BUREAU OF INDIAN STANDARDS
(CENTRAL LABORATORY)
SAHIBABAD (U.P.) 201010.

Ref: CL/PP/BID-07 (06-07) Date - 27 Oct 2006

OPEN TENDER NOTICE NO.2

Sealed tenders are invited (under two bid system i.e. Technical Bid and Financial Bid) separately each item from reputed manufacturers and their accredited/sole selling agents, suppliers for the "Supply, Installation, Commissioning and Satisfactory Demonstration" of following items:

BID Sl. No.	Equipment/ Spcn. Code	Name of Equipment	Location*	Qty
1.	ACE01	Life Test Equipment for GLS Lamps	CL	01 Unit
2.	ACE04 A&B.	3 Nos Test Corners of 36 Channels with Software and 1 No. Test Corners of 144 Channels with Software for testing of Appliances	CL	01 Set
3.	ACE06.	Ovens for Testing of GLS Lamps	CL	03 Units
4.	ACE07	Induced Failure Test Set up for GLS Lamps	CL	01 Unit
5.	BCE01	Power Measurement Kit for testing of Motors	CL	01 Unit
6.	BCE02	D.C.H.V Tester with Water Bath for testing of Cables	CL	01 Unit
7.	BCE03.	Air Bomb Chamber for testing of Cables	CL	01 Unit
8.	BCE04.	Oxygen Chamber for testing of Cables	CL	01 Unit
9.	BCE09	Tubular Ageing Oven for testing of Cables	CL	01 Unit
10.	CCE06	Computer Controlled Windows Based System – combined with Actuating Mechanism and loads for testing of Switches	CL	01 Unit

For detailed specifications, please see Page No.10 to 36, below.

1. Security Bid (EMD) – 5% of the Quoted Cost of the equipment may please be sent in the form of a Crossed/Account payee demand draft from a Nationalized Bank, payable at Ghaziabad in favour of "BUREAU OF INDIAN STANDARDS". The Demand Draft of the EMD be placed inside a separate sealed envelope clearly marked 'EMD' on the right hand side corner of the envelope and be stapled along with the sealed envelope containing the Financial Bid.

Contd..p/2….

2. TENDER DOCUMENT : No printed tender documents will be issued by BIS, CENTRAL LAB. Bidders are requested to download the Tender Notice, specifications, terms & conditions (**Page No.3 to 9**) and for each bid enclose a non-refundable bid fee of Rs.500/- (Rupees Five Hundred only) for each item separately, in the form of Demand Draft drawn in favour of BUREAU OF INDIAN STANDARDS payable at Ghaziabad.

3. Tenders not accompanied with **'EMD'** shall be summarily rejected.

Last date for receipt of Bids is 16 –11-2006 (1700 h)

Date of opening of Technical Bids is 17 -11-2006(1500h)

In the event of any of above date(s) being declared a holiday, the last date of submission of completed bid(s) shall be on the next working day.

Head (Planning & Purchase)
Central Laboratory (BIS)
Plot No.20/9, Site-IV
Sahibabad Industrial Area
Distt. Ghaziabad-201010 (U.P.)

Phone No:0120-2770416
Fax No:0120-2776663

*

CL – Central Lab, Sahibabad, Distt Plot No.20/9, Site-IV,
Sahibabad Industrial Area, Distt. Ghaziabad-201010 (U.P.)

BUREAU OF INDIAN STANDARDS
(CENTRAL LABORATORY)
Sahibabad, District Ghaziabad – 201010.

TERMS & CONDITIONS
TENDER DOCUMENT: CL/PP/BID-07 (06-07)

1. The Tenderers are requested to give detailed tender in their own forms in two bids i.e.
Part - A Technical Bid.
Part - B Financial Bid.

2. The specifications of equipments, have been specified against each item. However, bidder(s) may be required to arrange practical demonstration of equipment/model(s) quoted by them before finalization of order

3. No tender documents will be issued by BIS, CENTRAL LAB. Bidders are requested to download the Tender Documents and enclose a non-refundable bid fee of Rs.500/- (Rupees Five Hundred only) for each item separately, in the form of Demand Draft drawn in favour of BUREAU OF INDIAN STANDARDS payable at Ghaziabad. The Bid fee should be enclosed with Technical bid only.

4. In the technical bid the following may be clearly indicated :

a) The Equipments are required to be installed at locations indicated in the Tender Notice and subsequently training is to be provided to the concerned scientists/testing personnel, where necessary.

b) Packing, Forwarding, Freight & Insurance and Commissioning Charges, if any extra may be quoted separately in Financial Bid.

c) In case your quote is F.O.R./F.O.B. basis, estimated insurance coverage charges may be indicated.

d) CIF(Carriage Inward & Freight), New Delhi value both by Airfreight and Ocean freight, where applicable.

5 Tenders complete in all respects for each item should be submitted separately for **Technical** as well as **Financial bids as follows**

a) One sealed envelope superscribed "**Technical Bid**" will contain only the Technical Specifications of the indented equipment as per details in Clause 6 of this tender terms and conditions.

b) A Second sealed envelope superscribed "**Financial Bid**" will contain only the financial bid in which price, maintenance, Annual Maintenance Contract Charges [AMC] etc. and any other information, which has financial implications, will only be given. The Demand Draft of the EMD (see Para 42) be placed inside a separate sealed envelope clearly marked 'EMD' on the right hand side corner of the envelope and be stapled along with this sealed envelope containing the Financial Bid. However, the EMD of the successful Bidder may be adjusted against Performance Bank Guarantee.

c) Both the above sealed envelopes are to be kept in a main envelope, superscribed as Tender No CL/PP/BID-07(06-07) for ……..... (Item/Name) due on ---------- Nov 2006 and duly sealed.

Contd...p/4.....

6. The **Technical Bid [Part A]** should accompany complete specification, Manufacturer's name, address and following details :

   a. Expected life span of equipment and accessories.
   b. List of infrastructural facilities and consumables to be arranged by the Bureau for commissioning of equipment,
   c. List of the Users in India with complete postal address to whom the similar equipment has been supplied,
   d. Near locations in India from where after sales services shall be provided along with the name of Servicing Agent,
   e. The optional and any other essential items/accessories required for the maintenance of the equipment for the next three years.
   f. Technical Literature of the equipment along with necessary photograph/drawings, if any
   g. Deviation Statement Form **(See Annexure 1)**

7. Cost of the items should be mentioned clearly in the **Financial Bid [Part-B]** only. The following details need to be included :

   a. Price break-up of main equipment and accessories and consumables to be supplied by the party,
   b. Rebate on the quoted price, if additional equipment is procured for any other BIS Lab, and
   c. The Annual Maintenance Contract charges for next three years after the expiry of warranty period
   d. The rates quoted shall be valid for a period of 120 days from the date of opening of the tender. However, the current value of the foreign currency would be applicable at the time of placing the order.

8. In case of foreign quote, the Principal supplier should clearly indicate the address of the Indian Agent and percentage (%) of Agency Commission payable if any, to be paid to the Indian Agent in Indian Currency.

9. Indicate the names and addresses of the Indian reputed Organizations where you have supplied the similar equipment and may attach the satisfactory performance report of the equipment from user Organization.

10. (A) If you have supplied identical or similar equipment to Govt Labs. /Institutes, the details of such supplies for the preceding three years should be given together with the prices eventually or finally paid.

    (B) Based on the above information BIS will have its option to obtain details of the equipment, their performance, after sales services etc. for evaluation of the tender, directly from the concerned Labs./Scientists etc.

11. Fax / E-mail / Telegraphic / Telex tenders shall not be considered.

Contd...p/5.....

12. All the Bank Charges inside and outside India, including opening of LC, communication, confirmation, amendments etc., will have to be borne by supplier only.

13. Details of after-sales services offered by you are to be made clear in the tender.

14. **Delivery Period**: As time is the essence of the contract, Delivery period mentioned in the Purchase Order should be strictly adhered to. Otherwise the tenderer will forfeit EMD, after maximum 10 days of the last date of delivery.

15. The supplier will have to give along with the equipment complete drawings, circuit diagrams, service/maintenance manual & operating manual of the equipment

16. With regards to terms of payment including period of warranty, we prefer to release the payment on BILL Basis (excluding Indian Agency Commission) after receipt of consignment in good condition and satisfactory installation, and commissioning thereof. Alternatively, depending upon the value and foreign exchange regulations the payment can also be considered through Sight Draft / Letter of Credit through the State Bank of India/Punjab National Bank for the order value excluding the Indian Agency Commission. However, the detailed payment for Sight Draft / Letter Credit is mentioned at clause No. 25 of this tender terms and conditions.

17. Supply means “Supply, Installation, Commissioning and satisfactory demonstration of the whole system and training”. If there are any charges extra for Installation, Commissioning and training, the same should be specified in the financial bid.

18. All goods shall be inspected by BIS preferably in the presence of supplier or his authorized representative, when the packages are opened in Labs prior to installation. The decision of BIS shall be binding. Rejected items/goods/stores shall be removed by the supplier at his own cost and risk, within 30 days of receipt of notice for the removal of such goods, and no liability, whatsoever, on the Bureau shall be attached for the rejected/disapproved goods/items/stores

19. The Tenderer is required to furnish the Permanent Account Number (PAN) Allotted by the Income Tax Department.

20. In case of foreign quote, the address of Principal’s / Manufacturer’s and their Banker’s details should be furnished.

21. The item should be supplied with manuals and the manuals including technical drawings should be complete in all respects to operate the system without any problem. If the manuals are on chargeable basis, the same should be specified in the offer.

22. The supplier is required to insure having a import license for the equipment quoted where applicable as per GOI guidelines.

23. In case of Indigenous Items the offer should contain the Basic Price and percentage of Excise Duty should be shown separately, BIS shall pay custom duty as applicable.

Contd...p/6.....

24. Price shall specifically indicate sales tax, excise duty or any other charges. In absence of any such stipulation, it will be presumed that the prices include all such charges and no claim for the same shall be entertained. The Bureau pays full CST and neither Form C nor Form D are provided.

25. (A) The successful bidder shall furnish with in 15 days of placement of the order an unconditional Performance Bank Guarantee valid till 60 days after the warranty period from a Nationalized Bank for 10% of the order value within 15 days of placement of the order. On acceptance of this condition and submission of Bank Guarantee, the Letter of Credit will be opened for 100% order value. If the firm fails to submit the same, the Contract shall be deemed as terminated and the firm will forfeit the EMD, in case of foreign suppliers & indigenous suppliers. The performance Bank Guarantee is to be given in format enclosed at **Annexure 2,** enclosed with this document

(B) **For foreign suppliers** : PAYMENT- 90% payment shall be made by Sight Draft / an Irrevocable Letter of Credit established in favour of the supplier through the Punjab National Bank, Daryaganj, New Delhi, for the order value, excluding the Agency Commission due to the Indian Agents, against the presentation of original Shipping documents. Balance 10% will be released after completion of satisfactory installation, commissioning and demonstration of the whole system and on completion of training. However Letter of Credit/Sight Draft arrangement will be made for 100% order value. The Agency Commission to the Indian Agent, if any and payable by BIS will be paid only after successful installation, commissioning and satisfactory demonstration and acceptance of the items ordered for.

(C) **For Indigenous items:** 90% payment shall be made against delivery, installation, Commissioning, training and on acceptance as per Purchase Order at site and balance 10% shall be made after receipt of performance Bank Guarantee for 10% of the total order value, to be valid for One Year from date of installation and acceptance.

26. The Bidder has to state in detail the Electrical Power/UPS requirements, floor space, head room, foundation needed and also to state whether Air-conditioned environment is needed to house the system and to run the tests. i.e. pre-installation facilities required for installation may please be intimated in the technical bid.

27. INSTALLATION: Bidder shall be responsible for installation / demonstration wherever applicable and for after sales service during the warranty and thereafter.

28. In case of Foreign Quote, the mode of dispatch should be by Air Post Parcel/Ocean Freight/Air Freight (By Air India Freight) and on Freight to-pay basis only. The approximate dimensions of the packages and weight of consignment are to be indicated.

29. The makes / brand and name and address of the manufacturer, Country of Origin, Country of Shipment and currency in which rates are quoted are to be mentioned.

Contd...p/7.....

30. The payment of local currency portion shall be payable in equivalent Indian Rupees, within 30 days after the receipt of the equipment in good condition and after satisfactory installation and commissioning and demonstration.

31. The tender / quotation / offer submitted by you should be valid for a minimum period of ninety (90) days from the date of opening the tender.

32. The quotation should be only in Indian Rupees for indigenous items. In case of foreign quote, the vendors may quote their rates in Indian Rupees as well as in Foreign Currency.

33. The Bidder who submits the tender on behalf of their principals should produce documentary evidence in support of their authority to quote or submit proforma invoice of their principals.

34. BIS will not provide any accommodation/transportation for the Engineers/ Representatives for attending Installation, Commissioning and Demonstration Work. It is the absolute responsibility of the Principal Supplier/Indian Agent to make their own arrangements.

35. **WARRANTY** : The equipment is to be guaranteed for trouble free performance for a minimum period of two years after installation. The defects, if any, during the warranty period are to be rectified free of charge by arranging free replacement wherever necessary.

36. Indicate the name of firm, address, contact person, phone no. and fax no. etc of onsite warranty, agency who shall maintain during warranty and undertake Annual Maintenance Contract/Comprehensive Service Maintenance Contract beyond warranty shall be given in the technical bid. In case of foreign quote, the Indian Agent who shall maintain during warranty and AMC beyond warranty shall be given in the Technical Offer.

37. The supply of spare parts is to be guaranteed at least for a period of 10 years after the supply of the equipment.

38. After successful installation what will be the minimum down time of equipment/instrument in case of breakdown. If the identified firm or person fails to put the system into working condition what is the further alternative course of action suggested by you to adhere to minimum down time.

39. Please mention the charges for comprehensive annual maintenance contract separately for 3 years in financial bid (for post warranty period).

40. No sub-contracting will be allowed for installation or maintaining system/equipment / instrument during or after warranty period.

41. Discount offered should be mentioned clearly in the financial bid only.

Contd...p/8.....

42. The Earnest Money Deposit (@5% of Quoted Price) must be sent along with your financial bid in the form of a Demand Draft, Banker cheque or Bank Guarantee (from a Nationalized Bank only) drawn in favour of BUREAU OF INDIAN STANDARDS payable at Ghaziabad/New Delhi, otherwise your technical & financial bids will not be considered at all. The Earnest Money of successful bidder will be returned only after installation, commissioning, satisfactory demonstration and acceptance of the equipment by the user Scientist/HOD as per the terms of our purchase order. The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned.

43. (A) Tenders not accompanied with Demand Draft/Bank Guarantee towards "Earnest Money Deposit" will summarily be rejected.

(B) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.

(C) Unsigned Tenders will also be rejected.

44. Conditional Offers will not be considered.

45. If the supplier fails to Supply, Install and Commission the system as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of one percent value of the Purchase Order awarded, per every week delay subject to a maximum of 10% of the total value of the order and such money will be deducted from any money due or which may become due to the supplier.

46. Goods should not be dispatched until the Vendor receives a firm order.

47. Firms which have already supplied similar equipment to BIS and have not completed required installation/commissioning/after sales service/warranty replacements etc. such firms offers will not be considered for further evaluation and no enquiries thereafter will be entertained.

48. Tenders addressed to the Director, Purchase & Planning, Central Laboratory, Bureau of Indian Standards, Sahibabad, Distt Ghaziabad 2010101 are to be submitted for each item separately as detailed in Clause 5 of this tender terms and conditions

49. The tenders must be clearly written or typed without any cancellations / corrections or overwriting.

50. Please indicate page nos. on your quotation. E.g. If the quotation is containing 25 Pages, please indicate as 1/25, 2/25, 3/25 ----------25/25.

51. **Last Date and Time for receipt of Tenders** : The tenders will be received in the Purchase Section, Central Laboratory, Bureau of Indian Standards, Sahibabad, Distt Ghaziabad 2010101 up to **1700 h on 16 -11-2006.**

Contd...p/9.....

52. BIS will not be responsible:

a. For delayed / late quotations submitted / sent by Post / Courier etc.
b. For submission / delivery of quotations at wrong places other than the Office of Director, Purchase & Planning, Central Laboratory, Bureau of Indian Standards, Sahibabad, Distt Ghaziabad 2010101.

53. **Date and Time of opening of Tenders**: The Tenders (Part – A Technical Bid only) will be opened at **1500 h on 17 -11-2006** in the presence of tenderers who wish to be present.

54. The Date and Time of opening for Part B (Financial Bid) will be intimated only to pre-qualified and technically acceptable tenderers for the item at a later date.

55. All question, disputes or differences arising under, out of or in connection with this Bid document shall be subject to the exclusive jurisdiction of Delhi Court

56. The Bureau reserves the right to accept any tender in full or in part or to reject the lowest or any or all tenders without assigning any reason.

-sd-
Head Planning and Purchase
Central Laboratory
Bureau of Indian Standards

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**ACE 01**
NAME OF THE EQUIPMENT		**: PROGRAMMABLE MODULAR AUTOMATED TEST SYSTEM FOR LIFE TEST OF GLS LAMPS**
PROPOSED FOR BIS LABS		**: CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

SPECIFICATIONS FOR PROGRAMMABLE MODULAR AUTOMATED TEST SYSTEM FOR LIFE TEST OF GLS LAMPS AS PER IS 418:2004 AND IS 15518(PART I):2004

(As per Clause 5.3, 10 and Annex F as per IS 418:2004 and Clause 4.11 and annex. H of IS 15518:2004)

The required automated test system, connected to a computer through windows based programme, shall be able to perform following functions:

i) Controlling the test voltage
ii) Monitoring and recording the test voltage
iii) Recording the operating time
iv) Printing of measured test voltage at the time of failure of a lamp or switching action of supply during the testing.

The system shall consist of:

- Test racks / panels / sets with control panels
- Computer, minimum Pentium-IV based, with software to run the system, and a printer
- Servo stabilizer
- UPS for computer and printer

The details of the specific requirements of the system and its components are as follows:

SPECIFIC REQUIREMENTS:

(A) TEST SYSTEM:

1. The test systems should be designed and constructed to monitor the various life test data of 540 lamps (9 sets of samples each of 60 lamps). It should be designed in modular form for easy maintenance.
2. The particulars of GLS lamps to be tested in the proposed test systems are:
   i. Rating: 230, 240 250 Volts and 15 to 100 watts
   ii. Cap size: B-22d
   iii. Finish: Clear, Frosted or equivalently coated finish, or white finishes
   iv. Shapes: A, K M & PS shapes as per IS 418:2004
3. The parameters to be monitored by the system are as follows:
   - Burning time of each lamp
   - Mean effective value of test voltage during the life test

4. The burning of lamps in Zigs shall be monitored by reliable current sensing device (each for individual lamp), which will not affect the impedance of the test rack circuit characteristics. It is also desirable that the current sensor should be installed using a CT.
5. The monitored data should be scanned by the system at user programmable scan intervals and shall be provided with validation certificate of the software installed.
6. The system should display, record and print the following data at the time of failure of any lamp:
   a. Date & time of failure
   b. Burning time at test and rated voltage in hours and minutes
   c. Mean effective value of voltage applied across the lamp till the failure of the lamp
   d. Address of the lamp

7. The system should be able to test 540 bulbs (GLS lamps) at a time. It shall consist of 9 sets of 60 lamps each. The system shall be so designed that life test quantity of lamps less than 60 lamps can also be tested without affecting the quality of testing.

8. Operating position of lamps: The Lamps shall be operated in a vertical position, cap up. The lamp holder's axis on a test rack shall not deviate from the vertical by more than 5°.

9. The system should be designed in such a manner that it shall be possible to start or stop the testing of any lamp set (of 60 lamps) at any instant. Also for each lamp set, there should be a program name, a start condition, a stop condition at 750 or Set Hours of burning time at rated or set voltage & an end condition at 1250 or Set Hours of burning time at rated voltage. At accelerated voltage, these time periods shall be correspondingly reduced (calculated as per clause A-4.6 of IS 418:2004).

10. The system should have the option of selecting burning time even after 1250 hrs of burning, till the time all the lamps in the rack / set/ batch burns out. The average burning time of each lamp shall be displayed and printed.

11. The system should have the facility of controlling the test voltage in such a way that it should first be switched 'ON' at the rated voltage and then immediately raised to a variable preset value of voltage between 100% and to variable up to 110% of the rated voltage within preset time (Minimum 5 seconds.)

12. The system should have in built program to minimize the effect of transients on the life test voltage during start up after each power failure. There should be no HV short duration surge at the start of the test or when the power resumes after switching off during 'off' period.

13. The system should be provided with timer facility to **switch off** the each set (of 60 lamps) for 15 minutes after every 11:45 hrs of operation. The off period should not be considered as a part of the burning hours of the lamp. The 'OFF' time period should be adjustable.

14. Lamps shall not operate at excessive temperatures nor there be undue heating of a lamp by others. The temperature of the cap during operation shall not exceed the maximum cap operating temperature 210°C when measured as per cl. 4.11 of IS 15518 (part-1):2004.

15. The lamps shall operate free from noticeable vibration. No vibration or shocks shall be perceptible when touching the lamp holders, either during operation or when switching 'on' and 'off'.

16. Not more than one lamp set should be switched at a time. The switching 'OFF' and 'ON' of the lamps should be through relays / triacs.

17. Control for each lamp shall be provided.

18. The system shall be designed to withstand the temperature & humid conditions of Delhi.

(B) TEST VOLTAGE:

1. The system should calculate and measure mean effective value of test voltage supplied to each set/ batch of GLS Lamps during the life test. The voltage module used for the measurement should measure and record the test voltage at regular interval throughout the life testing. The variation in the power supply under steady state conditions shall be within ± 0.5% and the meters used to measure the voltage shall be 0.5 class or better.

2. Voltage compensation: Usually, fine voltage control for each group of lamps / set / batch under test is necessary for small voltage variations due to changes in load. The terminal voltage shall be auto-adjust whenever any lamp fails during the life test.

3. The lamps should be operated on alternating current at a frequency of a nominal value 50 Hz. The voltage variations of the test racks shall not exceed 1% of the test voltage.

4. The system should operate on 3 phase, 415 volts ac input, with 3 sets in each phase.

5. Each set shall have separate fine voltage control of ±1 volt. Each lamp shall be protected through 10 Ampere slow acting fuses.

6. The voltmeters provided on the control panel for each set shall be detachable / portable to facilitate its calibration & replacement / repairs.

(C) LAMP HOLDER:

1. The lamp holders on the test racks shall be of sturdy construction and shall be so designed to ensure adequate electrical contact and to prevent overheating.

2. The lamp holders shall be so designed that the torque necessary to insert or extract a lamp shall not exceed the values given in annex-C and cl. 4.5 of IS 15518(part-I):2004.

3. The lamp holder should be of **contact type** (not plunger type), earthed and such that the cap temperature does not exceed 210°C. The undue heating of a particular lamp shall not be there due to other lamps in the vicinity.

4. For bayonet lamp holders, the cap shall be substantially at the same potential as the contact which is not connected to the fused main supply lead.

5. The voltage drop between the point of measurement on the supply line and the cap contacts shall not exceed 0.1 % of the test voltage.

6. Bayonet lamp holders shall have earthed metal barrel.

(D) TEST RACKS:

1. The life test racks shall be protected from the bugs & flies.

2. Test rack circuit for 230V to 250V lamps shall have the characteristics as given below:

Parameter	**230V to 250V**
Resistance (ohms)	0.5 ± 0.1
Inductance (micro Henries)	500 ± 100 **
Individual external lamp fuse (Ampere)	10 slow- acting
Surge limit(Volts)	600 #
** : The maximum lamp current loading that may be switched on simultaneously is 16A, for 230 V to 250 V test racks. # : This information is given for surge operating means, of correct rating, to be selected. A 600 V average value is chosen to take into account practical tolerances on surge limiting means to ensure that incidental peaks greater than 900 V are suppressed.	

For method of measuring mains impedance, kindly refer Annex-H of IS 15518 (part-I):2004.

(E) ACCESSORIES:

UPS: It is for the computer and printer of Life test System. It shall be online and shall have backup power of 2 hours **at least** and shall give ac output in sine wave form at 50 Hz frequency.

SERVO STABILIZER: It is to run the Life test system. It should be 3 phase, 40 KVA oil cooled with accuracy class 0.5.

(F) PRINTER OUTPUT:

1. The printer output shall contain the following output:
   a) Sample no. : it shall have one alphabet and seven numerals (In the form E- 0222220 or E-02222__)
   b) Rack no. / Lamp set no.
   c) Start date and time
   d) End date and time
   e) Set time (125 % of rated life), On time and off time of 11:45 Hrs and 00:15 hrs (all items selectable)
   f) Status of the test
   g) Rated voltage
   h) Mean test voltage (it may be accelerated voltage)
   i) Test hours (at accelerated or rated voltage)
   j) Average life observed
   k) Sample details of individual lamp (of all 60 or less lamps): it shall contain lamp address, status at the end of the test (125% of rated life), mean voltage during the test, burning time period, date and time of fusing or the report, if not fused.
   l) The printer output shall have the heading: Bureau of Indian Standards, Central Laboratory.
   Life test on GLS Lamps, Date and time of print out.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	**:**	**ACE 04**
NAME OF THE EQUIPMENT	**:**	**TEST CORNERS WITH WINDOWS BASED SOFTWARE**
[ACE 04 (A)]		**: Test Corners with 36 channels Quantity : Three**
[ACE 04 (B)]		**: Test Corner with 144 channels Quantity : One**
[ACE 04 (C)]		**: Windows Based Software Quantity : One**
PROPOSED FOR BIS LABS	**:**	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	**:**	**Three + One (As above)**

Purpose	:	To carry out 'Temp.-rise' and 'Abnormal Operation Test' on electric appliances.
Reference IS	:	As per Cl. 11 & 19 of IS: 302 (Part I) -1979
Temperature Range	:	0 to 300°C
Least Count	:	1°C
Power Supply	:	Single phase, 230 Volts, 50 Hz, AC.
Specifications	:	

a) Test Corners: [ACE 04 (A) & ACE 04 (B)]

i) The Test Corners shall be made strictly as per Cl. 11 & 19 of IS: 302 (Part I) -1979.

ii) Three Test corners each of 36 Channels shall be made of following dimensions:

Size : 600mm x 600mm x 600mm
Thickness : 20 mm

iii) One Test corner of 144 Channels shall be made of following dimensions:

Size : 1200mm x 1200mm x 600mm
Thickness : 20 mm

iv) Material of the test corner shall be dull black painted plywood/ plyboard (Block board).

v) Test corners shall consist of two walls at right angle, a hinged ceiling and a floor fixed over a stand at a height of 750 mm from ground.

vi) Thermocouple used for determining the temperature of the surface of walls, ceiling and floor are embedded in the surface or attached to the back of small blackened disks of copper or brass, 15 mm in diameter and 1 mm thick, which are flush with the surface.

vii) Thermocouple disks shall be evenly distributed over the inner surface of two walls, floor and ceiling.

b) Windows Based Software: [ACE 04 (C)]

i) All four test corners [ACE 04 (A) & ACE 04 (B)] shall be connected through a suitable port to a PC having a Windows Based Software for the development of suitable data base for the following parameters to be captured during each scan for each individual sample:

a) Scanning time (as minimum as possible);
b) Scan interval from 0 to 99 minutes (Settable);
c) Date and Time;
d) Test Voltage (0 to 600 V);
e) Test Input (0 to 9999 W);
f) Temperature measured by each thermo couple (upto 400 °C);
g) Ambient Temperature (upto 100 °C)

ii) The PC/ Windows Based Software shall be connected through UPS with 1 h line back up.

iii) Suitable printer shall be supplied which shall be able to print the following:

a) *Heading:* BIS Central Laboratory (Electrical);
b) Date and Time of printout;
c) Sample Number (e.g. E-1237890);
d) All parameters captured by data base.

c) All measuring devices shall be supplied with calibration certificate from NABL approved calibration agency.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**ACE 06**
NAME OF THE EQUIPMENT	:	**LAB ELECTRIC OVEN FOR GLS TESTING**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**Three**

Purpose	:	To carry out test for Resistance to torque after heating test on GLS Lamps
Reference	:	Clause 4.5.3 and 4.5.4 of IS 15518(Part 1): 2004

Features :

1. SIZE: The capacity of the oven shall be sufficient to accommodate 10 sets of samples of 125 lamps each. It shall be of double door type and a vertical partition be provided in the middle of the oven. The total inner dimensions of the chamber (for both partitions) shall be 100cm x 250cm x 150 cm (min.) (HxWxD).

2. Inner chamber shall be of Stainless Steel of min thickness 0.8 mm and should be resistant to corrosion. Ten shelves shall also be provided (five equidistant shelves in each chamber) in the Oven. There shall be provision for keeping 130 lamps equally spaced in each tray and provision of circulation of air with proper support and skirting and dropdown handles. The nuts, screws and hinges of the inner chamber shall be of stainless steel or of brass.

3. High grade fibre/mineral wool shall be used between the walls for insulation.

4. Air circulation shall also be provided to achieve the requirements as per IS 3400(Part 4) –specifications for laboratory oven.

5. Temperature control: The temperature shall be from ambient to 250°C.

6. Separate temperature indicator and controller (PT-100 type) shall be provided for controlling the temperature inside the cabinet. The least count of the indicators shall be at least 0.1°C.

7. Accuracy of the controller shall be preferably 0.5% ±1 digit of temperature.

8. The control panel of the oven shall be separate and should be connected to the main body through a connector.

9. The oven shall be able to work in the ambient conditions.

10. Input to the oven shall be 230V, ac, 50 Hz. It should be of continuous duty. Stabilized power supply provision should be provided with the oven, if required.

11. A separate data logger along with printer and UPS of adequate rating shall also be provided to measure and record the temperature inside the oven on a continuous basis. The printout should indicate Sample Nos, Date of commencement of test, date of completion of test, any power break down period and temperature in °C.

12. The equipment shall be supplied with Calibration certificates for all measuring and indicating instruments from NABL accredited laboratory.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**ACE 07**
NAME OF THE EQUIPMENT	:	**APPARATUS FOR INDUCED FAILURE TEST**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

Purpose : To carry out Induced Failure Test on GLS Lamps

Reference : Annex D of IS 15518 (Part 1) : 2004

Features :

1. The test arrangement for induced failure test shall be as per Annex D of IS 15518 (Part 1) : 2004.

2. It shall have a pulse generator capable of generating a pulse up to 5 KV and other features including safety cover which meet the requirements of Annex D of IS 15518 (Part 1):2004(Copy enclosed for reference) lamps having rated voltage from 200 to 250 volts.

3. It shall have a 2 channel Digital Storage Oscilloscope having minimum bandwidth of 100 MHz for calibration of the pulse and a compatible 1000X High Voltage Probe for measuring pulses up to 10 KV minimum. The oscilloscope shall have facility for external trigger input and connectivity to computer through suitable ports and software.

4. All parts of the system shall be compatible to each other to give the desired test parameters.

5. All the measuring equipments shall be calibrated from an NABL/ International approved laboratory traceable to National / International Standards.

Encls.: Annex D of IS 15518 (Part 1) : 2004

ANNEX D

(*Clause* 4.9)

INDUCED-FAILURE TEST

D-1 TEST CIRCUIT AND EQUIPMENT

D-1.1 The test circuit shown in Fig. D-1 shall consist of the following:

a) A 50 Hz mains supply line whose voltage shall be the rated voltage of the lamps, within a –2 percent tolerance. The test voltage of a lamp with a voltage range marking shall be that voltage which is halfway between the range limits;

b) Switch *S*;

c) Inductance *L* to bring the total inductance to the value specified in D-2;

d) Resistor *R* to bring the total resistance to the values specified in D-2;

e) Lampholder *H* which for B15 and B22 capped lamps shall have an earthed shell; and

f) Fuse *F* with a rating not less than 25 A, for 220 V – 250 V lamps. For 100V – 150 V lamps, 15 A (*under consideration*).

D-1.2 A safety cover shall be provided to cover the lamp in the test position.

D-1.3 The pulse generator shall be capable of giving a pulse, which meets the following characteristics, as measured across the test lamp (*see* Fig. D.2 and D-3):

— peak value (kV):	2.9 to 3.1 for lamps with a rated wattage up to and including 100 W; 2.4 to 3.1 for lamps with a rated wattage higher than 100 W;
— width t_w (at 40 percent of peak value) (µs):	8 to 20 for lamps with a rated wattage up to and including 100 W; 10 maximum for lamps with a rated wattage higher than 100 W;
— rise time t_r (µs):	1 maximum;
— timing (electrical degrees)	$\varphi = 70° \pm 10°$

NOTE — The peak value is measured from the zero voltage level (*see* Fig. D-3).

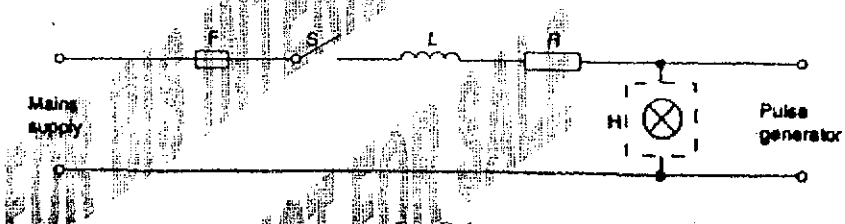

FIG. D-1

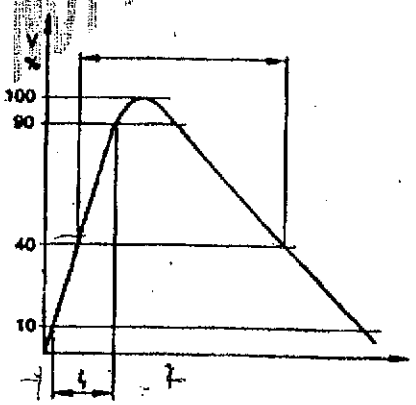

FIG. D-2

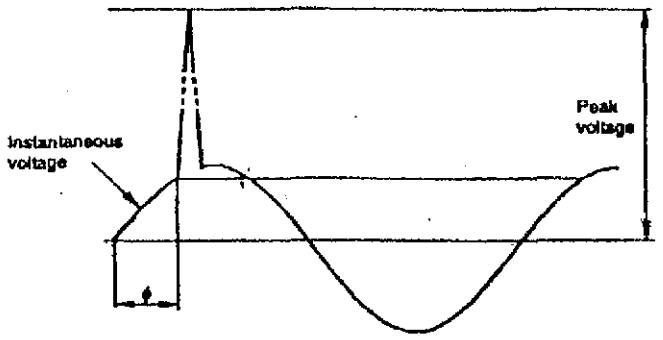

FIG. D-3

D-1.4 The inductance and resistance of the whole circuit, including the items of the various components in D-1.1 and including any fuse and all wiring, shall meet the following requirements:

a) for lamp voltage ratings between 200 V and 250 V
   — resistance (Ω): 0.4 to 0.45
   — inductance (mH): 0.6 to 0.65
b) for lamp voltage ratings between 100 V and 150 V
   — resistance (Ω): 0.3 to 0.35
   — inductance (mH): 0.6 to 0.65

D-2 TEST PROCEDURES

D-2.1 The lamp to be tested shall be inserted in the lampholder and the safety cover put in place.

D-2.2 The lamp shall be switched on applying line voltage only. At least 5 s later, a single high-voltage pulse is applied. If the lamp remains lit, the application of the pulse shall be repeated five times.

D-2.3 If the lamp still remains lit, it may be conditioned by being operated at an over-voltage for a period of calculated time equivalent to 60 percent of rated life (*see* H-2.3). It shall then be re-subjected to the high-voltage pulse set out in D-2.2.

The equivalent life shall be calculated in accordance with the following equation:

$$L_o = L\left(\frac{U}{U_o}\right)^n$$

where

L_o = life at rated voltage,
L = life at test voltage,
U_o = rated voltage,
U = test voltage, and
n = 13 for vacuum lamps and 14 for gas filled lamps.

D-3 CONDITIONING PROCEDURE

D-3.1 Conditioning by a Test House

Test houses are permitted to condition up to 10 percent over voltage. Any burnouts occurring during this conditioning shall be counted in the final assessment, provided the impedance limits are met.

D-3.2 Conditioning by the Manufacturer

Conditioning is permitted up to 30 percent over voltage. If the over voltage is greater than 10 percent or the test racks do not comply with the requirements, then burnouts occurring during the conditioning shall not be counted in the final assessment.

NOTE — The conditioning requirements for a test house are different from those of a manufacturer in order to ensure that a test house does not inadvertently put unrealistic stresses on the lamps during conditioning. On the other hand, they give the manufacturer the possibility of saving testing time and costs by using his detailed knowledge of the stresses his lamps can resist.

D-4 INSPECTION AND ASSESSMENT

After the test, each test lamp is examined. If either,

a) the bulb is no longer intact, or
b) the bulb is detached from the cap, or
c) for bayonet caps only there is a short-circuit between either one of the contacts and the shell,

then the lamp is deemed to have failed the test and is counted as a non-conformity.

If the lamp remains lit after the test procedure specified in D-2.3, it is deemed to have passed.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**BCE 01**
NAME OF THE EQUIPMENT	:	**POWER MEASURING KIT**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

Name of the Equipment	:	Power Measuring Kit (For 3 - phase Induction Motors)
Purpose	:	To measure the Current, Voltage, Frequency and true power of 3 - phase Induction Motors.
Reference	:	IS:325-1996, IS:7538-1996, IS:9079-1989 & IS:2161-1996

Requirements :

i) The power measuring kit shall be suitable for instant measurement & display of Current, Voltage, Frequency and True Power in three-phase, three wire ac system.

ii) The instruments required for the measurements shall be fitted into an insulated box of suitable material for safe transportation and are connected up so as to be ready for use.

a) Permanently installed wiring with (identification codes) in the kit shall connect all instruments – terminals to a phase selector switch for Ammeter, Voltmeter and Wattmeter.

b) In case of need the replacement of an instrument shall be easily possible.

c) The internal circuit of the measuring kit shall correspond to a complete three-phase three-wire measuring circuit for direct true power measurement by two-wattmeter method using single wattmeter.

iii) The constituent parts of the kit shall be as under :

a) One AC Ammeter (digital), accuracy Class 0.5, range = 0- 1- 5 A, 50 Hz.

b) One AC Voltmeter (digital), class 0.5, range = 0 - 300 - 600 V, 50 Hz.

c) One three - phase wattmeter (digital), class 0.5, 50 Hz, rating: 5 A, 300 / 600 V, range: 0 - 300 / 3000 W.

d) Three Current Transformers, Class 0.2, 5 VA, 0.2 Ohm, p.f = 0.8, frequency = 50 Hz. Multi-range primary current ratings = 10, 25 & 50 A and Secondary current = 5 A .

iv) Display of readings of Power Kit shall be stable.

v) One Ammeter selector for measuring current of 3 - phases and putting the Ammeter in OFF position.

vi) One set of voltage push button selector for measuring line voltage between any two phases and to put the voltmeter in OFF position.

vii) One set of voltage push button selector for selecting required voltage range e.g. 300, 600 volts.

viii) Power Kit shall have provision to interface with computer for storing of measured data.

ix) All measuring instruments shall be supplied with calibration certificates from NABL approved Calibration Agency.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**BCE 02**
NAME OF THE EQUIPMENT	:	**D.C. H V TESTER**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

Purpose	:	To carry out DC High Voltage Test on Cables
Reference	:	IS:694-1990 & IS: 1554(Part-1)-1988
Output	:	0- 2 KV DC with H.T. (- ve) Pole, L.T. (+ve) Earth with accuracy = ± 1 % of set value
Measurement of DC Voltage	:	On Secondary side across the output terminals with digital display having accuracy of Class 0.5 and LC = 0.01 KV
Input Supply	:	1 Phase, 230 V, A.C., 50 Hz
Water Bath	:	Refer **Annexure -1** for detailed specification

Features :

i) HV Test Unit shall have H V Tester and water bath.

ii) Shall have arrangement for testing of 24 samples at a time. It shall be capable of running for 240 Hrs. without interruption.

iii) Shall be able to detect and isolate the failure sample without affecting the other samples under test with suitable microprocessor based programme.

iv) Microprocessor window based system to indicate and record temperature of water bath, DC voltage, total running time and individual sample failure time with interlinking to PC and Printer through suitable port.

v) Out put voltage shall be maintained constant free from switching transients and fluctuations.

vi) H V Test System shall be provided with two separate UPS of 2 hours line back up and adequate capacity with maintenance free storage batteries; each for PC and DC High Voltage unit excluding water bath.

vii) All measuring devices shall be supplied with calibration certificate from NABL accredited agency.

Annexure-1 to BCE 02

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**BCE 02**
NAME OF THE EQUIPMENT	:	**WATER BATH FOR DC HV TEST**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

Type	:	Electrically operated thermostatically controlled Water Bath
Purpose	:	To immerse cable sample specimen for carrying out DC HV Test on PVC Insulated Cables
Reference IS	:	IS :694-1990 IS :1554(Part-1&2)-1988
Dimensions	:	Length = 2000 mm. Breadth = 600 mm Depth = 1200 mm.
Required Temp. range	:	0 – 100 °C(approx.)
Normal used temperature	:	60 °C
Requirements	:	

i) It shall be PID controlled having accuracy of ±1°C of set value.

ii) Shall be provided with digital temperature indicator with LC 0.1°C to indicate the temp of water inside the water bath.

iii) It shall be attached with water float valve with appropriate drainage system.

iv) Outer body of water bath shall be of powder coated steel plate with resin baking finish.

v) Inner tank of the water bath shall be made of stainless steel sheet of atleast 2 mm thikness.

vi) Sufficient number of heating element shall be fitted for quick attainment of the required temperature.

vii) Shall have provision to maintain uniform temperature of water inside the water bath.

viii) Suitable provision to be provided to minimize the heat loss from the surface of water.

ix) Water bath shall have proper earthing to bypass the fault current in case of internal short-circuit.

x) Suitable wheels shall be provided to make it movable.

xi) Temperature measuring device shall be supplied with calibration certificate from NABL accredited lab.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE :		**BCE 03**
NAME OF THE EQUIPMENT	**:**	**Air Bomb Chamber**
PROPOSED FOR BIS LABS	**:**	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	**:**	**One**

Purpose	: Ageing in Air Bomb on Elastomer insulation & Sheath
Reference	: Appendix-A of IS:6380-1984
Range Of temperature	: 0 – 250 °C
Least Count	: 0.1 °C
Accuracy	: ± 1 °C
Normal Used Temperature	: 127 °C ±1 °C
Range of Pressure	: 0 – 25 Kg/Cm²
Least Count	: 0.1 Kg/Cm²
Normal Pressure for Air	: 0.55 ±0.02 MPa (5.4 Kg/Cm²)

Features:-

i) Temperature of the chamber shall be PID controlled.

ii) Digital display of temperature and air pressure.

iii) Pressure of Air in the chamber shall be controlled with pressure regulating device.

iv) Shall have provision for recording of test parameters with the help of data logger along with UPS of 1 h line back up and associated printer.

v) The Data Logger shall have provision to set Sample Address, Date, Time and Scan interval (0-60 min).

vi) The equipment shall give at least following print out:
   a) Sample Address (E-123789),
   b) Date & Time
   c) Temperature
   d) Scan interval (0-60 min)

vii) Shall be provided with digital Hour meter with pre-set time facility and automatic switch off supply after pre-set time.

viii) A buzzer shall be provided to indicate completion of test.

ix) Air Pressure chamber (Bomb) shall consist of metal vessel desinged to retain an internal pressure and temperature.

x) Size of the chamber shall be such that 16 specimen of the sample can be accommodated at a time.

xi) All measuring devices shall be supplied with calibration certificates from NABL accredited lab.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**BCE 04**
NAME OF THE EQUIPMENT APPARATUS	:	**OXYGEN BOMB TEST**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

Purpose	:	Ageing in Oxygen Bomb on Elastomer insulation & Sheath
Reference	:	Clause 4.1 Of IS:10810(Part-16)-1986.
Range Of temperature	:	0 – 150 °C
Least Count	:	0.1 °C
Accuracy	:	± 1 °C
Normal Used Temperature	:	70 °C ±1 °C
Range of Pressure	:	0 – 50 Kg/Cm²
Least Count	:	0.1 Kg/Cm²
Normal Pressure for Oxygen	:	2.1 ±0.07 MPa (20.6 Kg/Cm²)

Features:-

i) Temperature of the chamber shall be PID controlled.

ii) Digital display of temperature and oxygen pressure.

iii) Pressure of Oxygen in the chamber shall be controlled with pressure regulating device

iv) Shall have provision for recording of test parameters with the help of data logger along with UPS of 1 h line back up and associated printer.

v) The Data Logger shall have provision to set Sample Address, Date, Time and Scan interval (0-60 min).

vi) The equipment shall give at least following print out:
   a. Sample Address (E-123789)
   b. Date & Time
   c. Temperature
   d. Scan interval (0-60 min)

vii) Shall be provided with digital Hour meter with pre-set time facility and automatic switch off supply after pre-set time.

viii) A buzzer shall be provided to indicate completion of test.

ix) Oxygen Pressure chamber (Bomb) shall consist of metal vessel desinged to retain an internal pressure and temperature.

x) Size of the chamber shall be such that 16 specimen of the sample can be accommodated at a time.

xi) All measuring devices shall be supplied with calibration certificate from NABL accredited agency.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE	:	**CCE 06**
NAME OF THE EQUIPMENT BASED SWITCH TESTING	:	**COMPUTER CONTROLLED WINDOWS SYSTEM WITH LOAD FOR**
PROPOSED FOR BIS LABS	:	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	:	**One**

TECHNICAL SPECIFICATION FOR PROGRAMMABLE TEST SYSTEM TO CARRYOUT NORMAL OPERATION TEST AND MAKING & BREAKING CAPACITY TEST ON SWITCHES OF RATINGS 6 & 16 AMP (AS PER CLAUSE 18 & 19 OF IS 3854:1997)

1. The Automated Test System connected to a computer based programme shall consist of:

a) Actuating Mechanism/ Test panels / display / control panels whose operation should be controlled by a computer (Pentium / Windows based) capable to test the samples of Switches of 6 & 16 Amp rating for Making & Breaking Test and Normal Operation Test as per Cl. 18 & 19 of IS 3854:1997.

b) Computer - Pentium based with software to run the system and printer.

c) UPS for computer and printer. It shall be on line and shall have backup power of at least 2 hours and shall give ac output in sine wave form at 50 Hz.

d) Printer

2. The Equipment should be capable to test the switches for Making & Breaking Test (Cl. 18 of IS 3854:1997) at controlled / adjustable Number of Operation, Speed, Voltage, Current and Power Factor. One Operation consists of "transfer of the moving contacts from one operating positions to another".

3. The Actuating Mechanism shall have controlled speed ranging from 5 to 50 operation / minute.

4. After completion of Making & Breaking Test the equipment automatically comes down for Normal Operation Test (Cl. 19 of IS 3854:1997) at controlled / adjustable Number of Operation, Speed, Voltage, Current and Power Factor.

5. TEST VOLTAGE, CURRENT AND POWER FACTOR:

i) For Normal Operation Test – Test voltages are 230 V, 240 V and 250 V, ac and Test currents are 6 Amp. and 16 Amp., ac, at Power Factor 0.6 ± 0.05.

ii) For Making & Breaking Test - At 1.1 times the Test Voltages stated at Sl. No. 5, i) and 1.25 times the Test Currents stated at Sl. No. 5, i) at Power Factor 0.3 ± 0.05.

iii) The tolerance for the test voltage is + 5 % & - 0 %.

6. The system shall put the switches 'ON' and 'OFF' for adjustable time-period for the operation i.e. 50 % 'ON' & 50 % 'OFF' for Making & Breaking Test and 25 % 'ON' & 75 % 'OFF' for Normal Operation Test as per the following table:

Rating of switches of all varieties	Operation per minute	'ON' time	'OFF' time	Remarks/ Cl reference
Making & Breaking Test				
6 Amp	30	2 Second	2 Second	See Cl 18 of IS:3854-1997
16 Amp	15	4 Second	4 Second	
Normal Operation Test				
6 Amp	30	1 Second	3 Second	See Cl 19 of IS:3854-1997
16 Amp	15	2 Second	6 Second	

7. The 'ON' period shall be (25 % +5% -0) of the total cycle and the 'OFF' period
shall be (75 % -5% +0) for normal operation test.

8. The computerized system should be capable to monitor / control / display / record and print the following data of each switch separately at the time of failure / completion of test:

a) Test Voltage, Current, Power Factor and No. of operation;
b) Date of failure/ completion of test; and
c) Address of the switch (e.g. Specimen No. 1 to 9).

9. The system should be capable to stop testing (after completion of number of operation at ' OFF ' position only. If a particular switch starts malfunctioning during the test, the system should be capable to disconnect the same from testing and performance of the same switch should be recorded.

10. The printer output shall contain the following:

a) The printer output shall have the heading: Bureau of Indian Standards, Central Laboratory (Electrical).

b) Normal Operation / Making & Breaking Test
c) Date and Time of print out.
d) Sample No.: It shall have one alphabet, dash and seven numerals (e.g. E-1234567 or E-0001234.)
e) Specimen No. 1 to 9.
f) Start date and time
g) Completion date and time
h) Speed of actuating mechanism
i) Test Voltage
j) Test Current
k) No. of Operations Completed
l) Status of the test

11. The apparatus shall have the provision to mount / fix the Switches as in normal use
without using special type of tools.

12. The system should be safe from dust, corrosion and electric shock and have adequate mechanical strength.

13. The Equipment should have Digital Ammeter, Voltmeter, Power Factor meter and Counter for each switch separately. These instruments shall be detachable / portable to facilitate their calibration/ repair/ replacement.

14. There should be an interface between load and computer system. The load should be separate unit.

15. The computerized system should be capable to test simultaneously 6 Nos. of switches for the 6 Amp rating or 3 Nos. of switches of 16 Amp rating.

16. The system should be capable to test the samples of different ratings (Current / Voltage) and types (Flush type, Surface type and Press fit type).

17. The System shall have computerized as well as manual controls for carrying out Normal Operation and Making & Breaking Test.

18. The system should comply all the provisions of Cl. 18 & 19 of IS 3854:1997.

19. The supplier shall provide all the literatures/software related to the system such as Operation / Instruction Manual, Circuit Diagram, trouble shooting etc.

20. All measuring instruments shall be supplied with calibration certificates from NABL approved Calibration Agency.

BUREAU OF INDIAN STANDARDS
CENTRAL LABRATORY
EQUIPMENT SPECIFICATION

EQUIPMENT /SPECIFICATION CODE :		**BCE 09**
NAME OF THE EQUIPMENT	**:**	**TUBULAR AGEING OVEN**
PROPOSED FOR BIS LABS	**:**	**CL ELECTRICAL**
TOTAL QUANTITY REQUIRED	**:**	**One**

Purpose	:	For Loss of Mass Test on cables.
Type of Equipment	:	Electrically Operated Heating Cabinet / Oven.
Reference of IS	:	IS:10810 (Pt-10 & 11)-1984, IS:6365-1971
Control of Temp	:	Electrically operated with PID control.
Inner Dimension of each Cell	:	Diameter = 100 mm. Depth = 300 mm.
No. of Cells	:	8 Cells
Temp. range	:	0 - 250 °C (each cell)
Test Temp. (Normally used)	:	80 °C, 100 °C & 135 °C
Least Count	:	0.1°C
Accuracy	:	± 1°C
Features	:	

i) Digital display of temperature and rate of air-flow of individual cell.

ii) Ageing Oven consisting of 8 Tubular cells of 300 mm depth and 100 mm inner diameter.

iii) There shall be provision of Temperature control of individual cell with PID & digital temp. indicator.

iv) There shall be provision for control of air flow in individual cell with digital indicator.

v) Provision of Central Unit for Controlled air flow to all Cells.

vi) Provision for recording and printing of test parameters of individual cell with the help of suitable Data Logger with UPS of 1 h line back up and associated printer.

vii) The Data Logger shall have provision to set Sample Address, Cell No., Date, Time, scan time (0-15 sec) and Scan interval (0-60 min).

viii) The equipment shall give at least following print out:

e) Sample Address (E-123789)
f) Cell No. (1 to 8)
g) Date
h) Time
i) Temperature of each cell
j) Ambient temperature

ix) Cap / Lid of the cell (tube) shall have suitable provision to suspend the specimen as per Cl. 8.2 of IS:10810 (Pt-10)-1984.

x) The air shall enter the Cell in such a way that it flows over the surface of the test pieces and leaves near the top of the Cell.

xi) The oven shall have a rate of air-flow such as to give 8 to 20 changes per hour in each cell.

xii) All measuring devices shall be supplied with calibration certificate from NABL accredited agency.

ANNEXURE-1

DEVIATION STATEMENT FORM

1) The following are the particulars of deviations from the requirements of the tender document and specifications:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

PLACE:

DATE:

SIGNATURE & SEAL OF THE MANUFACTURER/BIDDER

NOTE:

1. Where there is no deviation, the statement should be returned duly signed an endorsement indicating “No Deviations”.

ANNEXURE-2

PERFORMANCE SECURITY FORM

To _____ (Name of Purchaser)

WHEREAS _____ (Name of supplier)
Hereinafter called "the Supplier" has undertaken, in pursuance of Contract No._____ dated _____ 2006 to supply _____ (Description of Goods and Services) hereinafter called "the Contract".

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a Nationalized Bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier a Guarantee:
THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of _____ (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of _____ (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the _____ day of _____ 2006.

Signature and Seal of Guarantors

Date ----------2006
Address ----------

