.4 After corrective maintenance, the maintenance staff shall carry out inspection and functioning test of the equipment and cleaning of dust and filters of electric fans.

12.6 For each of the facsimile equipment, regardless the type of maintenance service adopted, the maintenance contractor shall keep a log book on site for record purpose. The maintenance staff shall write down all the details of the maintenance work performed.