

Technical Specification of Ultrasonic Tomograph for Concrete Inspection

Supply installation and commissioning of low frequency ultrasonic tomograph for non-destructive inspection of concrete, reinforced concrete and stone masonry as per detailed specifications given below:

Low-Frequency Ultrasonic Tomograph represents a hand-held lightweight low-frequency ultrasonic device of general purpose. This can be used on rough surfaces, without applying contact liquid. Every transducer has an independent spring suspension which allows conducting inspection on the rough surfaces. The tomograph is designed to test the concrete, reinforced concrete and stone with one-sided access to estimate integrity of material, locate inclusions, cavities, voids, delaminations, not grouted areas, identify cracks and measure thickness of the object.

Specifications:

| | |
|---|--|
| Scanning device type | Built in matrix antenna array type |
| Number of transducers in the antenna array | Minimum 48 Nos |
| Transducer type in the antenna array | It should be low frequency transverse (shear) wave transducer. Dry point contact with ceramic wear tips. |
| Nominal frequency of transducers | 50 kHz |
| Inspection depth in concrete | Minimum 1000 mm |
| Type of material to be scanned and its applications | Concrete, reinforced concrete / stones for detection of rebar, cavities, voids, delaminations / cracks. |

| | |
|---|--|
| Image reconstruction | <p>Should able to construct A-scan, B-scan and C-scan images.</p> <p>2-D images to create a 3-D model of the test object. The user can manipulate the 3-D model by rotating it or looking at different orthogonal planes.</p> <p>Should reconstruct a 2-D image of the cross section using the synthetic aperture focusing technique (SAFT).</p> |
| Power | Built in rechargeable battery, with backup time not less than 4 hrs. |
| Operating temperature range | -10 to 50 deg °C |
| Data communication with Convertible Laptop/ PDA | USB/any other wireless |
| Cables | Complete set of necessary cables to be supplied along with the equipment (if required) |
| Software capabilities | <p>Should abled to display voids, cavities, cracks, etc., calculate the depth of concrete member and cover thickness. The collected data set can be transferred to the convertible laptop/PDA for processing.</p> <p>Software shall have the capability to represent collected data from the instrument as tomograms and as well as 3D images.</p> |
| Raw Data export | Raw data extraction from the device should be provided for further processing in MATLAB. |

| | |
|---------------------------------------|--|
| Convertible Laptop / PDA requirements | <p>A Convertible/2-in-1 Laptop or PDA, with latest OS compatible with the software of the equipment has to be provided for further data processing.</p> <p>Display: 12.5-inch diagonal (minimum), Touch display with Full HD</p> <p>Processor: 8th gen (or latest) i7 with 16GB (minimum) RAM / A12X Bionic chip (or latest)</p> <p>Internal Storage: 512GB (minimum) Flash memory / SDD</p> <p>Weight: lighter than 1.4 kg</p> <p>OS: Windows Pro/iOS</p> <p>Suitable carrying case/bag.</p> |
| Other features | <p>Suitable lifting handles to be provided for handling. Hard carry case to be provided.</p> <p>The system should be able to work with standard Indian electrical supply (230 V AC, 50 - 60 Hz mains).</p> |
| Warranty | <p>The supplier shall provide warranty for a minimum of Three year after installation and commissioning of the equipment.</p> |