

Annexure

Sl. No.	Description	Qty (No.)
1	Hand held instrument for plating thickness measurement on surface of double/ multilayered PCB and copper cladded laminates	1
2	Hand held instrument for plating thickness measurement on through holes of double/ multilayered PCB	1

Technical Specifications

1. Hand held instrument for plating thickness measurement on surface of double/ multilayered PCB and copper cladded laminates

- 1) Applications: The instrument shall be capable of measuring the copper thickness (typically 5 to 125 microns) on top side of single and multilayer printed circuit boards without influencing the under lying copper layers for the measurement using the electrical resistance method (EN 14571).
- 2) Measurement accuracy: < 1 μm
- 3) Measurement acquisition: Each measured reading shall be automatically recorded
- 4) Indication of measurement acquisition: Visual and audible
- 5) Measurement unit: μm
- 6) Resolution of the displayed values: up to 1 decimal place (minimum)
- 7) Calibration: The gauge shall have provision for calibration. Calibration standard set and Cu base shall be provided along with the item.
- 8) Operating language: English
- 9) Date and Time: Settable
- 10) Housing - Shock, dust and waterproof (IP64)
- 11) Memory: Shall have provision for storage of minimum 100 readings or higher.
- 12) Display: Shall have inbuilt display on the equipment
- 13) Offline operations: Shall have suitable battery with minimum operational time of 10 hrs for offline usage. Suitable inbuilt charging mechanism shall be available.
- 14) Accessories: Party shall quote for all the necessary accessories for carrying out copper thickness measurement over multilayer PCBs
- 15) **Deliverables:**
 - i. Hand held plating thickness gauge
 - ii. Pluggable digital measuring probe for determining the Cu thickness on printed circuit boards
 - iii. Li ion battery & charger

iv. Calibration standard set and Cu base

2. Hand held instrument for plating thickness measurement on through holes of double/ multilayered PCB

- 1) Applications: The instrument shall be capable of measuring the copper thickness (5 to 80 microns) on through holes of printed circuit boards (PCB) using the phase-sensitive eddy current method.
- 2) Equipment shall be capable for measuring Copper thickness in PCBs with 0.7 - 8 mm thickness
- 3) Probe requirements: Shall be capable of carrying out measurements in
 - 3.1) Diameter of bore hole: 0.8 - 2 mm
 - 3.2) Copper thickness: 5 - 80 μm (Cu/Isolated)
 - 3.3) Variable insertion depth setting of the measuring needle in the range from 0.8 mm to 4.4 mm through spacer
 - 3.4) Spacer set for pluggable probe for measurement of copper plating thicknesses in PCB through holes: Set of spacers, comprising 6 single spacers for the positioning of the measuring element of above probe in the centre of the longitudinal axis of through holes in PCBs with thicknesses of 1.6 mm, 2.4 mm, 4.8 mm, 6.6 mm, and 0.5 - 1 mm.
- 4) Measurement accuracy: $< 1 \mu\text{m}$
- 5) Calibration boards to be supplied:
 - 5.1) Calibration board: Calibration board with 5 holes of 1 mm diameter each and different copper thickness in the holes.
 - 5.2) Reference-board: Reference-board with integrated Cu infinity standard.
- 6) Provision for data transfer (preferred): Data shall be able to transfer from the instrument to a computer via RS232 / USB interface
- 7) Operating language: English
- 8) Power: Battery and/or continuous operation via plug-in charger
- 9) Memory: 100 values or better
- 10) **Deliverables:**
 1. Hand-held instrument for copper thickness measurement
 2. Pluggable probe for measurement of copper plating thicknesses in PCB through holes with Cable length of 1 m (approx.)
 3. Spacer set comprising 6 single spacers with thicknesses of 1.6 mm, 2.4 mm, 4.8 mm, 6.6 mm, and 0.5 - 1 mm.
 4. Calibration board
 5. Reference-board

Other Conditions

1. Party shall provide datasheet/ brochures of the quoted item along with the quote
2. Calibration certificate for the probe/ equipment to be supplied along with the item
3. Item shall be warranted for minimum one year.
4. Party shall install and demonstrate the item at VSSC.
5. Party shall share the list of customers using this equipment along with the quote. Satisfactory evaluation of customer (if required by VSSC) will be one of the criteria for accepting the technical quote.
6. Party shall provide quote for Non Comprehensive AMC for three years after warranty period. Number of visits, terms and conditions shall be provided.
7. For evaluation of quote, cost of basic equipment, accessories and AMC cost for three years will be considered for arriving L1.